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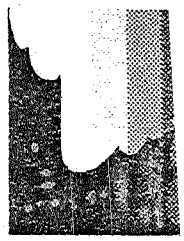

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ACID PRECIPITATION:

AN EVALUATION OF CANADIAN AND U.S. ENVIRONMENTAL LAWS AND RECOMMENDATIONS FOR REGULATORY ALTERNATIVES

F I N A L R E P O R T

Submitted to Environment Canada

by DAVID ESTRIN and STEPHEN R. GARROD
Barristers and Solicitors
Eden Mills, Ontari
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on behalf of

The Canadian Envi
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May 1981

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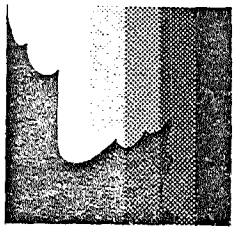

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EXECUTIVE SUMMARY

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E.S.1.0 Introduction

The problem of acid precipitation in Canada and the United States is a serious and immediate environmental problem. Despite deficiencies in the understandings of the precise mechanisms by which sulphur dioxide (SO_2) and nitrogen oxide (NO_x) are transformed into sulphates and nitrates in the atmosphere and transported hundreds or thousands of miles before being deposited and resulting in environmental damage, this scenario is generally accepted and agreed upon by most reputable scientists.

Unfortunately, the element of uncertainty in the exact processes and mechanisms by which the acidic deposits can be traced back to specific sources or specific groups of sources which emit SO_2 and NO_x is sufficient to cause substantial problems for any enforcement agency wishing to act to alleviate the problem.

Traditional pollution control laws have relied in large part upon being able to prove, to the necessary legal standard of proof, the cause-effect relationship between a pollutant that is emitted and the harm which consequently results. In most cases, this legal standard of proof that must be met is "beyond a reasonable doubt". Any control mechanism which relies upon having to meet this standard of proof can be expected to be met with substantial opposition from sources reluctant to submit to controls and their "experts". Because of the difficulties inherent in proving the cause-effect relationship associated with the acid precipitation problem, this traditional regulatory approach can not be expected to be sufficient to result in the necessary degree of control.

This present approach is *ad hoc* in nature, time consuming, extremely demanding in terms of scientific and legal expertise and unnecessarily demanding of manpower and other resources of the enforcement agency. Efficient use of expertise and enforcement resources, together with the necessity of controlling the problem in a comprehensive fashion within a relatively short period of time, require that this traditional approach to pollution control be abandoned in favour of a more direct mechanism which would eliminate the necessity of dealing with these complexities in each particular instance.

This fundamental limitation, combined with specific problems identified with most existing pollution control legislation in both Canada and the United States results in a situation where present legislation is inadequate to directly and efficiently deal with the problem. This is not surprising as the acid precipitation problem is unlike most traditional pollution problems which are characterized by the close proximity of source and damage. Nor is this inadequacy of present laws a serious limitation to future action. Laws traditionally develop in response to social problems and the acid precipitation problem has only recently been recognized as such. It would be surprising then if present laws completely contemplated the unique nature of this problem and were adequate to deal with it without amendment.

The emissions of SO_2 and NO_x which ultimately cause the acid precipitation problem can be divided into eight categories for the purpose of legal analysis. These categories are:

(1) new stationary sources of SO_2 and NO_x in the USA;
(2) new stationary sources of SO_2 and NO_x in Canada;
(3) new mobile sources in the USA;
(4) new mobile sources in Canada;
(5) existing stationary sources in the USA;
(6) existing stationary sources in Canada;
(7) existing mobile sources in the USA; and
(8) existing mobile sources in Canada.

Stationary sources include such sources as coal-fired generating stations, non-ferrous metal smelting plants, and other industrial sources of these pollutants. Mobile sources include passenger cars as well as trucks, buses and other transportation vehicles. Mobile sources contribute primarily NO_x emissions to the atmosphere, whereas stationary sources generally contribute both SO_2 and NO_x in significant quantities. A distinction is drawn between new and existing sources because of the fact that present legislation in the USA makes this distinction and because of the fact that requiring existing sources to submit to substantially more stringent standards than those that were in force when they established may require different strategies in order to be politically and economically feasible.

required to reflect "the degree of emission reduction achievable through the application of the best system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated for that category of sources". [Section 111(a)(1)(C)]

These requirements taken together have the effect of requiring what is commonly referred to as "best practical technology".While it has been argued that section 111 of the Clean Air Act in fact imposes a technological standard of "best available control technology" [See Banks, W.C.,"E.P.A. Bends to Industry Pressure on Coal NSPS and Breaks", Ecology Law Quarterly, Volume 9, page 67(1980)], E.P.A. has formulated its NSPS standards only with regard to best practical technology.

In spite of this somewhat weaker standard, NSPS standards for coal-fired power plants are six to seven times stricter than emission limits imposed on existing sources by most State Implementation Plans. The standard established on June 11th, 1979 for SO_2 emissions from new coal-fired power plants allowed for the emission of 1.2 pounds of SO_2 per million BTU's and set the percentage reduction requirement at 90% where uncontrolled emissions would be greater than or equal to 0.6 pounds per million BTU's and only 70% where uncontrolled emissions would be less than that figure. This two-tier sliding scale system was an attempt to strike a balance between economic and environmental requirements and to be equitable between different regions of the country to the extent that they relied upon coal of varying sulphur content.

While a substantial amount of controversy surrounded the procedure by which this standard was established [Banks (1980)], and the final result is not completely satisfactory to either environmentalists or industry, the standard does represent a substantial reduction in the total loadings of SO_2 that will be allowed from new sources.

The standard also represents a balance between the competing interests and is designed to achieve the purposes of the NSPS provisions. According to the House Report, the NSPS was intended to:

1) insure that no State would have a competitive advantage in attracting new industry;

2) reduce new source emissions as much as possible to maximize long term economic growth ;

3) reduce long term costs by forcing new plants to install all the control technology that they would ever need at the time of construction;

4) encourage the burning of high sulphur coal to expand available energy resources and free low sulphur coal for use in existing facilities for which retrofitting would not be feasible;

5) encourage the use of low sulphur coal in older and smaller sources, prolonging their lives and preventing unemployment; and

6) provide incentives for the development of improved technology through regularly revised standards.[H.R.Rep. No. 294, 95th Congress, First Session 187, (1977) at pages 183-186].

Within the parameters of the Clean Air Act, the E.P.A. is always entitled to formulate new standards which can take into account advances in technology or "the cost of achieving such emission reduction, any non-air quality health and environmental impact and energy requirements". While it is assumed that any such future standards will be stricter as new technology is developed, one cannot completely dismiss the possibility that consideration of these other factors could justify a relaxation of these standards should E.P.A. be convinced that that is appropriate.

The present emission control program for new sources under these New Source Performance Standards, while not as rigorous as best available control

technology could require, are nonetheless believed to be strict enough that, if they were applied to all sources, the acid precipiation problem would be significantly reduced. The objective that the Canadian Federal Government should seek to achieve insofar as new U.S. sources are concerned is that the NSPS provisions are preserved in the Clean Air Act as at present and that standards themselves become progressively stricter as technological improvements warrant.

S.2.2 New Stationary Sources of SO_2 and NO_X in Canada

Because Canadian sources contribute up to 50% of the acid precipitation problem in Canada as well as impacting substantially on areas in the United States, new stationary sources of SO_2 or NO_X should be required to comply with a standard equally as strict as the U.S. standard for such sources. The importance of having an equivalent standard is also underlined by the necessity of demonstrating that Canada is prepared to do at least as much as it is asking the U.S. to do in regard to controlling sources of acid precipitation. This is crucial to maintain the element of good faith which is so important for the co-operative resolution of this problem.

In Canada, while the Clean Air Act recognizes the concept of specific emission standards, severe definitional problems as well as constitutionally unnecessary requirements for provincial consultation and agreement regarding the application of such specific emission standards to sources in each province, prevent the Federal government imposing specific emission standards on new sources having regard to best practical technology under the Clean Air Act. Amendments to this Act are accordingly necessary.

Under the Environmental Contaminants Act, while specific emission limits could be imposed (subject to prior consultation with the provinces and only if the Cabinet is satisfied that no appropriate action will be taken by such provinces) by the Federal Cabinet by regulation on specific sources of SO_2 and NO_X emissions, the Act is limited to being applicable to sources that are a commercial, manufacturing or processing activity [s. 8(1)]. Accordingly such sources as power plants, whether privately or publicly owned (e.g. all Ontario Hydro Stations) are probably exempt from the reach of this Act. In addition, amendments are needed to the Environmental Contaminants Act to make monitoring and enforcement of any standards formulated less difficult and less demanding of governmental enforcement resources. Nevertheless, the Federal government should commence the process outlined in Part 3.2 to enable them to set standards for SO_2 and NO_X under this Act.

In Ontario and Quebec, legislation is in place which would allow for standards this strict to be imposed or for specific control technology to be imposed on a case-by-case basis however, unlike the U.S.A., there is no requirement that these standards or technology be imposed in any uniform way and because of the ad hoc nature of the approval processes in these provincial jurisdictions any future application of best practical technology or an equivalent standard can be expected to be patchwork at best. (Under the Quebec E.Q.A., unlike under Ontario or Federal law, there may be a duty to apply best practical technology. [See our discussion of the Quebec E.Q.A. in Part 4.4.]

Given these problems and given the past record of reluctance by the provincial governments to use their powers to the fullest extent necessary, substantial legislative amendments are believed to be necessary in order to ensure that Canada, either through the Federal authority or through provincial legislative power, has both the power and the duty to uphold its end of the bargain.

Because of the fact that the amendments that are required at both the Federal and provincial levels to properly control new sources in Canada are essentially the same as the amendments that are required to properly control existing sources, a full discussion of how this objective can be achieved will be left to the section which discusses achieving the objectives for existing stationary sources in Canada. (Part 6.2.6)

S.2.3 New Mobile Sources in the U.S.A.

Under Section 202 of the U.S. Clean Air Act, emission standards for heavy duty vehicles have been prescribed by the Administrator pursuant to his duty under that section. Such standards must reflect the "greatest degree of emission reduction achievable through the application of technology which the Administrator determined will be available for the model year to which such standards apply, giving appropriate consideration to the cost of applying such technology within the period of time available to the manufacturers and to noise, energy and safety factors associated with the application of such technology". [Section 202(a)(3)(A)(i)].

This standard represents what is commonly known as "the best practical control technology" and can be expected to become stricter over the years as new technology emerges.

With respect to light duty vehicles, the Clean Air Act itself sets out maximum standards for carbon monoxide, hydrocarbons and nitrogen oxides which cannot be exceeded by any regulations made under the Act. As discussed earlier, the U.S. standard for nitrogen oxides is 1.0 grams per mile for light duty vehicles manufactured from 1981 and following. This represents what Congress felt was the "best practical technology" at that time. While this does not represent the standards that could be achieved through the use of best available control technology it is a substantial reduction over uncontrolled vehicles and as has been pointed out is over three times stricter than the Canadian standard.

It is felt that this standard for new mobile sources would be sufficient to achieve a significant reduction in the acid precipitation problem resulting from these sources if it is adequately enforced. Enforcement of such standards is extremely difficult at present. The preliminary staff report of the National Commission on Air Quality concluded that:

> In-use vehicles have been found to exceed applicable emission standards substantially. This situation has persisted since vehicle emissions were first regulated, and is predicted to continue in the foreseeable future. [page 3.5-13]

That report also commented as follows in regard to NO_X:

> It is apparent that before NO_X emissions from mobile sources can be expected to decrease, standards need to be stricter, enforcement needs to be more effective, and older vehicles (which emit approximately 76% more NO_X than controlled cars) need to be slowly replaced by controlled cars [page 3.5-63]

Obviously, unless effective enforcement of standards takes place, the establishment of a standard in the first place is not going to be sufficient to result in a significant decrease in the problem.

The National Commission on Air Quality has identified a number of factors which contribute to the widespread failure of in-use vehicles to meet emission standards. These factors include: emission control system deterioration, improper maintenance, component failures, tampering, fuel switching and operation at high altitude. [page 3.5-19]. The principle reason for excess emissions from vehicles built between 1975 and 1979 is improper maintenance--primarily carburetor and ignition timing misadjustment.

Two approaches can be taken to ensure that excess emissions due to improper maintenance are minimized: routine inspections or fail-safe technology.

In the United States, for 1981 and later model years, light duty vehicles will no longer be susceptible to carburetor misadjustment because of the fact that regulations have severely limited the amount of adjustability that is allowed in a carburetor. Further, approximately 75% of the 1981-82 light duty vehicles manufactured will be equipped with electronically controlled fuel systems and a catalytic converter designed to minimize this problem. By 1983, 90% of all vehicles manufactured will have to employ these systems. Therefore, in the future, vehicles will be manufactured with a properly functioning emission control system that will not be susceptible to failure due to improper maintenance. Consequently, the vast majority of these vehicles are expected to continue to meet the standards through their useful lives although some increases in emissions will occur with high mileage as catalytic converters deteriorate. [National Commission on Air Quality Report, page 3.5-21].

To the extent that these technological modifications are made, increased efforts in the area of monitoring and enforcement of vehicle emission standards are not so crucial. Nevertheless, the potential for component failures and intentional tampering with control equipment makes monitoring and enforcement activity still necessary. In addition, monitoring and enforcement are crucial in ensuring that vehicles manufactured prior to the introduction of this "fail-safe" technology do not contribute excessively to total NO_X loadings. However, because monitoring and enforcement efforts with respect to mobile sources are more crucial for the control of existing mobile sources rather than new mobile sources, the discussion of this factor will be left to the section dealing with existing mobile sources.

It is predicted that if this Federal vehicle program imposing fail-safe technology and improved monitoring and enforcement programs is implemented as planned that nationwide mobile source emissions of NO_X will be reduced by 73% between 1979 and 1987. [N.C.A.Q. Preliminary Report, 1981, p.3.9-30]

Canada's objective with respect to new mobile sources in the U.S.A. should be to ensure that standards presently in the Clean Air Act do not become weakened and that regulations presently requiring the future use of this more "fail-safe" technology are not weakened. Canada should also be concerned to determine that to the extent necessary adequate monitoring and enforcement programs are in place in the U.S.A. to prevent component failures and intentional tampering with this new control technology.

E.S.2.4 New Mobile Sources in Canada

In Canada, as discussed in Part 3.3 the Federal government has promulgated regulations under the Motor Vehicle Safety Act which limit exhaust emissions from gasoline powered or diesel powered vehicle engines. For nitrogen oxides the standard is 3.1 grams per vehicle mile. As noted above, this standard is over three times more lenient than the equivalent American standard. For the same reasons discussed above in regard to new stationary sources, the Canadian standard should be at least as strict as the standard required for new American mobile sources.

Technically, there appears to be no reason why a stricter standard cannot be met in Canada if it can be met by American automobile manufacturers. The manufacturers in both countries are the same and since the pollutants from these vehicles travel in both directions across the International boundary and contribute to acid precipitation in both countries the standards should be equivalent.

However, as discussed in Part 3.3 of this report there may be limitations inherent in the Motor Vehicle Safety Act which would require legislative amendment to that Act before it could be used to impose standards stricter than are necessary to protect persons against "personal injury, impairment of health or death". Alternatively, emission standards from motor vehicles need to be incorporated within a completely revised Clean Air Act based on the rationale that such emission standards are required for the "peace order and good government" of the country.

Further, amendments to the legislation are necessary to ensure that there is a duty to apply the concept of best practical technology to the formulation of emission standards to be promulgated under the Act together with a duty to promulgate such standards by a definite date. Only in this way can there be assurance given to the United States that Canada will in fact match the standards that are in force in the U.S.A. and therefore be able to demonstrate that Canada can meet any obligations that it enters into through an International agreement.

As in the United States, monitoring and enforcement of mobile source emissions are crucial to the actual reduction of these pollutants. Unlike the situation

in the U.S.A. however, the situation in Canada is complicated further by the constitutional constraints previously discussed with respect to the control of vehicle emissions. Very briefly, since the Canadian motor vehicles emission standards, as presently formulated under the Motor Vehicle Safety Act, are based on the Federal constitutional jurisdiction to regulate inter-provincial trade and commerce and exports and imports the Federal jurisdiction ends as soon as the car is sold. Consequently, all monitoring and enforcement activity in Canada is left up to individual provinces.

In Ontario, a regulation made under the Environmental Protection Act [O.Reg. 561/79] sets out provisions designed to ensure that in-use vehicles comply with certain emission standards. This regulation restricts emissions of hydrocarbons, carbon monoxide or "visible emissions" but does not provide emission limits for nitrogen oxides.

Section 6 of that regulation sets out a Table which specifies the maximum emission standards for each of these regulated contaminants for vehicles of differing model years and engine displacements. Section 6(3) specifically provides that "every motor vehicle for which emission standards are prescribed (in the Table) shall comply with such standards". The penalty for breaching this regulation is the same as the penalty for breaching any other part of the Environmental Protection Act or any regulation, that is upon summary conviction a maximum fine of $5,000.00 for a first offence and a maximum fine of $10,000.00 for each subsequent offence.

Section 5 of that regulation provides as follows:

> In respect of a motor or motor vehicle manufactured with a system or device to prevent or lessen the emission of any contaminants, the system or device, or any replacement therefor,(a) shall be maintained and kept in such a state of repair that it is capable of performing the function for which it was intended; and(b) shall be kept installed on, attached to or incorporated in the motor or motor vehicle in such a manner that, when the motor or motor vehicle is operating, the system or device functions in the manner in which it was intended to function.

Further, under section 5(b) of the regulation anyone disconnecting or otherwise intentionally tampering with an emission control device which was installed by the manufacturer would be liable for prosecution.

Sections 23 and 24 of the E.P.A. also set out comprehensive offences making it illegal for anyone to operate a motor vehicle that is equipped with such a system or device if it is not properly maintained and making it illegal to intentionally tamper with or completely remove such emission control equipment.

Finally, section 7 of that regulation provides that

> (1) A provincial officer, designated for the purpose of carrying out the provisions of Part III of the Act, or a police officer may, by written notice in Form 1, require the driver or owner of a motor vehicle to submit such motor vehicle for testing and inspection.
> (2) Every driver or owner of a motor vehicle shall comply with a written notice given to him under subsection 1.

This section provides the authority for spot checks of vehicles to ensure that they comply with the provisions of this regulation.

In Quebec, the Environment Quality Act contains similar provisions.

Section 50 provides that

> No one may offer for sale, exhibit for sale or sell an engine or motor vehicle
> (a) the operation of which has the effect of emitting pollutants into the atmosphere; or
> (b) in respect of which a regulation of the Lieutenant-Governor in Council requires the installation of an apparatus to reduce or eliminate the emission of contaminants into the atmosphere, unless the engine or motor vehicle is provided with such apparatus.

Section 51 provides that

> No one may use or permit the use of either an engine or a motor vehicle
> (a) the operation of which has the effect of emitting pollutants into the atmosphere; or
> (b) the use of which requires, under a regulation of the Lieutenant-Governor in Council, the installation of an apparatus to reduce or eliminate the emission of contaminants into atmosphere, unless the engine or motor vehicle is provided with such apparatus.

And Section 52 provides that

> Every owner of a motor vehicle which is a potential source of contamination of the atmosphere must ensure its maintenance in accordance with the standards provided by regulation of the Lieutenant-Governor in Council.

However, all of these sections rely for their effectiveness upon regulations and although the necessary regulations are authorized in the Act, there are no mandatory deadlines for any such regulations and none has been made to date. Section 53 reads as follows:

> The Lieutenant-Governor in Council may make regulations applicable to the whole or to any part of the territory of Quebec, to:
>
> (a) classify motor vehicles and engines to regulate their use and withdraw certain classes from the application of this act and the regulations;
>
> (b) prohibit or limit the use of certain classes of motor vehicles or engines to prevent or to reduce the emission of pollutants into the air;
>
> (c) determine the manner in which certain classes of motor vehicles or engines may be used and the manner of maintaining them, and prescribe, if need be, the installation of purification devices in accordance with the specifications which he determines and provide for the inspection of such devices...

Since other provinces are not within the scope of this report, consideration has not been given to whether or not any other provinces have regulations of this type however, it is believed that it is unlikely that such regulations do exist in any comprehensive fashion across the country. The result of a lack

of adequate provincial regulations is that the Canadian Federal standard for nitrogen oxides is not likely to be maintained or enforced at any point in time after the manufacture of the vehicles.

The objectives for the Federal government with regard to new mobile sources in Canada should be as follows:

1) to adopt the principle of best practical technology in formulating federal emission limits for nitrogen oxides (this would probably involve simply adopting the American standard of 1.0 grams per vehicle mile);

2) to ensure that a comprehensive scheme designed to monitor and enforce this standard for new vehicles once they are in use is in place right across the country.

This second objective requires either that all of the provinces bring in comprehensive monitoring and enforcement regulations for in-use vehicles or that the Federal government does this itself. If the Federal government decides to act in this manner, the Motor Vehicle Safety Act is not broadly enough based, in constitutional terms, to support such a scheme. Therefore substantial amendments to the Clean Air Act are recommended.

Suggestions concerning improvements to existing monitoring and enforcement programs will be discussed in more detail in the section dealing with existing mobile sources as these comments are relevant to both new and existing sources in Canada.

S.2.5 Existing Stationary Sources in the U.S.A.

In the U.S.A. the existing stationary sources of greatest concern are the coal-fired power plants particularly those in the Eastern U.S.A., concentrated in the Ohio Valley. As discussed earlier in this report, controls over emissions from existing stationary sources are considered to be crucial if any reductions are to be achieved in the next 25 years in the acid precipitation problem.

In addition, Canada must realize, as previously discussed, that many states are presently petitioning for relaxation of their State Implementation Plans in order that sources within these states can be allowed to increase their present emissions. Therefore, Canada must be prepared to fight a defensive battle to ensure that present controls are not weakened at the same time as fighting an offensive battle

to attempt to have stricter controls placed upon emissions from existing stationary sources in the U.S.A.

In light of the present political and legal factors concerning controls over existing stationary sources in the U.S.A., Canada's objectives should be as follows:

1) to do everything possible to prevent present SIP's from being relaxed pursuant to the petitions identified earlier in this paper;

2) to do everything possible to seek to have State Implementation Plans revised pursuant to s. 126 of the Clean Air Act to impose stricter emission standards where appropriate. Canada and Canadian provinces could seek to have such stricter revisions made by invoking section 115 of the U.S. Clean Air Act coupled with the findings of fact made by Mr. Douglas M. Costle, the former Administrator of the E.P.A;

3) to seek to have specific emission reductions imposed upon existing stationary sources in the U.S.A. within certain limited periods of time after which, if compliance is not achieved, the facility would be required to shut down; and

4) to seek to have a re-definition of the circumstances under which modified existing sources become subject to the New Source Performance Standards to ensure that existing sources do not have their useful lives artificially prolonged.

With regard to the defensive strategy outlined in Objective 1 above, the Province of Ontario has recently taken an initiative with respect to petitions for SIP relaxation for eighteen fossil fuel-fired thermal generating stations in six states in the Ohio Valley area. [The Ontario Ministry of the Environment, A Submission to the United States Environmental Protection Agency Opposing Relaxation of SO_2 Emission Limits in State Implementation Plans and Urging Enforcement, March 12th, 1981]

These petitions from polluting sources are being heard pursuant to section 110(a)(2)(H) of the U.S. Clean Air Act which confers the right to petition for revisions of SIP's to take into account "improved or more expeditious methods of achieving such primary or secondary standards." Notwithstanding that the SIP revision process does not clearly include the right of Canada or a province to be heard, Ontario based its claim to intervene upon 1) the Administrative Procedure Act, 2) certain U.S. judicial decisions, 3) section 115 of the U.S. Clear Air Act and 4) International law. These same arguments for standing could equally support intervention in these same proceedings by the Canadian Federal government as an affected or an aggrieved party.

While there are substantial problems with the use of the SIP process to achieve particular limits on emission sources of concern, interventions of this type may

with any revision of the appropriate portion of the applicable implementation plan" [section 115 (b)].

Canada should therefore make representations to the new administration in the United States to the effect that they expect that the formal notification provisions will be complied with and that they expect to be invited to any resulting public hearings.

Again, while there are substantial problems and time delays associated with this procedure as discussed earlier in this paper this is an initiative that the Canadian government can and should take for the same reasons as discussed above in regard to interventions in SIP revision hearings.

Further, the problems associated with the use of this section in the future should be a subject of discussion between Canada and the United States at the time that negotiations on acid precipitation take place this summer. The obstacles identified and discussed in the earlier part of this paper should be eliminated by legislative amendment to the Clean Air Act to ensure that Canada's access to this process in the future can result in faster and more effective resolution of any international pollution problems.

In regard to the Objective 3 outlined above, the limiting of specific pollution sources, it is clear that there is no authority in the U.S. Clean Air Act that would allow the Environmental Protection Agency to impose any of the various measures that could achieve this objective, as described in Part 6.3 , on existing sources of SO_2 and NO_X pollution. Amendments to the Clean Air Act by Congress are necessary in order for this to be possible. Of course, economic incentives could be offered to sources to seek to have them voluntarily install such controls; however in the absence of a legislative sanction for failing to do this, such economic incentives would have to be great enough to result in a net benefit to the source in question. This would not therefore be a cost effective approach. Economic incentives are more cost effective when combined with legislated requirements.

Specific reductions in emissions from existing sources can be achieved in a number of different ways as discussed in Part 6.3. The Canadian government should formulate a position setting out what it believes are the appropriate ways of imposing such controls over existing sources and should determine which standard (whether best available retrofit technology or best practical retrofit technology) it considers necessary to base such controls upon in order to ensure that the problems associated with acid precipitation in Canada are alleviated. Having formulated these positions, Canada should communicate them in the strongest possible terms to the administration in the U.S.A.

Given the numerous problems discussed with respect to monitoring and enforcement of controls on existing sources it is desirable to ensure that penalties for intentional non-compliance or non-compliance due to negligence are as strict as possible. The most effective sanction in these situations would be to require the source in question to cease to operate until such time as it could operate within the requirements specified. Such a sanction would operate as a strong deterrent, hopefully resulting in greater compliance and making monitoring and enforcement requirements less onerous.

Objective 4 identified above, (a redefinition of a "modified" source to prevent artificial prolongation of the use of sources without emission control technology) only becomes necessary if Objective 3 fails to result in the achievement of emission standards for existing stationary sources which are as rigorous and as uniformly applied as are the standards for new sources. At the present time, New Source Performance Standards in the U.S.A. are substantially stricter than the emission limits imposed on existing sources by most State Implementation Plans. In this situation, utilities or other companies which own a facility which is a source of one of these pollutants have an added incentive to prolong the life of the existing facility rather than to build a new facility which would be subject to much stricter standards. Consequently, the useful life of existing sources is artificially extended beyond what would normally be the economic life of such a facility. This can be accomplished by undertaking major modifications to the facility that would not otherwise be economically justified.

Where there is a marked differential between the standards applicable to new sources and the standards applicable to existing sources, this will inevitably result in a substantial extension in the number of years that it would take for standards applicable to new sources to achieve a significant reduction in the total emissions which result in acid precipitation.

If it becomes apparent to Canada that such a differential will continue to exist into the future then Canada should press for a legislative re-definition of the facilities to which NSPS standards would apply, to include major modifications to existing facilities.

Presently, the New Source Performance Standards under section 111 of the Clean Air Act are applicable to any "new source". "New source" is defined to mean

> any stationary source, the construction or modification of which is commenced after the publication of regulations (or, if earlier, proposed regulations) prescribing a standard of performance under this section which will be applicable to such source.[section 111(a)(2)].

Section 111(a)(4) provides that

> the term modification means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.

However, the Act goes on to provide that a conversion to coal by reason of an order under the Energy Supply and Environmental Co-Ordination Act of 1974 shall not be deemed to be a modification for the purposes of this section. [section 111(a)(8)].

This exemption by itself is a substantial present and future exception to the otherwise widespread application of New Source Performance Standards. For economic and other domestic political reasons the United States is actively encouraging utilities to convert from oil and natural gas to coal and it is expected that a substantial number of utilities will in fact make this conversion in the near future. The exemption granted to these facilities by this section of the Act will result in emissions from these facilities which will be six or seven times greater than would be allowed if they were subjected to New Source Performance Standards.

Canada should attempt to determine the number of conversions that are expected to take place pursuant to this policy and attempt to determine the increase in acid precipitation that will result. If, as expected, this exemption will result in substantial increases in acid precipitation in Canada, strong representations should be made to the administration in the U.S.A. to encourage them to require

such converted sources to install the same pollution control equipment as if required of any other new source.

In addition to this specific exemption, E.P.A. has, pursuant to their rule-making authority, clarified the types of modifications and reconstructions that NSPS will apply to.

The "reconstruction" of any existing facility is sufficient to bring that source within the ambit of the New Source Performance Standards regardless of whether or not there is any increase in emissions. Unfortunately, however "reconstruction" is defined as meaning

> the replacement of components of an existing facility to such an extent that:
> (1) the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility, and
> (2) it is technologically and economically feasible to meet the applicable standards set forth in this part. [40 C.F.R.S60.15 (b)].

This means that an existing source of SO_2 and NOX can be continually repaired and continue to pollute to the same extent so long as any repairs at any time do not exceed 50% of the capital cost of an entirely new facility. Obviously, the scope for modifications to existing facilities is extremely wide and it is only in the most extreme cases that the modification would be so extensive as to amount to the equivalent of half the cost of a new facility.

Even where the modifications would be that extensive, the facility is not necessarily subject to New Source Performance Standards unless "it is technologically and economically feasible" to meet such standards. Whether or not a proposed modification amounts to a "re-construction" is a determination that must be made by the Administrator, within 30 days of receiving a notice from the owner of the facility in question, and his determination must be based upon:

> (1) the fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new facility;
> (2) the estimated life of the facility after the replacements compared to the life of the comparable entirely new facility;
> (3) the extent to which the components being replaced cause or contribute to the emissions from the facility; and
> (4) any economic or technical limitations on compliance with the applicable standards of performance which are inherent in the proposed replacements. [40 C.F.R. s. 60.15(e)and (f)].

Canada should make representations to have this definition amended insofar as the 50% requirement together with the requirement of "economic feasibility" effectively allow existing stationary sources to modify at will, so long as they do not increase their emissions, without becoming subject to the NSPS.

It cannot be emphasized too strongly how important it is to have the existing sources of these pollutants subject to more stringent controls. While controls over new sources are expected to reduce the rate at which emissions increase so that the absolute amount begins to level off, they will not have the effect of reducing current levels of emissions which are causing present problems so long as existing facilities are allowed to continue to emit SO_2 and NO_X at their same rates. The longer these existing sources are allowed to extend their useful lives and pollute at their existing levels, the longer the present rates of acid deposition will continue and the more severe the effects will become.

There is evidence to suggest that reductions in emissions from existing sources would have the effect of reducing acid precipitation in downwind areas. The preliminary staff report of the National Commission on Air Quality in the U.S.A. concludes that

> Although the results of a Commission study [Atmospheric and Environmental Research, Inc." Study of the Role of Transport in Fine and Total Suspended Particulate Air Quality" Report to the National Commission on Air Quality. Contract No. 18-AQ-9127, November 1980.] suggests that about a 15% reduction in emissions of sulphur dioxide from major sources in the Ohio River Valley would reduce average sulphate concentrations in downwind areas by about 10%, accurate estimates of the improvement in acid deposition cannot be made. However, any reduction in the amount of precursor pollutants would result in some lessening of acid deposition.[N.C.A.Q. p.3.9-19 to 3.9-20].

E.S.2.6 Existing Stationary Sources in Canada

The objectives for existing stationary sources of SO_2 and NO_X in Canada should be as follows:

1) to prevent relaxation of present provincial and Federal standards insofar as these are in place;

2) to achieve specific reductions in emissions of SO_2 and NO_X from existing stationary sources over and above present requirements within certain limited time periods, or require such sources to shut down:

3) to ensure that major modifications to existing sources of SO_2 and NO_X in Canada come within controls required for new sources of these pollutants if such controls are more stringent than the controls for existing sources.

As in the United States, regulated sources in Canada periodically mount campaigns to have such regulations relaxed. While the process in Canada is not so formalized as in the U.S.A. where petitions are specifically provided for in the legislation the process nevertheless goes on. In fact, because of the informal nature of the process in Canada, relaxations can be more difficult to defend against.

Since all enforcement of air pollution legislation in Canada (except in the Yukon and N.W.T.) to date takes place at the provincial level, it is relaxations of provincial control mechanisms that are of primary concern. In Ontario, as discussed in Part 4.1.1 the main vehicles of control are Certificates of Approval, Control Orders and most recently, abatement regulations. As discussed, the procedures leading up to the imposition of any of these mechanisms or leading to a subsequent revision of any of them is a completely internal process between government and the regulated industry and there are absolutely no assured or meaningful opportunities for public input into this process.

Consequently, there are absolutely no restraints or formal processes limiting the government's ability to alter, repeal or rescind any existing control orders or abatement regulations.

In addition, the ad-hoc nature of this form of control means that relaxations can take place on a case-by-case basis without consideration being given to the overall effects of these relaxations and without the public having an opportunity to become aware of such relaxations or their impact.

Such relaxations in fact occur from time to time whenever an industry is successful in convincing the Provincial Ministry of the Environment that it is unable to meet the control requirements. The most controversial example of such a relaxation is the relaxation of the control order which would have originally required Inco Limited in Sudbury to cut its sulphur dioxide emissions to 750 tons per day by 1978. When it became obvious that Inco was not going to meet this deadline, the deadline was extended and then eliminated. All of this occurred based on Inco's own submissions that it was unable to meet this standard and no formal process existed that would have required a more thorough review before any such relaxation was allowed.

The recently adopted, ad-hoc strategy of the Ontario Ministry of the Environment to issue

abatement regulations, is subject to the same ultimate weakness. There are no requirements in Ontario legislation, unlike the U.S. situation and unlike the requirements under the Environment Quality Act in Quebec, that require the publication of proposed regulations together with provisions for a public comment period prior to the finalization of any regulation. Therefore, in Ontario, a regulation can be rescinded just as easily as it is made in the first instance--- usually however, without the same media coverage.

The Canadian Federal government should concern itself with this lack of formal process in Ontario and other provinces insofar as it would rely upon provincial environmental agencies to fulfill any obligations that the Federal government makes with the United States Federal government. The alternatives open to the Federal government in Canada are clear. Either it should press the Ontario government to formalize these processes as other jurisdictions have done, to ensure that controls are not withdrawn in an arbitrary fashion without the opportunity of public knowledge or comment, or else the Federal government should be prepared to amend the Clean Air Act in a comprehensive fashion, to provide itself with the necessary authority and duty to control sources of these pollutants and ensure against relaxations that will increase the problem of acid precipitation.

With respect to the second objective, the same legislation and the same limitations are relevant to existing sources as to new sources in Canada. All of the comments made in the section concerning new stationary sources in Canada are equally applicable to existing sources in Canada. Essentially, all of the potentially useful pieces of legislation, both provincial and Federal, have limitations which must be corrected by amendment before they can be relied upon to deal effectively with the problem. All of these weaknesses have already been dealt with in detail in Part 4.0 and recommendations are summarized in Part 7.0.

With respect to the third objective, again this is only relevant if standards applicable to existing sources are not as stringent as standards which are applicable to new sources. If Canadian legislation sets standards which differentiate between new and existing sources in this manner then provision should be made, as discussed with regard to U.S. existing sources, to ensure that existing sources are not allowed to modify to prolong their useful lives without becoming subject to the more stringent standards applicable to new sources. This is essential to adequately deal with the existing sources of emissions leading to acid precipitation.

S.2.7 Existing Mobile Sources in the U.S.A.

Vehicle emissions of nitrogen oxides in the U.S.A. have been controlled since 1975-76. Since that time, the emission standard for NO_x has been made progressively more stringent: in 1975-76 the standard was 3.1 grams per vehicle mile; between 1977 and 1980 the standard was 2.0 grams per vehicle mile; and beginning in 1981 the standard has been reduced to 1.0 grams per vehicle mile.

Prior to 1975, there was no standard for NO_x emissions and therefore any vehicles built prior to that time which are still on the road are not restricted. Emissions from these vehicles will only be reduced with time as these vehicles are replaced by newer vehicles. This is not believed to be a substantial problem as vehicles do not have useful lives very much longer than the period these cars have already existed.

For vehicles manufactured since 1975 monitoring and enforcement of the applicable standard is considered to be crucial if actual reductions in NO_x emissions are to result from these standards.

E.P.A. has recognized this necessity and over the past several years has increased its efforts in regard to monitoring of in-use vehicles and in regard to encouraging the implementation of inspection and maintenance programs. The National Commission on Air Quality Preliminary Report found that

> E.P.A. has increased the number of vehicles subject to its in-use surveillance and testing program and as a result has instituted a large number of investigations and ordered a greater number of recalls in instances where a substantial number of a particular class of vehicles are exceeding standards.[p.3.5-26]

In 1977, in amending the Clean Air Act, Congress recognized that the overwhelming evidence was that in-use vehicles were substantially exceeding emission standards. As a result, any states that requested an extension of the attainment date for ozone or carbon monoxide ambient standards were required to implement vehicle inspection and maintenance programs before such an extension would be granted. The purpose of such inspection and maintenance programs is to identify, and have repaired, vehicles emitting excess amounts of hydrocarbons, carbon monoxide and nitrogen oxides all of which, through chemical reactions, can result in increased ambient concentrations of ozone and carbon monoxide.

Unfortunately, such inspection and maintenance programs are not imposed upon all states or even necessarily upon all states which are contributing to the acid precipitation problem. This is because the pre-condition for the imposition of this requirement is unrelated to acid precipitation. Therefore, its usefulness in controlling NO_X is only fortuitous. If such inspection and maintenance programs were required in every state substantial improvements in in-use vehicle compliance could be anticipated.

Programs of this type can either be centralized or decentralized depending upon whether the testing is done at government owned and operated facilities or privately licenced facilities. Whichever way the programs are administered, they contain the following necessary elements:

1) vehicle inspection and/or testing;
2) determination of whether the vehicle passes or fails;
3) certification of passing vehicles by means of a certificate of compliance (needed to register the vehicle) or windshield sticker;
4) repair of failed vehicles; and
5) re-testing after repairs are made.[N.C.A.Q. Report, p.3.5-35].

It is anticipated that in addition to ensuring that vehicle emission standards were not being exceeded because of improper maintenance or mechanical failure, such programs would also provide a deterrent to practices such as fuel switching and intentional tampering with control equipment.

Canada's objective in regard to existing mobile sources in the U.S.A. should be to encourage legislators in the U.S.A. to expand the present inspection and maintenance program to cover every state. This would ensure that the strict standards in the Clean Air Act do in fact result in substantial reductions in NO_X and in the proportion of the acid precipitation problem that originates with those emissions.

S.2.8 Existing Mobile Sources in Canada

Canada's objective in regard to existing mobile sources within Canada should be along the same lines. Assuming that the standard for nitrogen oxides is made more stringent for vehicles manufactured in future years (as recommended in section 6.2.4), inspection and maintenance programs are crucial to ensure that in-use vehicles comply with the standards.

Such vehicle inspection and maintenance programs are presently left up to the initiative of individual provinces. In Ontario, such inspection programs are only imposed on a spot-check basis not in any comprehensive manner. In addition, because of the fact that the Ontario regulation [O. Reg. 561/79] does not impose a maximum emission standard for NO_x at the present time there is in fact nothing to monitor existing mobile sources for in so far as the acid precipitation problem is concerned. The same is expected to be true as far as most or all other provinces are concerned.

Therefore, the first priority for the Federal government must be to ensure that a maximum emission standard for NO_x in-use vehicles is implemented across Canada. As discussed in the section respecting new mobile sources in Canada, this can be done either by the Federal government or by each of the provinces.

Only after such a nationwide standard for in-use vehicles is in place, does an effective inspection and maintenance program become important.

Any inspection and maintenance program developed should be comprehensive in application and require every vehicle to undergo a regular periodic examination to ensure that the standards are being met. Compliance with such a program could be indicated by stickers to be attached to windshields or licence plates or could be a prerequisite for the registration and licencing of the vehicle. Either way, vehicles that fail to meet the standard and were not repaired would not be allowed to be driven.

Because of the fact that a federal standard for NO_x is presently in existence, it would not be unreasonable to expect that any automobile manufactured since the standard was made should be able to comply with it so long as the control equipment is properly maintained. Therefore, the Federal government through new legislation could reasonably require that such in-use vehicles comply with this present standard while at the same time requiring that any such new vehicles comply with any such new standard that is made.

The Federal Government's objectives in this area therefore should be:

1) to develop or ensure that provinces develop maximum emission standards for NO_X that are based upon best practical technology; and
2) to develop or ensure that all provinces develop comprehensive inspection and maintenance programs which would require all vehicles to pass an annual inspection of emission control equipment.

E.S.3.0 SUMMARY OF RECOMMENDATIONS

E.S.3.1 Introduction

This summary of the recommendations made in this report is designed so that the reader can readily identify the key objectives that must be addressed by any regulatory scheme designed to alleviate the acid precipitation problem. These recommendations are presented in the order in which they appear in the report and are identified according to the section in which they are found. In this way, the reader can make reference to the main body of the text for further explanation of the rationale for this recommendation.

The recommendations set out below are of the following types:

1) recommendations for general policy objectives that the Canadian federal government should formulate in order that the rationales for the subsequent federal initiatives in this area are apparent to the public, to provincial governments and to the United States Federal government;
2) recommendations involved in making use of existing Canadian federal legislation to the extent that it can be useful for dealing with the problem;
3) recommendations for necessary amendments to Canadian federal legislation to make it more useful for this purpose;
4) recommendations involving necessary reforms to provincial legislation in Canada to ensure its present use and to improve the reliability of provincial controls that the Federal government should require if continued reliance is to be placed upon the provinces as a part of the necessary regulatory scheme to control acid precipitation;
5) recommendations involving diplomatic interventions that the Canadian government should make in the U.S.A. to ensure that existing legislation in that country is applied to the fullest extent possible;
6) recommendations involving diplomatic and legal interventions that the Canadian government should make in the U.S.A. to ensure that existing legislation is not weakened by the present Administration by relaxations of State Implementation Plans or by Congressional amendments;

7) recommendations involving Canadian diplomatic and legal interventions in the U.S.A. to ensure that present U.S. legislation is made more effective by revising State Implementation Plans to impose stricter standards and by encouraging Congressional amendments to the Clean Air Act to make it more effective for controlling existing sources of the precursors of acid precipitation.

E.S.3.2 Recommendations

1) That the Canadian Federal government articulate as a general policy objective that it is necessary to control loadings of SO_2 and NO_x into the atmosphere in both Canada and the United States in order to control the acid precipitation problem in this country. (Part 6.1)

2) That because of the problems of legally proving the cause/effect relationship between emissions of SO_2 and NO_x and the adverse effects on the environment in any particular instance, due to the complexities associated with the long-range transport of these pollutants, that the Canadian Federal government abandon the traditional approach to pollution control in favour of a more direct mechanism which would eliminate the necessity of proving this cause/effect relationship on a case-by-case basis. (Part 6.1)

3) That the Canadian government seek to ensure that the New Source Performance Standards that presently apply to new U.S. stationary sources of SO_2 and NO_x are preserved in the Clean Air Act as at present and that these standards themselves become progressively stricter as technological improvements warrant. (Part 6.2.1)

4) That new stationary sources in Canada should be required to comply with standards equivalent to those applicable to new U.S. sources: that is "best practical technology". (Part 6.2.2)

5) That amendments to the Canadian Clean Air Act be made to remove definitional problems and unnecessary constitutional constraints on the use of that Act to achieve recommendation number 4. (Part 6.2.2)

6) That amendments to the Environmental Contaminants Act be made to make that Act applicable to power plant emissions and to make monitoring and enforcement of any standards formulated under that Act more effective and efficient. (Part 6.2.2)

7) That standards be formulated by the Canadian government under the Environmental Contaminants Act for SO_2 and NO_x emissions to set the stage for the application of that Act to sources of these contaminants. (6.2.2)

8) That Canada seek to ensure that standards presently in the U.S. Clean Air Act with respect to NO_x emissions from new and existing mobile sources and regulations presently requiring the future use of failsafe control technology do not become weakened but become progressively more stringent as technological improvements warrant. (Part 6.2.3)

9) That Canada seek to ensure that adequate monitoring and enforcement of the standards referred to in recommendation number 8 occur by encouraging the more widespread use of comprehensive and mandatory inspection and maintenance programs throughout the U.S.A. (Part 6.2.3 and 6.2.7)

10) That new Canadian mobile sources of NO_x emissions be subject to the same maximum standards as are such sources in the U.S.A.: that is, "best practical technology". (Part 6.2.4)

11) That the Canadian Clean Air Act be amended in order that it can be used to achieve recommendation number 10. The use of this Act would allow for stricter emission standards for NO_x to be made than could presently be justified under the Motor Vehicle Safety Act because of constitutional and definitional limitations in that Act. Such amendments to the Clean Air Act for this purpose should impose a duty on the administrator of this Act to make such regulations according to the standard of best practical technology by a definite date. (Part 6.2.4)

12) That the Federal government amend the Canadian Clean Air Act to allow it to be used to ensure that adequate monitoring and enforcement of this new standard for NO_x emissions occurs through the nationwide use of comprehensive and mandatory inspection and maintenance programs. (Part 6.2.4 and 6.2.8)

13) That as an alternative to recommendation 12, the Federal Government should ensure that all Canadian provinces bring in emission standards for NO_x that are based on best practical technology and that they adopt mandatory inspection and maintenance programs to ensure compliance with such standards. (Part 6.2.4 and 6.2.8)

14) That the Canadian Federal government formulate as a general policy objective the position that abatement of emissions from existing stationary sources of SO_2 and NO_x is essential if a reduction of the total loadings of these pollutants is to be achieved and if a reduction in acid precipitation is to be achieved within the next twenty-five years. (Part 6.2.5)

15) That the Canadian Federal government should intervene in SIP revision proceedings in the United States to prevent present State Implementation Plans from being relaxed pursuant to petitions presently being made on behalf of fossil fuel fired power plants throughout the Ohio Valley area. (Part 6.2.5)

16) That the Canadian Federal government should take legal initiatives to attempt to have certain State Implementation Plans revised pursuant to section 126 of the U.S. Clean Air Act to make them more stringent based on section 115 of the U.S. Clean Air Act and the findings of fact made by the former Administrator of the EPA. (Part 6.2.5)

17) That the Canadian Federal government should make diplomatic efforts to ensure that Congress amends the United States Clean Air Act to allow for specific emission reductions to be imposed upon existing stationary sources of these pollutants in the United States. (Part 6.2.5)

Although the adverse effects associated with acidic pollutants can result both from high ambient concentrations and from the deposition of acidic compounds, this limited ability of most receptor areas to buffer acidic precipitation makes the total quantity of acidic compounds deposited the crucial parameter in determining the extent of the impacts that will in fact occur in poorly buffered lakes, susceptible soils and other sensitive receptor areas. [Altshuller and McBean, (1980), p. 3,4]

In addition to impacting on the natural environment, acid precipitation also damages man-made structures such as statues, buildings, bridges, cars and other stone or metal objects, resulting in substantial but as yet unquantified economic costs.

1.4 Causes of Acid Precipitation

The principal gaseous emissions which eventually result in acid precipitation are sulphur dioxide (SO_2) and nitrogen oxides (NO_x). By complex chemical reactions in the atmosphere SO_2 and NO_x are transformed into sulphates (SO_4^{-2}) and nitrates (NO_3-) which either combine with water to form sulphuric acid and nitric acid droplets or else combine with other substances to form small particulate matter which is either deposited in dry form (if heavy enough) or else is dissolved in water droplets to create more acid. Between the time that these gases are emitted and the time that the deposition occurs, these substances can be carried hundreds or thousands of miles through the atmosphere.

The extent of the contribution of natural sources compared to the contribution of man-made sources varies from time to time and place to place. It is generally agreed that man-made sources contribute significantly more to the formation of acid precipitation than do natural causes, especially over land masses. It has been estimated that biogenic sulphur emissions in the eastern regions of Canada and the US amount to only approximately 4 per cent of the anthropogenic emissions. [J.N. Galloway and D.M. Whelpdale, "An Atmospheric Sulphur Budget for Eastern North America," Atmospheric Environment (in press)]

18) That the Canadian Federal government should make diplomatic efforts to seek to have Congress amend the U.S. Clean Air Act to bring a greater number of existing sources which undergo major modifications under the control of New Source Performance Standards. (Part 6.2.5)

19) That the Canadian Federal government should make diplomatic efforts to seek to have Congress amend the U.S. Clean Air Act to make New Source Performance Standards applicable to existing power plants that convert to coal use pursuant to the Energy Supply and Environmental Co-ordination Act of 1974 or any other oil "back out" laws. (Part 6.2.5)

20) That if provincial control of stationary sources of SO_2 and NO_x is to be continued to be relied upon, that the Federal Government in Canada should indicate to provincial governments that control processes under present legislation relevant to the regulation of these sources should be reformed and formalized to minimize the potential for existing controls to be weakened or arbitrarily withdrawn. (Part 6.2.6)

21) That, if standards for existing sources are not as stringent as standards for new sources, that legislative amendments be made requiring that existing sources that undergo major modifications must be treated as new sources. (Part 6.2.6)

22) That while the common law could potentially be useful as a complement to a legislative regulatory scheme, numerous procedural and evidentiary problems need to be remedied by legislation in order for it to be effective. A specific study addressing these problems is considered necessary before any detailed recommendations can be formulated in regard to these problems. The Canadian Federal government should undertake such a study as soon as possible to ensure that all useful approaches are taken. (Part 6.4)

23) That numerous general reforms to facilitate the enforcement of Canadian federal and provincial environmental legislation be incorporated in any new or amended legislation designed to alleviate the acid precipitation problem in order to make the Canadian regulatory system as accessible and free from arbitrary discretion as the U.S. system. In particular, we recommend that all Canadian federal and provincial legislation contain certain standard provisions:

(i) A duty on the administrator to require the installation of best practical technology on present and new sources within a limited period of time;

(ii) A duty upon the administrator to take enforcement action to require the installation and use of such equipment;

(iii) A provision allowing any person (including a group, association, municipality, state/province and federal and foreign governments to obtain a mandatory court order (in the nature of mandamus) requiring the administrator to perform his duties; the breach of such mandatory court order would be contempt of court;

(iv) A provision allowing any person to obtain from a civil court an injunction to restrain any particular source from commencing to operate without the installation of the requisite best practical technology or from continuing to operate contrary to limits and deadlines for installation of best practical technology;

(v) A provision providing public funding for persons meeting certain criteria in order to allow them to launch the contemplated court actions; provision for access to information necessary to allow enforcement of such laws; and protection of government officials who give out information or who initiate or who testify in enforcement proceedings;

(vi) Provisions reforming the rules of evidence and restricting the application of the defence of "reasonable care" in Canadian regulatory environmental offences. (Part 6.5.1)

1.0 NATURE OF THE PROBLEM

1.1 Introduction

While it is not within the scope or purpose of this report to document in detail the scientific evidence concerning the causes and effects of acid precipitation, it is necessary, in order to formulate alternative legal responses designed to ameliorate the problem, to summarize briefly the leading features of the issue that affect the efficacy of a legal solution.

Part 1.0 of this report summarizes the scientific assumptions upon which the discussion of legal remedies is premised. While these assumptions are based upon what appears to be a consensus among most scientists it should be noted that agreement on many of these points is not unanimous and that competing views can have important implications in considering which alternative options are ultimately preferred.

1.2 What is Acid Precipitation

For the purposes of this report we adopt the definition used in the United States' Acid Precipitation Act of 1980 [Title VII of the Energy Security Act of 1980-PL 96-294]. This term includes the wet deposition of acidic substances in the form of rain, snow and ice as well as the dry deposition of these substances in particulate form. Precipitation is considered to be "acidic" in character if its pH value is 5.7 or below. "Normal" precipitation has a pH value of 5.7 and above.

[pH is a common measure of acidity and is defined as the negative logarithm of the hydrogen ion concentration. The pH scale ranges from 0 to 14, with a value of 7 representing a solution that is neutral, values below 7 indicating greater acidity and the values above 7 indicating greater alkalinity. Because this scale is logarithmic, the difference between any two numbers on the pH scale represents a ten-fold difference in acidity or alkalinity.]

1.3 Extent and Effects of Acid Precipitation

The areas of the globe which are receiving acid precipitation are extremely widespread. In North America, the geographic distribution is primarily concentrated in the area of United States east of the Mississippi River and the area of Canada east of the Ontario/Manitoba border. Some localized distributions of acid precipitation are in addition found throughout the western parts of Canada and United States. [A.P. Altshuller and G.A. McBean, Second Report of the United States - Canada Consultation Group on the Long-Range Transport of Air Pollutants,

November 1980, Figure 3, p. 34]

The acidity of precipitation in North America has not been monitored consistently over the years. However, the data that does exist, together with analysis of other sources of information such as changes in the pH of municipal reservoirs and lakes and changes in the sulphate concentration of precipitation accumulated in the Greenland Icecap, support the hypothesis that precipitation in the eastern parts of North America has increased markedly in acidity since the industrialization of this region. The average annual pH of rainfall over much of the eastern United States and adjacent parts of Canada today is less than 4.5, with short periods of rainfall having pH measurements as low as 3.0. [The Interagency Task Force on Acid Precipitation, National Acid Precipitation Assessment Plan (Draft), January 1981, p.27]

The effects of acid precipitation upon a variety of ecosystems have been extensively documented. Numerous studies have demonstrated that acid precipitation can adversely affect aquatic ecosystems and can result in the disappearance of all forms of life in susceptible fresh water lakes. There is also evidence to suggest that acid precipitation causes direct damage to the leaves and roots of some vegetation and may well stunt the growth of forests.

Acid precipitation can also result in the impoverishment of soils by increasing the rate at which nutrients and minerals are leached out of the soil. This leaching not only reduces soil fertility but also results in higher concentrations of these minerals, including toxic metals, in many drinking water supplies. While direct adverse health effects of acid precipitation on humans have not been proven, these indirect impacts do give rise to concern for human health.

The extent of these various impacts on aquatic and terrestrial ecosystems depends to a large extent on the buffering capacity of the lakes or soils. Areas which are underlain by calcareous or limestone bedrock or which have thick deposits of soils with these components are able to effectively neutralize the acids deposited. Unfortunately, the vast majority of the areas in Canada, and a substantial proportion of the areas in the U.S.A. which are receiving acid precipitation, do not have these soil or bedrock characteristics and are therefore unable to buffer the acidic deposits in this manner. [Altshuller and McBean (1980), Fig. 4, 5, 6, 8 and 9]

It is estimated that approximately 30 million tons of SO_2 were emitted from man-made sources in the United States in 1977. Three-quarters of this amount was emitted east of the Mississippi River and of that amount EPA estimates that 92% was emitted in the vicinity of the Ohio River Valley as a result of fossil fuel combustion. [United States Environmental Protection Agency, Office of Research and Development, Acid Rain, Report #EPA-600/9-79-036, July 1980, p.26] Emissions of NO_X from man-made sources in the U.S.A. in 1977 have been estimated at approximately 25 million tons EPA, (1980), p.26; National Acid Precipitation Assessment Plan (1981), p.30-31 . Of this amount, approximately 60% is estimated to come from stationary sources such as electrical generating stations and 40% is estimated to come from mobile sources, primarily from the exhausts of cars and trucks. [EPA, (1980) p.27; National Acid Precipitation Plan (1981), p.31]

The relative contribution of NO_X is expected to increase in the next 20 years due to the fact that SO_2 emissions are expected to increase only very slightly. SO_2 emissions in the U.S.A. will be stabilized at slightly above present levels because of the fact that new electrical utilities will be subject to "New Source Performance Standards" which are six or seven times more stringent than the standards applying to existing power plants.* While emissions are not expected to increase substantially over the next twenty years, neither are they expected to decrease without further controls on existing sources.

There is every reason to believe that maintaining SO_2 emissions at present levels for the next twenty years is not a sufficiently stringent control program to avoid the adverse effects of acid precipitation. Present levels are already causing serious problems and irreversible effects on aquatic and terrestrial ecosystems in sensitive receptor areas. In an interim report released February, 1981, a U.S./Canada work group (3A: Strategies Development & Implementation) concluded that

> ... what is known about acid deposition indicates that the problem is genuine and serious. Damage to the environment in both countries has been documented. Acid deposition is a problem which, if it is allowed to go unchecked, could result in substantial economic and social costs. Research must continue tn order to develop a clearer understanding of the acid deposition problem. As a practical matter, the best way to reduce acid deposition effects is to reduce emissions of pollutants that cause the problem. [p. 10]

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*Stabilization of emission levels assumes present U.S. legislation and the Environmental Protection Agency's budget for monitoring and enforcement are not altered by the new Administration.

That report also found that while current commercially available NO_x control technology on stationary sources has limited effectiveness, control technology is available which could significantly reduce SO_2 emissions from very large stationary power plants and from existing non-ferrous smelters. [p.26-30] It is estimated that SO_2 emissions from very large stationary sources can be reduced through the use of presently available control technology by up to 90%. [Wetstone, G. and Reed, P.D., Institutional Aspects of Transported Pollutants: An Examination of Transport Reduction Strategies (Draft Final Report), Environmental Law Institute, Wash., D.C. Jan.1981 p.20]

Total Canadian SO_2 emissions are estimated to be approximately one-fifth those of the United States sources. The largest single category of sources in Canada is the non-ferrous smelting sector which makes up approximately 50% of that total (there are 13 such smelters in Canada; 2 in B.C., 2 in Manitoba, 6 in Ontario, 2 in Quebec and 1 in New Brunswick). Electrical generating stations account for approximately 10% and other industrial processes and fossil fuel combustion sources account for the balance.

The non-ferrous smelting sector is geographically concentrated in Central Ontario, in the Sudbury area, where one of these smelters (Inco Ltd.) is the largest single sulphur dioxide emission source in North America and is responsible for 20% of Canada's total SO_2 emissions. In fact, three-quarters of the total Canadian emissions of SO_2 occur east of the Manitoba-Saskatchewan Border, the vast majority of that originating in Ontario and Quebec--two of the provinces suffering most severely from the effects of acid precipitation.

Further, of the total SO_2 emissions in Ontario and Quebec, approximately 80% is from a limited number of significant point sources. [Voldner, E.C., Y. Shah, D.M. Whelpdale (1979) A Preliminary Canadian Emission Inventory for Sulphur and Nitrogen Oxides, LRTAP Report 79 - 2, Atmospheric Environment Service, Environment Canada] In Ontario, the most important point sources after Inco are the coal-fired generating stations operated by Ontario Hydro: Nanticoke, Lambton and Lakeview. The Nanticoke generating station itself accounts for approximately one-half of Ontario Hydro's total sulphur dioxide emissions each year. The Nanticoke generating station together with the rest of the industrial complex surrounding it is expected to be a major contributor to both SO_2 and NO_x emissions in Ontario for some time to come:

The projected emission rate for the fully developed industrial complex could be as high as 300,000-500,000 tons/year, and thus Nanticoke is expected to be the second largest source of sulphur dioxide in Ontario after Sudbury. Nitrogen oxide emissions (again primarily from the generating station) are also expected to be appreciable, at an estimated 100,000 tons/year, making Nanticoke the largest single source of this pollutant in Ontario. [Maris Lusis, 1980, Air Quality Research and Management in the Long Point, Haldimand-Norfolk Area, Paper presented at the Conference in Coastal Resources and Environmental Management: A Case of the Long Point Area, Lake Erie, Ontario, 7th March, 1980, Waterloo, Ontario; reproduced from Nelson, J.G., Day, J.C. and Jessen, S., Environmental Regulation of the Nanticoke Industrial Complex, Economic Council of Canada, Working Paper No. 7, September 1980, p.29]

In Quebec, utilities are not major contributors because of the heavy reliance on hydro-electric power and therefore the major point sources are primary copper and nickel smelters and other miscellaneous stationary fuel combusion sources. [Fleming, R.A. and Gillies, D.K.A., Acid Precipitation: An Emission Perspective, Ontario Hydro, Environmental Protection Department, November 1979, Table 1]. Noranda Mines Ltd. is Quebec's largest point source of SO_2 and Canada's second largest such point source, behind only Inco Ltd. of Sudbury.

Total Canadian NO_X emissions are estimated to be approximately one-tenth those of the United States sources and of this total 60% comes from the transportation sector. Electrical utilities account for 10% and other combustion sources make up the balance. [Work Group 3A Interim Report (1981), p. 26, 28 and 29 .]

Two-thirds of Canadian NO_X emissions originate east of the Manitoba-Saskatchewan Border, the vast majority of that originating in Ontario and Quebec.

1.5 Long Range Transportation of the Precursors of Acid Rain

Sulphates and nitrates resulting from these SO_2 and NO_X emissions are known to travel for up to thousands of miles through the atmosphere before returning to earth as wet or dry deposits and as a result frequently cross political boundaries.

The chemical process of conversion of SO_2 and NO_x into acid precipitation is complex and exact knowledge of how and at what point it actually occurs during the transport of these materials is incomplete. Further, while predictive models of atmospheric transport mechanisms of a short-term local nature are well established and sufficiently reliable for regulatory use, long term, long range models are still undergoing the process of being experimentally confirmed. [Work Group 3A Interim Report, (1981), p.8]

While these long-range models may not have been developed as of yet to the extent that they can be relied on to meet the test of a legal standard of proof they can and do provide valuable information that could well form the basis for policy decisions of a regulatory nature. The United States - Canada Research Consultation Group on the long-range transport of air pollutants has reported that:

> Over the past year, considerable progress has been made in modelling sulphur transport, and several model estimates are now available. There is reasonable agreement amongst the models and with measured values of depositions. The models confirm the results presented in the first RCG Report; namely, that LRT is important and the deposition in Eastern Canada originates about equally from Canada and the United States; whereas, the bulk of sulphur deposition in the United States originates there.
> [Altshuller and McBean (1980), p.1]

Understanding of the mechanisms of nitrate deposition are not as far advanced. This same report of the United States - Canada Research Consultation Group concluded that "realistic LRT model predictions of nitrate deposition are not yet available and are probably at least a year away. Models suitable for use in control strategy development are even further away. [Altshuller and McBean (1980), p.4]

These factors combine to complicate and limit the effectiveness of many present legal responses in both the United States and Canada since, as discussed in Parts 3.0 and 4.0 of this report, most existing air pollution legislation was developed and designed to address local impacts of air pollution. Further, the application of existing laws is often limited by jurisdictional boundaries, unlike the acid precipitation problem that they must address.

1.6 Acid Precipitation, Legal "Proof", and Traditional Regulatory Concepts

1.6.1 General Comments

In analyzing any existing legislation for its potential for minimizing air pollution, problems inherent in the underpinning of the scheme must be recognized. That underpinning is the inferential incorporation into regulatory mechanisms of the concept of legal "proof". Whatever mechanisms are adopted for abating undesirable sources of air pollution and for maintaining controls on sources which are deemed to be sufficiently under control, the administrative agency is at all times required to be able to demonstrate, both to the alleged polluting source and to a court, if necessary, the cause and effect relationship between the conduct that is proscribed and the source that is alleged to be in violation of the Act's requirements.

Some scientists and industry spokesmen have questioned whether or not the harm that acid precipitation is said to be causing in the north-eastern United States and Canada is attributable to man-made sources as opposed to natural sources. There are also suggestions that local sources as opposed to contributions from long-range sources are the major contributors to damage in any specific area.

On another level of analysis, assuming it can be proved in the legal sense that man-made sources are the major contributor to the acid precipitation damage problem, it remains to be determined whether or not our present scientific methodologies can demonstrate, again within the context of legal evidentiary concepts, that specific sources in a given political jurisdiction are the cause of specific damage in downwind jurisdictions. Our analysis indicates that it is virtually impossible at the present time to "prove" that a specific source of SO_2 or NO_x in a given political jurisdiction is the major cause of acid precipitation in any other jurisdiction. Because of this major scientific-legal problem (which must be remedied by changes in the law to take this into account), any regulatory regime whether in Canada or the U.S., is fundamentally limited in its ability to adequately address the acid precipitation problem.

without basic changes in the legislation, to significantly control the major causes of acid precipitation.

Experience indicates that whenever scientists are unwilling or unable to agree on whether there exists a given cause and effect relationship, industries with vested interests to protect will argue strongly against any administrative agency restricting its operations. The greater the scientific uncertainty, the stronger are the countervailing arguments and the easier it becomes to successfully challenge administrative decisions in the courts. That is so because the American and Canadian legal systems have developed on the basis of diligent attempts to protect private property interests. Accordingly, efforts to establish standards which restrict private rights, including proprietary rights to make a profit through the use of one's own initiative and resources, will receive as restrictive an interpretation by the courts as possible.

Accordingly, within the context of the present U.S. and Canadian environmental regulatory systems, if nobody "knows" with the degree of certainty required by our judicial system that certain lakes are dying because of specific emissions in specific states, those who assert their "proprietary" rights to act in an unregulated manner will almost always prevail over those who seek to impose controls on the basis of scientific studies which cannot "prove", in a legal context, a cause - effect relationship strongly enough to warrant such an invasion of private rights.

Important issues at the interface of science and law in regard to using the regulatory system presently contained in the United States Clean Air Act and in Canadian legislation are the following:

1.6.2 Burden of Proof

Those who would seek to enforce standards which are enacted to prevent harm to persons or to the environment carry the burden in the present legal system of initially producing sufficient evidence to justify the

> judge allowing the hearing to continue. That person must therefore bring into court at the outset sufficient facts which are admissible according to the rules of evidence to satisfy what is called the "evidentiary burden". Once this has been done by the initiating party, there is a sense in which the evidentiary burden is said to shift to the other party. The latter runs the risk of losing if he presents no evidence. However, if he presents no evidence he will not inevitably lose. It depends on whether the tribunal regards the first party's evidence as sufficiently cogent to discharge the burden of proof. Thus the burden of proof is borne by the party who will lose if, in light of all the evidence, the decision-maker entertains the appropriate degree of doubt. The burden of proof for all issues in an enforcement situation is on the initiating party (the Environmental Protection Agency, for example) throughout. As a general rule, the party bearing the burden of proof also bears the evidentiary burden. [Franson & Lucas, "The Legal Control of Hazardous Products in Canada", Science Council of Canada, 1977]

1.6.3 Standard of Proof

The burden of proof must be distinguished from the concept of "standard of proof". As a recent study has put it

> ...the party bearing the burden of proof will lose all the evidence the Judge entertains the appropriate degree of doubt. It is this appropriate degree of doubt that is characterized as a standard of proof. [Franson and Lucus, Ibid, p. 52]

In a civil case the usual standard is proof on the "balance of probabilities". In the case of an alleged violation of a statute or regulation (which is normally prosecuted in a criminal court) the prosecutor must prove the accused guilty of the offence "beyond a reasonable doubt". It can be seen that the burden of proof may be the determining factor when the tribunal is in doubt on any issue.

The legal concepts of the enforcement initiator bearing the burden of proof and being required to meet a certain standard of proof crucially involve the scientist, for "expert" testimony is necessary in an enforcement situation whenever the standard involved is quantative or requires proof of facts and opinions which are beyond the experience of every man.

Yet a wide range of variables can make it difficult for an individual scientist to present "hard" data without qualification, or for a group of scientists to completely agree about the accuracy or significance of measurements.

Accordingly, there are very real problems in attempting to have scientists enter the judicial arena for the purpose of giving an opinion with the certainty that makes their views helpful to the court.

As one writer has stated the problem:

> Frequently there is inadequate information available on which to base a "scientific" conclusion. It must be recognized that in these cases, if a decision is made, it is a value judgment, different from those generally thought of as "scientific". Many scientists are reluctant to become associated with speculation, especially if it is not differentiated from what they think of as a science.
>
> . . .
>
> Given the current concepts of "evidence" and "proof" it is difficult if not impossible to get a good scientist to testify in those instances where there is not adequate data. In the present legal system "not knowing" or not being able to "prove" what is going to happen, holds no weight in a court or a tribunal. In these cases the scientist's plea for "more information" is not a cop-out given the existing system.
> [D. Thompson, "The Scientist, the Civil Servant and Public Participation", in C.G. Morley (ed.), Ask the People, Winnipeg, 1973, p. 110]

The above analysis should now be considered in light of recent observations by a major US Task Force specifically addressing the current scientific position with regard to cause and effect relationships regarding acid precipitation.

6.4 Problems of Proof - The Inter-Agency Task Force on Acid Precipitation

The "National Acid Precipitation Assessment Plan" prepared by the Inter-Agency Task Force on Acid Precipitation (January, 1981 Draft) [Prepared pursuant to the Acid Precipitation Act of 1980] contains some rather disturbing conclusions with regard to the status of scientific knowledge which would provide proof of the cause and effect relationships between sources of SO_2 and NO_X and their impact in the form of acid rain in a given area.

This document is a draft national plan for a ten year program of research to be carried out pursuant to the Acid Precipitation Act of 1980. The purpose of the program is to identify the sources, causes and processes involved in acid precipitation and to evaluate the environmental, social and economic effects of acid precipitation. Over the course of ten years many millions of dollars will be spent researching a variety of topics identified in a proposed plan. (Obviously the research will be of great scientific benefit and this plan contains justifications as to why such research is indeed necessary. However, because it provides a potential for great amounts of funding to scientific and governmental agencies there is some reason to suspect that the level of uncertainties stated as to the lack of proof between sources of SO_2 and NO_X and their particular impacts may be over-emphasized so as to provide a political justification for the funding levels.)

Nevertheless the research needs described in this National Acid Precipitation Assessment Plan should be given considerable weight when the U.S. Environmental Protection Agency or indeed the Canadian Government or any other governmental agency seeks to prove in a given situation through the judicial or administrative process that certain processes are causing certain problems in a downwind area. In other words, should abatement of present sources of SO_2 and NO_X emissions be attempted by government agencies either in Canada or the United States based on scientific testimony as to the impacts of the nitrates and sulphates that result from such emissions and the resulting precipitation of nitrates and sulphates

in a downwind situation, the comments contained in the National Acid Precipitation Assessment Plan could be used by polluters to assert that such sources cannot be scientifically proved to be causing any particular problem whatsoever.

We are setting out at this point some of the relevant statements contained in the National Acid Precipitation Assessment Plan that would allow a present polluter some optimism in claiming, in regard to any proposed regulatory abatement action, that its activities were not contributing to particular damage as a result of impacts from sulphates and nitrates.

The first statement of relevance is the very text of the "Acid Precipitation Act of 1980" itself passed by Congress as Title VII of the "Energy Security Act of 1980" (PL96-294) signed into law by President Carter on June 30th, 1980. The purposes of Title VII include:

(1) to identify the causes and sources of acid precipitation;.....

That very statement by Congress is in effect an admission that uncertainty surrounds the causes and sources of acid precipitation. The extent of the uncertainty that the research funded through this National Acid Precipitation Plan is supposed to address becomes evident upon an examination of the Plan's description of the state of present knowledge and the "information needs".

Under the heading "Atmospheric Transport & Chemistry" the report states:

> Once in the atmosphere, sulphur dioxide and nitrogen oxide undergo complex chemical and physical transformations. These gases and particles combine in complicated and largely unknown ways with water, oxygen, ammonia, heavy metals, hydrocarbons, and other airborne materials to form the complex and hetrogeneous mixtures of substances that return to the earth's surface as wet and dry depositions.
>
> Most of the substances emitted into the atmosphere are carried with the winds and so may be deposited far from the point where they entered the atmosphere. ...acid deposition in the Northeastern United States and Canada is caused, in part, by emissions of SO_2 and NO_x which enter the atmosphere outside of the area. The preliminary measurements at remote island sites in the Pacific and Indian Oceans - far from man-made sources - indicates that acid rain may be a global as well as a regional phenomenon. But, because the natural sources are not adequately understood, it is difficult to state what portion of acidity at these remote

locations is man-made and what portion is natural. Although such long range transport is becoming better understood, it is still not possible to determine with confidence the extent to which any specific source or collection of sources in one region leads to acid deposition in another region. [pages 34-35, emphasis added]

Under the heading "Monitoring Atmospheric Deposition" the report states:

> Not only is there inadequate understanding of chemical transformations in the air, there is also a lack of definitive measurements of the chemical composition of precipitation ... there is also insufficient information on the data collected by [monitoring] networks to permit establishing sample validity, data quality or other parameters of quality assurance. As a result there is great uncertainty about the composition and trends of atmospheric deposition in the United States. [emphasis added]
>
> The quality of data can be established only when proven methods of collection, analysis and quality assurance are used in their collection. Data whose quality have been documented are needed both for short and long term purposes. Such purposes include: (1) specific forecasts of what regions are likely to be affected by acid deposition; (2) validation of models of long range transport; (3) systematic evaluation and adjustment of control and mitigation measures. [pages 35 - 36]

Part III identifies crucial areas where more information is needed in order to "...provide an objective basis for establishing sound energy production, resource management and environmental protection policies." [page 47, emphasis added]

The introduction to this part continues by stating that the answers to the questions are urgently required because "... (3) present information on acid precipitation is insufficient to support the development of reliable models capable of predicting its occurrence and assessing its consequence; and (4) a number of potentially irreversible effects of acid deposition have been postulated, but if, and when and where these may occur cannot now be predicted with confidence." [page 47, emphasis added]

Part III goes on to describe information needs required "to improve our understanding of the phenomenon and consequences of acid precipitation." [p. 47] Under the heading "Atmospheric Processes" it is stated that

The paths of acidic and pre-acidic airborne materials from their source to final deposition are complex and poorly understood ... meteorology, chemistry and aerosol and cloud physics are among the many disciplines used to investigate these interactive processes. [page 51]

This Section then continues to discuss atmospheric transport processes and the complexity of these processes. The report states:

The movement of even an inert tracer, such as a balloon released into the atmosphere, is generally a very complicated path. In attempts to follow these complex motions, scientists use mathematical transport models. A number of these models have been developed to predict the distributions and atmospheric concentrations of SO_2 and sulphate (SO_4) and the wet and dry deposition of sulphur compound[2]... These models[4] indicate that deposition in any one region may originate not only within that region, but also in neighbouring and more distant regions. Because both wet and dry deposition mechanisms fluctuates strongly from between geographical regions, models developed and validated in one area usually cannot be used elsewhere without adjustments. [pages 51-52, emphasis added]

The report continues as follows:

Chemical and physical transformation processes affect atmospheric residence times, pollutants, the chemical nature of the deposited matter, and the relative importance of wet and dry deposition processes. ...there are still major questions as to what reaction rates and mechanisms are responsible for gas-phase oxidation of sulphur compounds. ...processes are so complex and so incompletely understood that characterizations of oxidation rates of sulphur compounds are extremely tenuous. The lack of knowledge is even more serious in the case of nitrogen oxide. ...models of gas-phase reaction chemistry are at a very early stage of development [page 52]

This section concludes by posing what the authors of this report consider to be "the ultimate question regarding atmospheric transport, transformation and removal" . That is, "What is the atmospheric link between the emission of pollutants and acid deposition?". [page 53]

It is asserted that in order to be able to construct predictive models which can answer this question research must be undertaken in five major areas related to this cause/effect problem. While these research needs are felt to be adequate to allow for an improved understanding of these processes in North America, this section concludes with the statement that "finally, little is known about very long range, hemispheric or

global transport of man-made or natural acidic substances". [page 54]

This Task Force is very clearly of the view that present models are inadequate and that only after the research that they propose is carried out can predictive models help answer the important questions they pose. These include:

> (6) in which regions of the country should pollution be reduced to protect sensitive natural resources in another region downwind from pollution sources? ...
>
> (7) how much of the acid deposition in Canada and in the United States originates in the other country?
>
> (9) can transport models be used for reliably predicting the patterns of acid deposition in seasonal and year-to-year variability over the United States? [pages 54-55]

The above questions and the assertion that better transport models are needed and that these cannot be developed until much more research is undertaken all lead to a very powerful case for those who would make it to the effect that any particular sources of SO_2 or NO_x cannot be shown to be the cause of the impacts of acid rain in any downwind area.

1.6.5 Problems of Proof - Industry Assertions of a Lack of Cause-and-Effect Relationship

The suggestion that industry will use such assertions of the lack of scientifically proven cause and effect relationships in disputing the need to abate present sources can be corroborated by the comments made at a recent seminar on the U.S. Clean Air Act by Dr. W.C. Hamilton, Senior Staff Scientist, Research Services Division, with Conoco Incorporated ["The Clean Air Act: How Should It Be Re-Done in 1981?" sponsored by Inside E.P.A. Weekly Report and McGraw Hill Conference Centre, Nov. 17 and 18, 1980]

Dr. Hamilton in his remarks replied to allegations which he said have been made by the Council on Environmental Quality, the EPA and various environmental groups and academic scientists to the effect that acid rain is a phenomenon of recent vintage, that the area affected is large and is continuing to grow in both areas extent and degree of acidification; that serious environmental damage is already occurring to fish, acquatic systems, forests, crops, soils and materials and much more is portended unless immediate remedial steps are undertaken; and that the acidity is caused by the combustion of fossil fuels, particularly coal.

His position was stated as follows:

1. The allegations of CEQ et al cited above are to a great extent simply unfounded conjecture.
2. For most of the Eastern United States acid rain is not an imminent problem and quite possibly not even a potential problem.
3. There may well be certain geographically isolated and geologically unique parts of the Eastern United States such as the Adirondacks where acid rain is having an adverse affect.

This has yet to be fully demonstrated.

4. The anthropogenic contributions to acid rain, including knowledge about chemical species, reaction pathway, source-receptor modelling and transport modes are so poorly understood at this time that any "remedial strategy" on EPAs part would be sheer guess work.

5. The research programs on acid rain proposed and undertaken by the Administration and the Congress, plus the research programs being carried out by private industry, are fully justified and should be vigorously pursued.

Dr. Hamilton's comments vigorously denying any present capability to demonstrate a cause and effect relationship between SO_2 and NO_x sources and downwind damage caused by acid precipitation can be expected to be echoed by those who have the most to fear from abatement of large coal-emitting stationary sources.

In this regard a report currently circulating in Washington entitled "Acid Rain: The Impact of Local Sources" by P.W. Spaite et al, PEDCo Environmental Incorporated (Cincinnati, Ohio) and by Paul W. Spaite Company, (Cincinnati. Ohio) and prepared for the U.S. Department of Energy, dated November 24, 1980, is another in what will likely be a continuing series of such statements.

This report in its abstract states that :

> Little is known about the precise origin of acid rain precursor pollutants, expecially with respect to the relative importance of local versus distant sources. Many have assumed that acid rain is predominantly a problem of long range transport of pollutants from large fossil fuel combustion sources, namely, coalfired utilities. However, close examination of fuel use information and source emission characteristics in the Adirondacks, Florida and California suggests that local oil burning and automotive sources may be major contributors to the occurrence of acid rain in these areas.[p. ii , emphasis added]

The report also found, as stated in the abstract, that:

> Oil-fired boilers, especially the smaller commercial, industrial and residential units, produce at least three-ten times as much primary sulphate per unit of sulphur content as coal-fired units. Moreover, oil-fired units emit comparatively large quantities of catalytic compounds capable of rapidly converting still more sulphur oxide sulphate in the atmosphere. Thus, in areas where large quantities of oil are burned, the direct impact from locally generated sulphates may equal or even exceed that produced by "imported" sulphates derived from distant coal-burning sources.

> Fuel consumption data show that large quantities of oil are being consumed in the areas experiencing acid rain. Forty per cent of the residual and thirty-six per cent of the distillate oil burned in the United States is consumed in the eight State area surrounding the Adirondacks. [p. ii]

In coming to their conclusions the report notes that local sources, including two thermal power generating stations and a petroleum refinery, are believed to be the major cause of acidification in Halifax County, Nova Scotia; and that acid rain observed near Seattle, Washington has been linked to a nearby smelter [p.6].

The report states in regard to the north-eastern United States:

> If it is assumed that atmospheric catalysis causes the local deposition of twenty-five to seventy-five per cent of the local SO_2 emissions as sulphates, the contribution of local sources ranges from thirty-six to seventy per cent [p. 20].

Under the heading "Implications of the Findings" the report states:

> Examination of data on the burning of oil (distillate and residual) and on consumption of transportation fuels in the north-east United States indicates that local oil burning and consumption of gasoline in automobiles may be a significant, and perhaps dominant cause of acid rain in that region. [p. 27 & 28]
> The authors continue: Strategies aimed at reducing distant source emissions could have only minor effects on the concentration of local pollutants and provide only minor relief for material damage caused by acid rain and acid precursors.[p. 28, emphasis added]

The foregoing statements should not, of course, be taken as literal truths. Nevertheless they do represent the type of advocacy "expertise" that regulatory agencies and courts will have to weigh in taking and upholding initiatives to abate sources of SO_2 and NO_X on the premise such sources are causing harm through acid precipitation resulting from such emissions. At worst, such dissenting scientific views could be accepted by the decision making body resulting in the defeat of control strategies. At best, these dissenting views can be expected to substantially prolong procedures and delay the imposition of whatever controls are deemed appropriate. Only if drastic changes are made in the law to take into account this scientific controversy will regulatory abatement actions be successful in achieving a reduction in the acid precipitation in a relatively expeditious fashion.

2.0 THE CANADIAN CONSTITUTION AND ACID PRECIPITATION

2.1 Introduction

Canada is a federal state. As such, legislative powers are distributed between the federal government and the provinces. The British North America Act passed in 1867 by the British Parliament sets out in sections 91 and 92 the basic distribution of legislative powers. Until such time as either the British Parliament amends that distribution of powers contained in sections 91 and 92 or the Canadian people obtain the right to have that constitutional document amended in Canada, no change can occur in the distribution of legislative powers.

Fundamentally it has been for the courts to determine whether legislative jurisdiction over the environment and resources was given to either level of government or both as regards particular aspects of these subject matters. Neither environment nor pollution is mentioned in the distribution of powers contained in Section 91 and 92.

2.2 Crown Land and Ownership of Natural Resources

When discussing the constitution and acid precipitation it must be recognized that in addition to consideration of legislative powers as between the federal and provincial governments, ownership of natural resources has to be taken into account. The provinces are the owners of Crown rights to land and other natural resources within their boundaries by virtue of Section 109 of The BNA Act. Section 92 (5) gives them the powers to make laws with respect to the management and sale of most of these resources. Within the provinces of Ontario and Quebec there is so small an amount of federal Crown ownership of land or resources that for all practical purposes it is irrelevant to the acid precipitation problem.

The fact that provincial ownership of public lands carries with it ownership of minerals on such lands means that the power of the provinces to control resources exploitation within their own boundaries is extensive. This authority is supplemented by the right of provincial legislatures to make laws regarding matters concerning "local works and undertakings" [Section 92 (10)], "matters of a merely local or private nature in the province" [Section 92 (16)], and "property and civil rights in the province" [Section 92 (13)].

Based upon both its ownership of resources that, when processed or burned, result in acid precipitation within the province and its legislative jurisdiction based upon the above-noted sections of the BNA Act provinces have considerable constitutional authority to deal with the acid precipitation problem.

It should be emphasized that the provinces do not own all "natural resources" within the province. What provinces do own are all ungranted lands (that is lands never sold or given to any private person) as well as so-called public resources such as air, water, and wildlife, but only in so far as those particular matters have not been reduced into private possession by individuals or otherwise granted by the provincial government to individuals.

As owners of resources that might be burned as fuel in their provinces a provincial government could prevent, for example, coal with certain sulphur content from being taken off Crown lands except on condition that it would not be utilized in any fuel-burning process in Ontario. Alternatively, it could stipulate that coal or other resources could not be burned as fuel or smelted in Ontario unless certain pollution abatement equipment was installed in the coal-burning or smelting process. This could be of some significance, for example, with regard to large coal deposits such as Onakawana near Hudson Bay. Similarly, in so far as smelting operations may be utilizing resources taken from Crown lands (that is lands still owned by the provincial government but in which smelting companies have interests), the provincial government as owner, could likely impose conditions even on those deposits which have been leased or otherwise granted out (but not sold absolutely) to smelting companies.

However, in the main, provincial ownership of resources is not likely to be the major constitutional device by which sources of acid rain will be controlled at the provincial level. Rights of ownership by provincial governments of these resources should not be ignored in the context of

what could be done for the future. Nevertheless the major effort by provincial governments to abate present sources of acid rain and prevent new sources of acid precipitation must be founded in provincial legislative powers.

2.3 Provincial Legislative Powers

The three heads of provincial power indicated above, found in section 92 of the BNA Act, that is "property and civil rights in the province", "generally all matters of a merely local or private nature in the province" and "local works and undertakings" all support provincial anti-pollution legislation as well as laws regulating trade within the province and public health.

It is on the basis of the three general heads of powers just mentioned that provincial environmental legislation such as the Ontario Environmental Protection Act, the Environmental Assessment Act or the Quebec Environment Quality Act are based. The courts have indicated that at least with regard to portions of the Ontario Environmental Protection Act dealing with noise, that such regulatory contents are certainly related to "property and civil rights in the province" and "matters of a merely local or private nature in the province". [R. v. Lake Ontario Cement [1973] 2 O.R. 247 and R. v. Young (1973) 1 O.R. (2d) 564]

However, there are four important limitations on provincial legislative jurisdiction.

The first is obvious - the provinces may not legislate with respect to matters assigned exclusively to the federal government by Section 91. [Robert T. Franson, and A.R. Lucas "Canadian Environmental Law", Vol. 1, p. 253] For example in Ontario a municipality had made a municipal noise by-law. A person was charged with violating this by-law for having arranged motor-boat races. The by-law was held not to apply to the accused's activity because motor-boat racing fell within the exclusive federal power over nagivation and shipping. [See R. v. Rice [1963] 1 C.C.C. 108] Similarly, in another case it was held that a Toronto air pollution by-law could not be applied to ships lying at a pier within the municipality. [R. v. Canadian Shiplines Limited [1960] O.W.N. 277, [1961] O.W.N. 89]

It should not be taken from the above comments that legislation with respect to a matter within provincial legislative jurisdiction is made invalid merely because it has some impact on matters within federal jurisdiction. If the pith and substance of the legislation falls within the class of subjects assigned to the provinces by section 92 of the BNA Act it will be valid even though it has some impacts on matters within federal jurisdiction. Thus, for example, a province cannot legislate with respect to Indians qua Indians, but otherwise valid provincial legislation may be applied to Indians. [Franson and Lucas, supra, p. 253-254]; [Cardinal v. Attorney General of Alberta [1974] S.C.R. 695]

The second limitation on provincial legislation arises where otherwise valid federal and provincial legislation overlap. In such a case, the provincial legislation is inapplicable to the extent that it is in direct conflict with the federal legislation. This is the doctrine of "paramountcy". However, this constitutional "conflict" wherein provincial legislation will cease to be operative in the face of federal legislation in the same area only comes into existence where there is conflict in the sense that compliance with one law leads to breach of another. This concept, which has been the consistent interpretation of the Supreme Court of Canada on this type of issue, allows provincial governments to make more stringent environmental requirements than federal environmental laws because there is no real constitutional conflict in that context. A polluter can obey both laws by adhering to the more stringent provincial law. Merely because the provincial law is more stringent than the federal does not in itself lead to conflict in a constitutional sense. This concept has important implications when, as in the case of regulation of air pollution, there seems to be both federal and provincial legislative jurisdiction over most aspects of the matter. In a recent decision of the Supreme Court of Canada that dealt with an environmental matter, one Judge, with whom two other Justices (out of a total of seven) agreed, said that "when the matter is one of provincial jurisdiction, a province is not prevented from imposing stiffer requirements than those which the federal parliament may have prescribed" [Interprovincial Co-operatives Limited v. the Queen in Right of Manitoba (1975) 53 DLR (3d) 321 at 359]

A third limitation on provincial jurisdiction involves the federal government. It would appear that provincial legislation cannot usually be applied to the federal government, or to federal crown corporations, such as Eldorado Nuclear Limited, Air Canada, Canadian National Railways, or other business operations that are federal works, undertakings or businesses. This is certainly the case as regards the "essential parts" of such federal instrumentalities. Provincial laws affecting incidential aspects of operation, such as waste disposal, may not be invalid. But siting requirements and pollution abatement requirements which go to affecting how a particular federal enterprise may in fact carry on its activities, would be affecting such an enterprise, generally speaking in its "essential parts" and therefore be invalid as regards those federal instrumentalities.

It is of course open for the federal government to agree that it or its Crown agencies or other persons under its legislative jurisdiction will be subject to provincial legislative jurisdiction as regards any matter including environmental matters and it is also possible for the federal government to incorporate into its rules governing its own departments and Crown agencies and federal businesses the laws and regulations adopted by provincial governments. For example, the federal government has exclusive legislative jurisdiction with regard to all activities which involve atomic energy in any of its applications. To protect the health of uranium workers in Ontario uranium mines the federal government has, in issuing licences under federal legislation for such mines, caused those mines to be governed by provincial laws dealing with exposure of workers to radiation, in the absence of any applicable federal laws.

In the converse situation it should be noted the provincial governments are not immune from valid federal legislation. That is, if the federal government has legislative jurisdiction over certain matters then the various provincial governments and their agencies would be bound by such federal laws.

The fourth and final limitation on provincial jurisdiction is perhaps the most fundamental to the acid precipitation issue. This is the limitation that provincial legislative jurisdiction extends only to matters "in the province". That clause appears in sections 92 (13) and 92 (16). This clause was considered by the Supreme Court of Canada in Interprovincial Co-operatives Limited v. The Queen in Right of Manitoba [supra]. The facts in that case have been summarized as follows:

> At issue was the applicability of special Manitoba legislation to deal with polluting activities outside the province. The situation arose because chemical plants in Ontario and Saskatchewan deposited effluent into rivers that flowed into Manitoba, creating mercury pollution in that province. In response, Manitoba enacted legislation allowing the province to pay assistance payments to commercial fishermen who were injured as a result. The province was also empowered to take assignments of their claims. The Act provided that the measure of damages in any action brought by the province against those responsible for the damage should be the amount the province had spent in assistance payments as well as any money the province had spent alleviating the damage. Certain potential common law defences were removed. For example, in an action brought by the province it would not be a defence if the fisherman to whom assistance payments were made had no property interest in the fishery. Also, the defence of statutory authority arising from permits granted from another jurisdiction was expressly removed.
>
> A majority of the Supreme Court (4 to 3) held that this latter feature was designed to have an extra-territorial effect, in that it removed civil rights that had been granted by another province, and therefore that it was ultra vires.
> [Franson and Lucas, supra, p. 244-245]

In the Manitoba Court of Appeal, the majority upheld the validity of the Manitoba legislation. Four of the five Justices in that court seemed convinced that the Manitoba legislation was essentially directed against acts done within the province. Two of the Manitoba Justices put it this way:

> In my opinion, the impugned statute in the context of the assumed facts is valid provincial legislation and does not offend any doctrine of territorial limitation. To the extent that such limitation may exist it does not debar the Manitoba legislature from enacting legislation imposing obligations in respect of acts done outside the province on persons or corporations who are domiciled or resident in the province. The courts of Manitoba can and do entertain actions and award damages for torts committed abroad, from which it follows that the Manitoba legislature is competent to define the conditions on which damages in such

> action should be awarded in so far as the matter related to property and civil rights in the province and is a subject of a local and private nature therein.
> [Interprovincial Co-operatives v. The Queen, 38 D.L.R. (3d) 367 at 400]

In the Supreme Court of Canada that view was rejected. Mr. Justice Pigeon (with whom two other Justices concurred) had the following to say:

> With respect, I fail to see how the Assistance Act can be said in the present case to be directed against acts done within Manitoba. The essential provision on which Manitoba relies to claim against the appellants is the discharge of a contaminant from premises outside Manitoba into waters whereby it is carried into waters in the province. While it can be said that the legislation is aimed at damage caused in Manitoba, it is not directed against acts done in that province: the basic provision on which the claim is founded is an act done outside the province, namely, the discharge of the contaminant. ... A province cannot extend its legislative authority by purporting to regulate the access to its courts. ...
>
> It seems to me that the same reasoning should be applied to the construction of "property and civil rights in the province". It is not within the authority of a provincial legislature to define or to extend the scope of its constitutional jurisdiction. ... As between different Canadian provinces, the situation is not in all respects the same as if they were independent states. There is a constitutional limitation on their legislative authority.
> ...
>
> The basic principal of the division of legislative powers in Canada is that all legislative power is federal except in matters over which provincial legislatures are given exclusive authority. Such authority is under every head expressly or impliedly restricted to the provincial territory.
> [Interprovincial Co-operatives v. The Queen, 53 D.L.R. (3d) 321 at 352-357]

Mr. Justice Pigeon noted that where business contracts affect inter-provincial trade, it is no longer a question within provincial jurisdiction. The matter becomes one of federal jurisdiction. He went on to say:

> In my opinion, the same view ought to be taken in respect of pollution of interprovincial waters as with respect to interprovincial trade. ... The basic rule is that general legislative authority in respect of all that is not within the provincial field is federal.
> [Ibid, at p. 357]

Three other Justices including the present Chief Justice of Canada held that there was a valid basis for the Manitoba Act and that in the absence of conflict with federal law it was operative.

The seventh Judge found that the Act was aimed essentially at problems arising in Manitoba as a result of pollution in Manitoba waters. He therefore found it was valid as an exercise of the province's power to legislate in regard to property and civil rights; but that in so far as it purported to apply with respect to conduct in rights of defendants outside Manitoba, it was inapplicable.

The results of this split decision indicate that a province cannot by itself legislate to deal with sources of pollution arising outside its boundaries and must confine its activities to sources "in the province". This limitation is of course of considerable importance when it comes to overall regulation of sources of acid precipitation.

2.4 Federal Legislative Jurisdiction

The federal government derives its powers to legislate both from specific heads of power contained in Section 91 of the BNA Act and also from the preliminary words of that section which give to parliament the right to legislate for the "peace, order and good government of Canada".

As was said by Viscount Maugham in a 1943 decision:

> It must not be forgotten that where the subject matter of any legislation is not within any of the enumerated heads either of Section 91 or Section 92, the sole power rests with the Dominion under the preliminary words of Section 91 relative to "laws for the peace, order and good government of Canada". [Attorney General for Alberta vs. Attorney General for Canada [1943] A.C.356 at 371]

2.4.1 The Federal General Power (Peace, Order and Good Government)

At one time, it was thought that the general power could be invoked by the federal government as a basis for federal legislation only in times of national emergency. This view has now been firmly rejected. A statement of the law that seems to be accepted today is the following:

> The true test must be found in the real subject matter of the legislation. If it is such that it goes beyond local or provincial concern or interests and must from its inherent nature be the concern of the Dominion as a whole (as for example in the Aeronautics Case ... and the Radio Case ...) then it will fall within the competence of the Dominion parliament as a matter affecting the peace, order and good government of Canada, though it may in another aspect touch upon matters specially reserved to the provincial legislature. [Attorney General for Ontario v. Canadian Temperance Federation [1946] A.C. 193 at 205]

On the basis of the federal general power, federal control has been upheld over broadcasting, air transport, atomic energy and the National Capital Area. [See Re Regulation and Control of Radio Communication [1932] A.C. 304; Johanneson v. West St. Paul [1952] 1 S.C.R. 292; Pronto Uranium Mines Limited v. Ontario Labour Relations Board [1956] O.R. 862 Munroe v. National Capital Commission [1966] S.C.R. 663].

Most recently, the federal government purported to regulate wages, profits and prices in all provinces of Canada in the Anti-inflation Act. [S.C. 1974-75 c. 75]. The subject matter of this legislation was certainly within provincial jurisdiction as relating to property and civil rights in the province and matters of a merely local nature in the province. However, the federal government was convinced that inflation at the time had so affected the economy of the nation that it was a matter affecting the whole of the country, therefore impacting the order and good government of the country. Provincial governments and unions resisted the legislation and asked the courts to hold it ultra vires - beyond the powers of parliament.

However, the Supreme Court of Canada rejected that argument holding that the economic situation was such in Canada that peace, order and good government could be invoked as a basis for this federal legislation as long as that serious economic condition prevailed. The majority in the Supreme Court rejected the submission that even if there was a national economic crisis the Federal Government should have attempted to obtain the co-operation of provincial governments before being entitled to bring in its own legislation. As Chief Justice Laskin put it:

> ... it does not follow that the federal policy that was adopted is vulnerable because a co-operative scheme on a legislative power basis was not tried first. Co-operative federalism may be consequential upon lack of federal legislative power, but it is not a ground for denying it.
> [Reference re Anti-Inflation Act, (1976) 68 D.L.R. (3d) 452, at 494]

The problems of pollution which cross provincial boundaries certainly go beyond local or provincial concern. Whether it is of concern to the country as a whole in such terms as to make it a matter affecting the peace, order and good government of Canada would depend on a given factual situation. It may well be that because the impacts of acid precipitation are such as to affect the welfare of sufficient parts of Canada and because these impacts arise from pollution originating in other provinces or countries, that the courts could be convinced that the federal government has the jurisdiction based on "peace, order and good government" to enact legislation in this area.

Support for that can be found in the Interprovincial Co-operatives vs. The Queen decision referred to above.

Mr. Justice Pigeon (writing for himself and two others), as indicated above, stated that the same view ought to be taken in respect of pollution of interprovincial rivers as is taken in respect to inter-provincial trade. He observed that the provinces have no power over the latter subject and therefore it falls within the general power. As he put it, "Here, we are faced with a pollution problem that is not really local in scope but truly interprovincial. The legal situation is not without analogy with that of interprovincial pipelines which were felt to be excluded from the operation of provincial mechanics lien act by reason of their interprovincial character ... Manitoba is restricted to such remedies as are available at common law or under federal legislation". [IPCO vs. The Queen, supra, pgs. 357 - 359, emphasis added]

One other Justice also agreed that the Federal government would have a right to legislate as regards inter-provincial water pollution. Mr. Justice Ritchie said "I take the view that ... the control of pollution of [inter-provincial] rivers is a Federal matter" [IPCO vs. The Queen, supra, at 350]. Two other Justices expressed no opinion on this point.

This decision has been commented upon in the following terms:

> both air and water flow between the provinces, making it impossible for any province to protect itself adequately against pollution coming from another province. For this reason, the Federal general power offers promise as a means of justifying Federal pollution control legislation. ...The Supreme Court has given a fairly clear indication that it views inter-provincial pollution as falling within the Federal general power. In light of the speed with which air crosses the whole of the country Federal jurisdiction would seem even clearer. ...the general power can be relied on when pollution crosses provincial boundaries or when a particular environmental problem reaches the level of national importance (although it is difficult to predict when this latter test might apply).[Franson and Lucas, supra, at pgs. 266 and 273]

2.4.1.1 The Environmental Contaminants Act, The Clean Air Act, The Canada Water Act, and The Federal General Power

It seems clear that the Federal Government in the 1970's was convinced that it had jurisdiction, based on "peace, order and good government", to enact new legislation dealing with air and water pollution that affected more than one province or that was more than a "local matter" within a province.

The Canada Water Act, The Clean Air Act and The Environmental Contaminants Act are all predicated, in part, upon the Federal general power.

They all implicitly recognize that provincial governments have jurisdiction over the subject matters of each of these Federal acts as regards sources of contamination arising in the provinces. But the same Federal acts then provide that as regards extra-provincial impacts or even impacts within a province that affect specific geographic areas, the Federal government may take action if the province does not appear ready or able to deal with the problems using its own legislation. The Federal thesis in these Acts seems to be predicated, in part, on the assumption that if the provinces do not act to control such matters they will eventually affect the peace, order and good government of the country and that accordingly the Federal government at that point has the constitutional ability to use its own legislative powers.

Several writers have commented that the Canada Water Act, which does attempt to give to the Federal government the unilateral ability to regulate so as to restore, preserve and enhance water quality in inter-jurisdictional waters (which include, in addition to international and boundary waters, any waters whether wholly situated in a province or not which "significantly affects waters outside such province") is valid federal legislation.

Stein has commented that

> More positive grounds of support for unilateral Federal action [in support of the Canada Water Act] might be found under the Federal General Power. ...can it be said that water quality management in Canada, or more narrowly, in particular geographic areas, has now become a matter of national concern? If so, then the Federal Government should be able to impose its regulations anywhere in Canada where this criterion is met. ...there are good reasons for believing that Federal authority might be sustained. Efficient management of inter-jurisdictional waters necessarily requires an administrative agency that is competent to exercise uniform authority throughout the relevant geographic area. Since provincial jurisdiction is restricted to inter-provincial activities, it would be impossible for any one province to create this type of agency. Following the theory that every subject matter must be accommodated within the scope of the B.N.A. Act, the management of inter-jurisdictional waters should, it is submitted, fall to the Federal Government under the residual general power. [S.B. Stein, "An Opinion on the Constitutional Validity of the Proposed Canada Water Act" (1970), Volume 28, U. of T. L.J. 74]

Dale Gibson, a noted Manitoba constitutional scholar, writing in 1969, prior to the introduction of the Canada Water Act, had these comments to make with regard to the ability of the Federal government to enact such legislation:

> The power [of Parliament to legislate based on peace, order and good government] is not dead; it has been quietly licking its wounds and regaining strength, and in recent years it has begun to re-assert itself as a source of Federal jurisdiction, even where no emergency exists. It is once more possible to predict that if the subject matter of legislation has great national significance there is a reasonable likelihood that the courts will place it within Federal jurisdiction for that reason.
>
> Would this cause have any relevance to the administration of provincial waters? I believe that it would; not just because water resources are important to the Nation...and not because it would be desirable to administer water uniformly across the country... but because it would not be possible for any province by itself to create the kind of all-embracing, multi-use administrative agency that most resource administrators seems to think would be ideal. ...I submit...that this is exactly the type of situation that the "peace, order and good government" clause is capable of covering, and that if it wished to do so Parliament would have the constitutional capacity to create the type of multi-purpose basin authorities that the provinces cannot create. [Dale Gibson, "The Constitutional Context of Canadian Water Planning", (1969) Alberta Law Review, 71 at 85-86]

2.4.2 Specific Provisions in Section 91 of the British North America Act Applicable to Federal Legislative Jurisdiction concerning control of Acid Precipitation

There are several specific heads of power in Section 91 of the B.N.A. Act that enable the Federal Parliament to legislate as regards aspects of this problem. No one particular head of power seemingly is sufficient alone to vest clear authority in the government to take comprehensive measures with regard to this problem. It is necessary to look at the attributes of each of the potentially applicable heads of power together with the "general power" discussed above in order to determine the extent to which the Federal government can, under the present constitution, deal with this problem.

2.4.2.1 The Criminal Law Power [Section 91 (27)]

Parliament is entitled to make laws dealing with criminal law.

This constitutional head of power has been commented upon in the following terms:

> The criminal law power reserved to the Federal Parliament covers the "criminal law in its widest sense", and encompasses the ordinary ends of "public peace, order, security, health and morality". It includes the power to make new crimes, and to enact legislation for the prevention of crime. Generally, it is for Parliament and not the courts to judge what conduct should be prohibited. Legislation enacted under this head of power may have an incidental effect on property and civil rights within the provinces as long as the legislation genuinely enacted is in relation to the criminal law.
>
> It seems clear, therefore, that the criminal law power could be relied upon to support legislation aimed at preventing pollution of all kinds, including noise pollution, pollution of air and water, and littering, since all of these have a direct impact on public health and safety. However, there are two potential limitations that should be noted.
>
> The first possible limitation on Federal jurisdiction over the criminal law concerns the kinds of environmental management techniques that are included in the legislation. Some commentators have suggested that the criminal law power is limited to situations where certain conduct is prohibited and fines or jail sentences are imposed on violators. If that if so, some of the more exotic regulatory schemes, for example those involving prior approval of development or effluent charging schemes, might not be authorized. However the Supreme Court has held that Parliament is not limited to defining offences and providing penalties for their commission: it also has the power to pass legislation designed to prevent crime. Most practical pollution control schemes could probably be brought within this holding.
>
> A second possible limitation concerns the nature of the subject matter of the legislation. The outer boundaries of the criminal law power are not entirely clear. Earlier cases suggested that it is limited to matters which are essentially criminal in nature - that is, to matters relating to public health, safety or morals. This view, at least, in the strict sense, has been rejected, and it is clear that economic, social and political ills may be dealt with.
>
> But Parliament may not prohibit any conduct it wishes, as the Margarine Case clearly shows. In that case, Parliament had prohibited the manufacture and sale of butter substitutes. The Privy Council held the legislation ultra vires because it was, in pith and substance, a law for the protection and encouragement of the dairy industry.
>
> Numerous tests have been suggested for determining whether a statute is criminal law, but none appear to have been very successful. Probably the best that can be said is that Parliament will not be permitted to use the criminal law power to invade either the fields of trade regulation that have been traditionally held to be provincial, or to enact legislation dealing with ordinary civil liability. [Franson and Lucas, supra, pgs. 255-257]

Preventing harm to health has been a traditional subject matter of criminal law. The courts have upheld federal legislation that prohibited the use of sulphur dioxide in meat products despite the fact that the evidence showed SO_2 was not harmful to health. In Standard Sausage Company vs. Lee [1933] 4 D.L.R. 501 and [1934] 1 D.L.R. 706 (addendum)] the B.C. Court of Appeal reasoned that adulteration of food had historically been dealt with by the criminal law, and that adulterated food could have a severely injurious impact on health. That being so, Parliament had the jurisdiction to deal with the problem. It was up to Parliament, and Parliament alone, to decide how to deal with the problem of which adulterants could be tolerated. As Macdonald J.A. observed:

> The primary object of this legislation is the public safety - protecting it from threatened injury. If that is its main purpose - and not a mere pretence for the invasion of civil rights - it is nonetheless valid because it may be open to criticism, from which few acts are free, that its purpose would be served equally well by accepting the opinion of others, viz., that sulphur dioxide might with safety be added to the list of usable preservatives. Tampering with food by the introduction of foreign matter, how ever good the intentions, should properly be regarded as a public evil and it may properly be regarded as highly dangerous to lower the bars, or to remove restrictions, which, rightly or wrongly, Parliament in its wisdom thought fit to prescribe.

Writing in 1961, present Chief Justice Bora Laskin of the Supreme Court of Canada, then a Professor at the University of Toronto Law School, had the following comments with regard to the extent of the Federal government's power to deal with health effects under the criminal law power:

> If there were any crisis of public health, whether arising from pollution of water or otherwise, Parliament could certainly deal with it. Since it has also been held that " to legislate for prevention appears to be on the same basis as legislation for cure", there is good reason to suppose that Parliament might, if so disposed, assert authority to take regulatory measures to prevent pollution of water in the interests of the general public health [Attorney General of Ontario vs. Canada Temperance Federation (1946) A.C.193 at pg. 207]. If this be so, there would again be an area of control common to both Canada and the provinces. [Laskin, "Jurisdictional Framework for Water Management", Resources for Tomorrow Conference: Background Papers I pg. 211 as reproduced in Canadian Constitutional Law at pgs. 1047-1048]

Based on the criminal law power the Federal Parliament enacted the Hazardous Products Act [R.S.C. 1970, c. H-3]. In 1977 the Manitoba Court of Appeal upheld the validity of such legislation. In the case in question, the accused was charged with unlawfully selling a baby crib of a type defined as a hazardous product contrary to regulations made under the Act.

The accused argued that the Act and its regulations were ultra vires Parliament as infringing upon the exclusive provincial power under Section 92 (13) of the B.N.A. Act to legislate in relation to property and civil rights in the province.

The Manitoba Court of Appeal upheld the validity of the statute as a valid exercise of the exclusive federal power to legislate in relation with the criminal law under Section 91 (27). The Manitoba Court of Appeal held that the Act is "a genuine attempt" to amend the criminal law. [within Attorney General B.C. vs. Attorney General Canada (Ref. re Section 498A of the Criminal Code) [1937] A.C. 368] It fell within the tests set out by Rand J. in Reference re Section 5 (a) of the Dairy Industry Act[the margarine Case, [1949] S.C.R. 433] as being "enacted with a view to public purpose which can support it as being in relation to criminal law". The court held that the Act was within the legislative authority of the Dominion even though it may affect property and civil rights [R. vs. Cosman's Furniture (1972) Limited,[1977] 1 W.W.R. 81].

4.2.2 Sea Coast and Inland Fisheries [Section 91(12)]

Under this head of power the Federal Government is given exclusive power to enact fishery regulations and restrictions. The power is essentially concerned with "the protection and preservation of fisheries as a public resource" [see comment of Laskin, C.J.C. in Inter-provincial Co-operatives Limited vs. The Queen [1976] 1 S.C.R.477 at 495, as approved by a unanimous seven member panel of the Supreme Court of Canada in Northwest Falling Contractors Limited vs. The Queen et al (1980) 9 CELR 145 at 150.]

Considered in these terms, i.e. that the Federal power is for the purpose of the protection and preservation of fisheries as a public resource, Parliament has undoubtedly very broad powers to enact measures of such a nature. Parliament has acted on this constitutional jurisdiction by the wide provisions of the Federal Fisheries Act, described elsewhere in this report.[part 3.5]

Two very recent decisions of the Supreme Court of Canada have interpreted provisions of the Federal Fisheries Act in the context of the constitutional jurisdiction of Parliament in this area.

One case, Dan Fowler v . Her Majesty The Queen [(1980)9 CELR 115] dealt with Section 33(3) of the Fisheries Act which makes it an offence for any person engaged in logging, lumbering, land clearing or other operations to put or knowingly permit to be put any slash, stumps or other debris into any water frequented by fish or that flows into such water, or on the ice over either such water, or at a place from which it is likely to be carried into either such water. In the Fowler case the Supreme Court of Canada held that section of the Fisheries Act to be ultra vires of Parliament to enact. It was found to be beyond the authority of Parliament because as worded it was not restricted by its own terms to activities that are harmful to fish or fish habitat. As the Supreme Court of Canada put it

> Subsection 33(3) makes no attempt to link the proscribed conduct to actual or potential harm to fisheries. It is a blanket prohibition of certain types of activity, subject to provincial jurisdiction, which does not delimit the elements of the offence so as to link the prohibition to any likely harm to fisheries. [Dan Fowler v . The Queen, supra, at 123]

The Supreme Court of Canada went on in that decision to hold that "the prohibition in its broad terms is not necessarily incidental to the Federal power to legislate in respect of Sea Coast and Inland Fisheries and is ultra vires of the Federal Parliament". The Court noted there was no evidence before it to indicate that the full range of activities caught by that subsection do, in fact, cause harm to fisheries.

The court emphasized that Federal fisheries legislation to be valid must be directed towards the protection and preservation of fisheries as a public resource, and adopted the definition of a fishery as being the natural resource, and the right to exploit it, and the place where the resource is found and the right is exercised.

In the Fowler case, the court held that Section 33(3)

> does not deal directly with fisheries, as such, within the meaning of those definitions. Rather, it seeks to control certain kinds of operations not strictly on the basis that they have deleterious affects on fish but, rather, on the basis that they might have such affects. Prima facie subsection 33(3) regulates property and civil rights within a province. Dealing, as it does, with such rights and not dealing specifically with "fisheries", in order to support the legislation it must be established that it provides for matters necessarily incidental to effective legislation on the subject matter of Sea Coast and Inland Fisheries.[Dan Fowler vs. The Queen, supra, pg. 121]

In the Northwest Falling Contractors Limited vs. The Queen case, supra, the issue which came to the Supreme Court of Canada at approximately the same time as Fowler was before it was whether or not section 33(2) of the Federal Fisheries Act was valid Federal legislation under section 91(12) of the B.N.A. Act.

Section 33(2) of the Federal Fisheries Act is the pre-eminent Federal anti-pollution law for the purpose of protecting waters valuable for fish from pollution. It reads as follows

> Subject to subsection (4) no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or any place under any conditions where such deleterious substance or any other deleterious substance that results from the deposit of such deleterious substance may enter any such water.

"Deleterious substance" is extensively defined in a subsequent section.[see part 3.5]

The accused Northwest Falling Contractors Limited was charged in the Province of British Columbia that it permitted a deleterious substance to enter a certain water body. Particulars of the offence were that an oil slick approximately one mile long was observed on April 4th, 1978 at 8:15 in the morning. After investigation it was found that on the previous morning a barge operator of the Gulf Oil barge delivered approximately 17,000 gallons of diesel fuel to tanks owned by Northwest Falling Contractors Limited. There were four

tanks resting on an old rotter log. The log broke causing a pipe to break on the bottom of one tank, spilling 3,000 gallons of diesel fuel into the waters in question.

The accused challenged the constitutional validity of section 33(2) on the basis that the legislation was in relation to pollution of water generally, orwas legislation for the protection of all animal life in the water.

The Supreme Court of Canada upheld the validity of section 33(2). The Supreme Court quoted earlier decisions of that court and of the Privy Council dealing with constitutional validity of Federal Fisheries Legislation. In an 1882 case the Chief Justice of the Supreme Court of Canada said that the fisheries legislation enacted pursuant to the clause in the B.N.A. Act dealing with "Sea Coast and Inland Fisheries" was in reference to

> subjects affecting the fisheries generally, tending to their regulation, protection and preservation, matters of a national and general concern and important to the public...laws with reference to the improvement and increase of the fisheries, in other words, all such general laws as enure as well to the benefit of the owners of the fisheries as to the public at large, who are interested in the fisheries as a source of national or provincial wealth; in other words, laws in relation to the fisheries, such as those which the local legislatures were, previously to and at the time of Confederation in the habit of enacting for their regulation, preservation, and protection....[The Queen vs. Robertson (1882) 6 S.C.R.52 at pg. 120]

In dealing with the argument that Section 33(2) and the definition of "fish" in section 2 the Act went far beyond the ambit of Section 91 (12) of the B.N.A. Act, the Supreme Court of Canada in its unanimous Northwest Falling decision held that

> Shellfish, crustaceans and marine animals, which are included in the definition of "fish" by section 2 of the Act, are all part of the system which constitutes the fisheries resource. The power to control and regulate that resource must include the authority to protect all those creatures which form a part of that system. [Northwest Falling vs. The Queen, supra, at 150]

The court then went on to deal with the accused's other argument that the scope of section 33(2), taking into account the broad definition of

"water frequented by fish in subsection 33(11)" and the broad definition of "deleterious substance" made Section 33(2) really concerned with pollution generally and not fisheries in particular.

That submission was rejected by the Supreme Court of Canada. The court held that the "true nature and character of the legislation ...is aimed at the protection and preservation of the fisheries" [Northwest Falling vs. The Queen, supra, pg. 150]

The court continued:

> basically, it [s.33(2)] is concerned with the deposit of deleterious substances in water frequented by fish, or in a place where the deleterious substance may enter such water. The definition of a deleterious substance is related to the substance being deleterious to fish. In essence, the subsection seeks to protect fisheries by preventing substances deleterious to fish entering into waters frequented by fish. This is a proper concern of legislation under the heading of "Sea Coast and Inland Fisheries".[Northwest Falling, supra,p.150]

The court pointed out that Section 33(3), considered in Fowler, unlike Section 33(2), contains no reference to deleterious substances. It is not restricted by its own terms to activities that are harmful to fish or fish habitat".

Section 33(3) made no attempt to link the proscribed conduct to actual or potential harm to fisheries. It was a blanket prohibition of certain types of activity, subject to provincial jurisdiction, which did not delimit the elements of the offence so as to link the prohibition to any likely harm to fisheries.

The Supreme Court in the Northwest Falling case held that the definition of "deleterious substance" "insures that the scope of subsection 33(2) is restricted to a prohibition of deposits that threaten fish, fish habitat or the use of fish by man".

It can be seen from the above comments of the Supreme Court of Canada in the Northwest Falling case, coming immediately in juxtaposition to the decision in Fowler, that there is no doubt that Parliament has acted within its constitutional powers in the wording of Section 33(2) of the Fisheries Act and in defining "deleterious substance".

The constitutional validity of that definition is particularly important when one considers, as is done elsewhere in this paper, the efficacy of the Federal Fisheries Act to control or prohibit sources of acid precipitation insofar as such sources cause harm or may cause harm or be deleterious to fish (including crustaceans etc. defined in Section 2 of the Federal Fisheries Act). On the basis of these decisions, s. 33.1 of the Fisheries Act, providing authority to the Minister of Fisheries & Oceans to approve land-based activities which might impact fish habitat, can be considered to be valid constitutionally. Nevertheless, any new measures dealing with acid precipitation carried out pursuant to the Federal Fisheries power must take into account the recent Fowler decision where the Supreme Court struck down aspects of the Fisheries Act not clearly related to protecting fish and which were in essence dealing with property and civil rights in a province.

2.4.2.3 Regulation of Trade and Commerce [Section 91(2)]

This constitutional power of the Federal Government appears to allow it to make laws regulating goods that have entered the current of inter-provincial trade or that are intended for inter-provincial trade. Even purely intra-provincial transactions may be incidentally affected. [Franson and Lucas, supra, at 263]

On this basis the Federal Government would have the ability to control the importation into Canada or the production of fuels in Canada as to concentrations of contaminants that they may contain.

The Federal Motor Vehicles Safety Act regulations with regard to prohibiting the emission from vehicles manufactured or imported into Canada that emit more than a prescribed amount of contaminants set under that Act is undoubtedly constitutionally based on the Trade and Commerce power.

The Trade and Commerce power alone does not allow the Federal Government to regulate the use of vehicles or fuels after they have been manufactured. That is why, for example, under the Motor Vehicles Safety Act, there is no federal regulatory scheme requiring that vehicles after being manufactured and while in operation emit no more than a certain level of contamination or be maintained with such equipment in place and in working order. Constitutionally,

the legal requirement to have such equipment maintained and kept on the vehicle after it is sold is a matter of property and civil rights in the province, or so it has been thought to be to date in any event, and all such legislation relating to these matters must be found in provincial legislation. (However, insofar as emissions from vehicles or fuels would impair public health, the Criminal Law Power could be invoked to justify federal requirements of of this nature; insofar as such emissions result in environmental problems of national scope and importance, the Federal General Power could be invoked.
Caution must be used when resorting to the Trade and Commerce clause in order to support Federal legislation that would pertain to environmental management. As some writers have commented

> It seems unlikely that resort to the Trade and Commerce clause will be of much assistance in cases where it is obvious that the objective of the measure under question is some form of environmental management. In such cases, the leading feature of the legislation is probably not the regulation of trade and commerce at all, but is probably more correctly characterized as environmental management. If so, its validity will depend upon whether the Federal Government can bring the measure within some other enumerated head of Federal power or within the general power.
>
> Within a limited range, resort to the trade and commerce power may be helpful. Courts have often been reluctant to look behind legislation that seems clear on its face and inquire into what may have been the motive or objective of the legislature in enacting it. It has been done, but only in unusual circumstances where a colourable attempt was being made to usurp another level of government's jurisdiction. Certainly in such circumstances the burden of establishing the point would be on those who would challenge the legislation. The fact that legislative debates and Ministerial statements cannot be relied on would make it very difficult to carry this burden. For example, lead content regulations of the kind envisioned here might be enacted to protect the public health, or to conserve supplies of lead, or to standardize the product thereby protecting consumers or making the competitive market work more smoothly. Who is to say? In any but the most blatant cases it seems unlikely that a court would interfere. [Franson and Lucas, IBID,pg. 264].

2.4.3 The Declaratory Power(Section 92(10)(c))

Pursuant to the above provision the Federal Parliament is entitled to exclusively make laws in relation to

> such works [and undertakings] as, although wholly situated within the province are before or after their execution declared by the Parliament of Canada to be for the general advantage of Canada or for the advantage of two or more of the provinces

It can be seen that the Parliament of Canada, pursuant to the above provision, if it has the political will to do so, can, by passing the appropriate resolution in Parliament, declare a work or undertaking which would otherwise be under provincial legislative jurisdiction to be for the general advantage of Canada or for the advantage of two or more of the provinces and accordingly obtain exclusive Federal jurisdiction over that work. Such a declaration can be passed and have application not only to works which then exist but which will automatically have application to any new works of the same class that come into existence at any point in the future.

This Federal power has been exercised in relation to prairie grain elevators as well as to any facility that uses atomic energy. Most relevant to considerations of acid rain is the Act passed July 17th, 1947 which declares that

> The works and undertakings of Hudson Bay Mining and Smelting Company Limited in the Flin Flon mineral area on both sides of the boundary between Manitoba and Saskatchewan, are works for the advantage of two or more of the provinces[S.C.1947,c.62,s.1]

Pursuant to this declaration the Federal Government has exclusive authority to legislate in regard to not only the mining activities carried on by this company but also exclusive authority to regulate emissions. Under the Canada Clean Air Act, Section 11, the Federal Cabinet could make emission standards applicable to such a Federal "business". In the absence of such a Federal emission standard being promulgated however the Clean Air Act does not apply to that company.

Of interest is the fact that when concerns about air pollution controls on this plant arose in 1972 representatives of Environment Canada told the Manitoba Municipal Board that they preferred to work in co-operation with and through the provincial environmental authority rather than impose the provisions of the Clean Air Act on that source of emissions. [Brian E. Felske & Associates Limited, "Sulphur Dioxide Regulation and the Canadian Non-Ferrous Metals Industry", Economic Council of Canada, Technical Report No. 3, (1981)at pg. 199]

From a constitutional point of view this declaration forms a precedent for having Parliament declare any particular smelter to be a "work for the general advantage of Canada". There is no legal reason why such a declaration could not be made with regard to power plants as well. Only political considerations would prevent Parliament so acting. If such declarations were made the Parliament of Canada would have absolutely no constitutional problem controlling present sources and preventing major new sources of acid precipitation.

2.4.4 British Empire Treaties (Section 132 of the B.N.A. Act)

Section 132 of the B.N.A. Act expressly gives to Parliament and to the Government of Canada all the powers necessary to perform the obligations of Canada arising under treaties between the British Empire and foreign countries. This section was obviously drafted before it was ever thought that Canada would become a sovereign nation capable of entering into treaties in her own right. The courts have held that it does not apply to treaties that Canada has entered into after having achieved sovereignty (that is following the passage by the British Parliament in 1931 of the Statute of Westminster).

The result is that for treaties made by the British Government on behalf of Canada as part of the British Empire prior to 1931 Section 132 gives to the Federal Government the right to legislate in areas that would otherwise be within provincial legislative jurisdiction. On the other hand, after 1931, while the Federal Government has the ability to enter into a treaty, if legislation is necessary to implement it the jurisdiction to pass that legislation depends, in the usual way, upon the division of legislative powers established by the B.N.A. Act. The result is that legislation implementing Canadian treaties since 1931 must be passed by which ever level of Government has legislative jurisdiction over the subject matter of the treaty. In some instances this will mean that each province must pass implementing legislation.

Accordingly, only if the Federal Parliament has constitutional jurisdiction to enact laws dealing with air pollution that would control that problem on a national level by reasons of other provisions in the British North America Act does the Federal Government have the ability to implement any treaty it may make with the United States dealing with the subject of acid precipitation.

There are, however, two treaties signed by the British Government on behalf of Canada as part of the Empire which may have importance to this subject matter. The two treaties are The Migratory Birds Convention and The International Boundary Waters Treaty.

2.4.4.1 The International Boundary Waters Treaty

In 1909 the Boundary Waters Treaty was signed by the United States and by Britain on Canada's behalf. It created the International Joint Commission.

Under the Act implementing the treaty [originally passed as S.C.1911 c.28 and now found in R.S.C.1970c.I-20] a highly important provision is contained which reflects the unique status of treaties entered into by Great Britain on behalf of Canada having regard to Section 132 of the B.N.A. Act. Section 3 of the International Boundary Waters Treaty Act provides as follows:

> The laws of Canada and of the provinces are hereby amended and altered so as to permit, authorize and sanction the performance of the obligations undertaken by His Majesty in and under the Treaty; and so as to sanction, confer and impose the various rights, duties and disabilities intended by the Treaty to be conferred or imposed or to exist within Canada.

This provision gives effect to Article IV of the treaty in which the parties agree "that the boundary waters and water flowing across the boundary shall not be polluted on either side to the injury of health or property on the other side".

The implication of this clause in the treaty taken together with Section 132 of the B.N.A. Act is that the Parliament of Canada is entitled to make any laws necessary to ensure that no contaminants enter waters which form part of the boundary waters or which flow across the boundary waters to an extent that such contaminants in such waters could injure health or property in the United States. Since property is not restrictively defined it could arguably include not only real property but public property such as aquatic life, fish, vegetation, etc.

Section 3 of the International Boundary Waters Treaty Act, implementing the treaty, is an indication that the Federal Government recognized that it had the power to amend and alter provincial laws so as to permit it to fulfill its obligations under the treaty.

[In considering this further the definition of "boundary waters" must be taken into account. They are defined in the "preliminary article" as follows

> ...the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the International boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof but not including tributary waters which in their natural channels would flow into such lakes, rivers and waterways or waters flowing from such lakes, rivers and waterways, or the waters of rivers flowing across the boundary].

2.4.4.2 The Migratory Birds Convention and the Migratory Birds Convention Act

The Migratory Birds Convention was signed by Great Britain on behalf of Canada with United States on August 16th, 1916. The present Act implementing that treaty is the Migratory Birds Convention Act [R.S.C.,c.M-12].

In that Convention it is declared that the species which migrate "are of great value as a source of food or in destroying insects which are injurious to forest and forage plants on the public domain, as well as to agricultural crops" and that the countries concerned, "being desirous of... ensuring the preservation of such migratory birds as are either useful to man or are harmless, have resolved to adopt some uniform system of protection which shall effectively accomplish such object..."[preamble]

In Article VIII the parties agree "to take, or propose to their respective appropriate law-making bodies, the necessary measure for ensuring the execution of the present convention".

These provisions would seem to allow the Federal Government to make such laws and regulations as may be deemed expedient to protect migratory game etc. and section 132 of the B.N.A. Act would allow such Federal laws to deal with matters that otherwise might be within provincial jurisdiction under section 92 of the B.N.A. Act. The provisions of the Act and regulations and how they may be used are discussed in part 3.6 of this report.

Indeed, a noted Canadian legal scholar has commented that the Acts implementing these treaties may go beyond the scope of the treaty itself.

> Implementing legislation under section 132 need not come within the exact terms of the treaty; it is sufficient that it is reasonably necessary to perform the obligations under it. For example, in the Migratory Birds Convention, Great Britain and the United States agreed on a number of provisions for the conservation of migratory birds. In the implementing statute the Dominion prohibited, inter alia, possession, purchase and sale of dead migratory birds though this was not expressly provided for in the treaty. This legislation was held valid by the Manitoba Court of Appeal in R. v. Stuart [1928 1 D.L.R. 12] as being reasonably ancillary to the purpose of the treaty. It is clear, too, that such legislation may be amended at any time, so long as it falls within the ambit of the treaty. [R. v. Sikyea (1964) 43 D.L.R. 150 at 161]. It also is possible that the implementation of a minor amendment to an Empire treaty made by a treaty of the Canadian government might be held to fall within section 132, but a significant or severable modification would probably not be. Finally when the treaty ends, Dominion power also ends unless, of course, justification can be found under another head of federal power. [G.V. LaForest, "Water Law in Canada, 1973, p.65, emphasis added].

2.4.5 The Federal Taxing Power [s. 91(3)]

This Federal power to make laws relating to "the raising of money by any mode or system of taxation" has been described in the following terms:

> The power to tax can often be used to [indirectly] regulate those being taxed as well. This approach has been used by Parliament to encourage industry to reduce pollution by allowing accelerated depreciation of pollution control equipment [Income Tax Regulations 1100 (1) (t), S.O.R./54-682, 66-54, 71-257]. [See discussion in part 6.3.2.3].
>
> Regulations by taxing measures of any matter otherwise falling within federal jurisdiction is certainly permissible. [Reader's Digest Assoc. (Can.) Ltd. v. A.G. Can. (1963), 37 D.L.R. (2d) 239 (Que.) aff'd. (1967), 59 D.L.R. (2d) 54 (C.A.)]. The real question is to what extent federal taxation may be permitted to have a regulatory impact on matters normally within provincial jurisdiction. [For a discussion of the authorities on the point see G.V. LaForest, "The Allocation of Taxing Power under the Canadian Constitution", (Canadian Tax Papers No. 46, 1967), pp. 32-36]. It seems to be well established that Parliament cannot use the taxing power to invade a field reserved to the provinces. [A.G. Can. v. A.G. Ont. (Unemployment Insurance Case), [1937] A.C. 355]. Nonetheless, the mere fact that taxing measures have an impact other than the raising of revenues does not necessarily lead to the conclusion that they are ultra vires. Taxes inevitably have some regulatory impact. If discriminatory effects were grounds for avoiding federal taxes it would be virtually impossible for Parliament to exercise the taxing power.

> Federal taxing measures have been allowed to have a regulatory impact on matters normally within provincial jurisdiction where the measures were ancillary to the taxing scheme. [Proprietary Articles Trade Assoc. v. A.G. Can., [1931] A.C. 310]. In such cases the regulatory aspect must be reasonably necessary to the scheme and there are indications that the federal taxing power will be given fairly narrow regulatory scope where matters normally within provincial jurisdiction are concerned. For example, in R. v. Imperial Tobacco Co. the court held ultra vires a provision that allowed the federal authorities to recover from sellers of goods any sums collected from consumers under colour of, but in excess of, the legally required sales tax. [1938 Ex. C.R. 177]. It was reasoned that the recapture of excess tax charges was not shown to be absolutely necessary to, and therefore could not be held to be ancillary to, the sales tax.
>
> In most cases likely to be of practical concern to environmental law these limitations probably will not pose any real problem. The kinds of taxing measures most likely to be of interest from the point of view of environmental law are those that provide a rebate or other tax break for the development or installation of new pollution control equipment. It is inherent in the general tax laws that allowances are available for warranted business expenses and depreciation of equipment. If the taxing authorities decide that pollution control equipment depreciates faster than other forms of equipment, who is to argue with them? Courts are unlikely to look behind such provisions.
>
> It should be remembered that federal legislation will be sustained as an exercise of the taxing power only if its leading feature is revenue production. If regulation becomes more important than revenue production in the scheme of a statute it would probably be held to be the statute's leading feature. [Franson & Lucas, p. 262-263].

The above discussion indicates that there are clear options available to the Federal Government to provide fiscal incentives and disincentives to those taxpayers who should be persuaded to bring current or new sources of air emissions within desireable limits. (It should be noted that by reason of s. 125 of the B.N.A. Act provincially owned or controlled entities, such as Ontario Hydro, are immune from the Federal taxing power.)

2.4.6 Spending Powers of the Federal Government

The spending power of the Federal Government is, in a constitutional sense, virtually unrestrained. For that reason this power has received favourable comment from those concerned to see the use of new technology to prevent and abate pollution.

> Because environmental control depends so heavily on the development and installation of treatment facilities, one of the most important powers of the federal government may be the spending power. By making money available on the condition that it be used to develop new technologies, the federal government may well be able to do more to encourage better environmental management than it could by any regulatory scheme. Or it might conduct research on its own to demonstrate the need for certain

approaches to environmental management, even when these could only be implemented by the provinces. The spending power is so unconfined that one authority has observed that it is one of the principal factors shaping Canadian federalism.

The practice of making conditional grants has received a good deal of attention in the literature. However, the courts have not often had the opportunity of considering it. Those supporting an unlimited power to spend public funds argue that since the taxing power of the federal government is unlimited, its power to spend should also be regarded as unlimited. In one case the power to make conditional grants has been upheld where there was no element of compulsion and the recipient was free to refuse the grant. [Angers v. Min. of Nat. Revenue, [1957] Ex. C.R. 83]. Supreme Court dicta also appears to support the proposition that the Dominion is free to dispose of its funds as it sees fit. [Ref. re Employment and Social Insurance Act, [1936] S.C.R. 427, 457 (per Kerwin J.), aff'd. (sub nom. A.G. Ont.), [1937] A.C. 355]. [Franson & Lucas, p. 260-261].

2.5 Possible Co-Operation Between the Federal and Provincial Governments In Order to Achieve Constitutional Control Over Acid Rain

The courts have determined that neither level of government can, as a technique to overcome constitutional problems, delegate any of its powers to the other. Nonetheless, the techniques for co-operation between the two levels of government are tried and tested. The courts have held that either level of government may delegate powers and responsibilities normally within its jurisdiction to boards or agencies created by the other level of government, or to joint boards. The technique is widely used in the area of natural products marketing. There are also examples in the environmental field. The Canada Water Act provides for the establishment by Federal-Provincial agreements for joint boards to manage water resources. Fisheries regulation has long been an example between the two levels of the government. The Federal government has jurisdiction over all fisheries regulation, but the provincial governments generally have proprietory rights over fresh water fisheries. To avoid the problems of split jurisdiction in certain provinces the Federal government has delegated the power to enforce fresh water fishing regulation to provincial authorities and in turn promulgates any regulations recommended by provincial authorities to control fresh water fishing. [R.W. Parisien, "The Fisheries Act: Origins of Federal Delegation of Administrative Jurisdiction to the Provinces" (Environment Canada, 1972) at pgs. 33-36; Franson and Lucas, p. 277].

A major example of an attempt to achieve federal-provincial co-operation without delegation of legislative powers occurs in the "Canada-Ontario Accord

for the Protection & Enhancement of Environmental Quality" signed October 20, 1975. [See Appendix "A"].

Whether such agreements can result in real progress in achieving cross-country control over specific emission sources of concern, such as SO_2 and NO_X, is doubtful. That is so because an accord is really nothing more than an expression of intended co-operation which, like any non-enforceable agreement, including international treaties and agreements, can be unilaterally disregarded or terminated without sanction to the party determining to do so.

2.6 Proposed Amendments to the Canadian Constitution-The "Constitution Act 1981"

Under part VII of this Bill (currently before Parliament) which part is entitled "Amendment to the Constitution Act,1867", it is proposed that the B.N.A. Act 1867 (which would now be called the Constitution Act 1867), would be amended by adding thereto immediately after Section 92 thereof the following heading and section:

Non-Renewable Natural Resources, Forestry Resources and Electrical Energy

92A(1) in each province the Legislature may exclusively make laws in relation to
(a) exploration for non-renewable natural resources in the province;
(b) development, conservation and management of non-renewable natural resources and forestry resources in the province, including laws in relation to the rate of primary production therefrom; and
(c) development, conservation and management of sites and facilities in the province for the generation and production of electrical energy.

These proposed revisions to the Constitution and particularly the distribution of powers as between Ottawa and the provinces may have some implications for future control of sources of acid precipitation.

These revisions would allow the provinces to, inter alia, control the development, conservation and management of such non-renewable natural resources as coal, oil and other matters that may be processed and result in emissions of sulphates and nitrates. "Management" is not defined and in its ordinary meaning it is a broad term.

The word "management" is found again in subsection (c) with regard to providing

provincial governments with exclusive jurisdiction to manage "sites and facilities" for the "generation and production of electrical energy". The mangement of such facilities is of obvious importance with regard to controlling sources of acid precipitation.

Perhaps these provisions do nothing more than confirm specific powers that provinces now exercise under other provisions of Section 92 of the B.N.A. Act which would allow them to regulate sources of SO_2 and NO_X in the province. Even if these provisions were enacted they may not add further to provincial ability to withstand further controls by Ottawa over such sources. But on the other hand they may contribute to such a difficulty.

It is suggested that the whole area of constitutional powers, including the implications of these proposed amendments to the constitution and the practical means whereby the federal and provincial governments might delegate powers to control acid precipitation to an agency specifically established for that purpose, be given further scrutiny in another sub-study. (It must be commented that there is nothing in any of the proposed constitutional amendments that would purport to create rights to protect the environment or give any acknowledgment that the environment has some importance to Canadians as other matters have been recognized such as "freedom of association" or "freedom of peaceful assembly", etc. Insofar as the protection and conservation of the environment seems to be a matter of considerable importance to the Federal government, this is a constitutional oversight which should be addressed).

3.0 CANADIAN FEDERAL LEGISLATION

3.1 The (Canada) Clean Air Act [S.C.1970-71-72, c.47]

3.1.1 Description of the Main Features of the Act

This Act was passed by the Canadian Parliament June 23, 1971, the same year that the Federal Department of the Environment was established. The Act was officially proclaimed on November 1, 1971.

The Clean Air Act has the potential to control air pollution on a national level. It, together with the Environmental Contaminants Act and the Motor Vehicle Safety Act, are the three major Federal statutes which have relevance to the problem of acid precipitation.

The following discussion analyses the Act without reference to the amendments made in 1980 by Bill C-51, the impact of which will be discussed below.

3.1.1.1 National Air Quality Objectives

National air quality objectives are suggested limits for levels of pollution in the air. Only in specific and limited circumstances do such "objectives" have legal consequences.

Under Section 4 (1) the Minister of the Environment may formulate, with respect to any air contaminant, ambient air quality objectives reflecting three ranges of quality of the ambient air in relation to a contaminant and in relation to that contaminant in combination with any one or more air or both, represent (a) the tolerable, (b) the acceptable, and (c) the desirable range of concentrations of that contaminant, if any, either alone or in combination with those one or more other air contaminants.

Assuming the Minister does formulate such air quality objectives, before they become in fact "objectives" within the definition of the Act, the Minister must then recommend to the Governor in Council (the Federal cabinet) the actual listing (or legally speaking the "prescription") of his recommended objectives as "national air quality objectives". [Section 4 (2)]

The maximum "acceptable" level is intended to provide adequate protection against effects on soil, water, vegetation, materials, animals, visibility, personal comfort and well-being. It represents the realistic objectives today for all parts of Canada. When this level is exceeded, control action by a regulatory agency is indicated, according to Environment Canada [The Clean Air Act Annual Report, 1972-1973, p. 19]

The maximum "desirable" level defines the long-term goal for air quality and provides the basis for an anti-degradation policy for the unpolluted parts of the country and for the continuing development of control technology. [Ibid]

Maximum "tolerable" levels are intended to indicate the onset of an "imminent danger" requiring immediate abatement action. [Ibid]

The prescribed objectives were established by means of a "sub-committee of experts" which was established in 1970 to recommend to the Federal-Provincial Committee on Air Pollution the appropriate levels. According to Environment Canada, recommendations of the sub-committee have permitted air quality objectives to be prescribed at the "desirable" and "acceptable" levels. A separate sub-committee was established to develop "tolerable" level air quality objectives. [Environment Canada, The Clean Air Act Annual Report, 1978-79, p.41-42]

The Clean Air Act national ambient air quality objectives for SO_2 and NO_X are set out in Table I below, which compares these objectives to representative Canadian provincial standards and to US national ambient air quality standards, both primary and secondary.

TABLE I
AMBIENT STANDARDS AND OBJECTIVES IN CANADA AND THE UNITED STATES

		Permissible Pollutant Concentration (micrograms per cubic meter)							
		Canadian Ambient Objectives			Representative Provincial Standards			U.S. Ambient Standards	
Pollutant	Averaging Time	Desirable	Acceptable	Tolerable	Ontario**	Alberta	Saskatchewan	Primary	Secondary
SO_2	Annual	30	60		55	30	30	80	60
	24 hour	150	300	800	275	150	150	365	260
	3 hour								1300
	1 hour	450	900		690	450	450		
NO_2	Annual	60	100			60	100	100	100
	24 hour		200		200	200	200		
	1 hour		400	1000	400	400	400		

[Wetstone, "Air Pollution Control Laws in North America and the Problem of Acid Rain and Snow", 10 ELR 50001, at 50013] **These figures are the desirable"

**(cont.)Ontario concentrations . The legal concentration at the property boundary of a source is, for SO_2, 830 ug/m^3 and for NO_X, 500 ug/m^3 measured as a ½ hr. coverage.]

[The national ambient air quality objectives under the Canada Clean Air Act are found in the following regulations: Ambient Air Quality Objectives Order, No. 1, c. 403, Consolidated Statutes and Regulations, p. 2869; Ambient Air Quality Objectives Order No. 2, c. 404, Consolidated Statutes and Regulations, p.2873; Ambient Air Quality Objectives, No. 3, SOR/78-74]

The "acceptable" range in the Canada Clean Air Act objectives is the equivalent of the United States' Primary Standard and indicates the level at which there is a danger to public health. The "desirable" range is comparable to the secondary standard in the US and is intended to reflect the level at which "welfare" effects vegetation, soil, water or the general public conform may occur.

As in the United States, sulphates and nitrates are not addressed through national air quality objectives.

As indicated above, by themselves, the national ambient air quality objectives have no legal significance. They are only goals and can have no legal effect unless and until they are incorporated into provincial legislation or municipal by-laws (in so far as municipalities in some provinces have the legal ability to set limits on specific sources of air pollution on the basis that those specific sources would violate an ambient standard).

3.1.1.2 National Emission Guidelines

Pursuant to Section 8 of The Clean Air Act the Federal cabinet may publish national emission guidelines indicating quantities and concentrations beyond which any air contaminant should not be emitted into the ambient air from sources of any class, whether stationary or otherwise.

Such guidelines, as indicated, are unenforceable suggestions. Each guideline consists of a document specifying emission limits for new sources and an industry study report in which available emission control strategies for existing sources are assessed. The technical review and assessment of control strategies is done by advisory committees consisting of federal and provincial government representatives and advisors from industry, and have as a criterion the "best practicable technology" available to the industry. [Environment Canada, The Clean Air Act Annual Report, 1978-79, p. 26; Estrin and Swaigen, Environment on Trial - A Handbook of Ontario Environmental Law (Revised Edition 1978) p. 92]

The potential victims of pollution and the citizens groups who have their interests in mind, are not represented on such task forces. According to the Canadian Environmental Law Association:

> While government recognizes that guidelines may not be sufficient to produce desirable air quality in some locations, it will not set any more stringent levels than industry is prepared to live with. Although it is clear in some cases that the guidelines will result in undesirable air quality, the federal government considers any additional requirements to be the responsibility of provincial and municipal control agencies. [Environment on Trial, p. 92]

The limits specified in the guidelines may become enforcible if, and only if, they are accepted and adopted by other regulatory agencies either provinces or municipalities in their legal requirements.

Guidelines have been published for the cement industry, the asphalt paving industry, the coke oven industry, arctic mining operations and for packaged incinerators.

Unfortunately these guidelines do not include sulphide-ore smelters or coal-fired power plants, the source categories most relevant to the acid precipitation problem in Canada.

However, even if such guidelines are developed for these sources, they would remain entirely as guidelines unless and until adopted by provincial governments through their provincial laws. They would remain as guidelines intended to promote uniform air pollution regulations across Canada.

3.1.1.3 National Emission Standards

Unlike the objectives and guidelines discussed above, national emission standards are legally enforcible. Assuming such standards are made and that they are contravened, the penalty is a fine of up to $200,000.00. [s.33(1)]

Such national emission standards may be made only in limited circumstances.

Section 7 (1) of The Clean Air Act provides that such standards may be made by the Federal Cabinet through regulations only when the emission into the ambient air of an air contaminant from a particular class or classes of stationary sources would (a) constitute a significant danger to the health of persons or (b) be likely to result in the violation of a term or terms of any national obligation entered into by the Government of Canada relating to the control or abatement of air pollution in regions adjacent to any international boundary or throughout the world.

Prior public notice through publication in the Canada Gazette must be given of any proposed national emission standard and no such standard may come into effect until after the expiry of sixty days following such publication, except where there is an "emergent" situation involving an extremely hazardous air contaminant or "for any other reasons cited by the Governor in Council" he considers the immediate prescription of a national emission standard to be essential to meet a national emergency. In these latter cases no prior public notice is required and such national emission standards may be prescribed within five days of the Governor in Council making an order

that such cause has arisen; but any such national emission standard made in this way is subject to negative resolution of parliament. [Section 7 (2) and (3)]

Several standards have been set pursuant to the provisions providing for protection of health; all have concerned toxic emissions demonstrated to have serious public health consequences, such as mercury, vinyl chloride, and lead. None is directly relevant to acid precipitation.

Section 9 (1) makes it an offence for any operator of any stationary source of a class in respect of which a national emission standard has been prescribed pursuant to Section 7 to operate such stationary source in a manner that results in an emission into the ambient air in contravention of the national emission standard.

Section 33 (1) provides the maximum penalty for violation of such National Emission Standard to be punishment by way of summary conviction and upon conviction to a fine not exceeding $200,000.00 for each offence.

3.1.1.4 Specific Emission Standards

The Clean Air Act permits the Federal Government to impose "Specific Emission Standards" on works, undertakings and businesses within the legislative authority of the Parliament of Canada. [Section 10 (1) and Section 11 (1)]. However, no specific emission standards have ever been made.

In preparing specific emission standards for recommendation to the Federal Cabinet the Minister must take into account the total quantity of the air contaminants emitted into the ambient air to which the standard relates, both alone and in combination with any one or more other air contaminants, from other sources of air contaminant emissions in the geographical areas in which the federal works, undertakings and businesses in respect of which the specific emission standards are being prepared, are situated and, in the case of new works, the best available technology for control of air pollution from like works, undertakings or businesses. [Section 11 (2)]

Another section allows the Minister to recommend to the Federal cabinet, notwithstanding that national ambient air quality objectives have not been prescribed by the Governor in Council in relation to an air contaminant, with respect to any federal work, undertaking or business in relation to which plans and specifications are submitted to an inspector pursuant to sub-section (1) of section 15 or with respect to each federal work, undertaking or business within any geographical area of Canada defined by the Cabinet, specific emission standards in relation to that air contaminant, either alone or in combination with any one or more other air contaminants that, in the case of a work, undertaking or business in relation to which plans and specifications are submitted to an inspector, are based on the best available technology for control of air pollution from like works, undertakings or businesses and that, in the case of any federal work, undertaking or business, are based on such factors, including the cost of complying with the standards, as the Minister considers appropriate. [Section 12]

Following such a recommendation the Federal cabinet may prescribe as a specific emission standard any such standard recommended by the Minister. [Section 13 (1)]

No specific emission standard comes into effect until the expiry of sixty days following publication of the proposed emission standard in the Canada Gazette. However, where, by reason of atmospheric conditions in any part of Canada or for any other reasons cited by the Federal cabinet, the Federal cabinet considers the immediate prescription of such emission standards with respect to each federal work, undertaking or business within a geographical area of Canada defined by the Cabinet to be essential to meet an emergency in that area, such a specific emission standard with regard to federal works, undertakings or businesses may be made within five days after the Cabinet makes such an order; but any such specific emission standards are subject to negative resolution of Parliament. [Section 13 (3) and (4)]

Section 9 (1) (b) makes it an offence for the operator of a federal work, undertaking or business in respect of which a specific emission standard has been prescribed pursuant to Section 13 on the basis of a recommendation by the Minister pursuant to Section 12, to operate such federal work, undertaking or business in a manner that results in contravention of a Specific Emission Standard.

Further Section 9 (2) makes it an offence for any operator of a work, undertaking or business in respect of which a specific emission standard has been prescribed pursuant to Section 13 on the basis of a recommendation by the Minister pursuant to Section 11, to operate such work, undertaking or business in a manner that results in an emission into the ambient air in contravention of that emission standard in circumstances where the concentration of the air contaminant or combination of air contaminants to which the standard relates in the ambient air in the geographical area in which the work, undertaking or business is situated exceeds a maximum tolerable limit with respect to that air contaminant or combination of air contaminants.

Section 33 (1) provides that any person who violates such specific emission standards in such circumstances is liable on summary conviction to a fine not exceeding $200,000.00 for each offence.

3.1.1.5 Provincial Application of Federal Specific Emission Standards

Sections 19 to 21 contemplate the preparation of specific emission standards to be applicable to works in a province under provincial jurisdiction when and if any particular province has entered into an agreement with the Federal Minister of the Environment for the purpose of facilitating the formulation,

co-ordination and implementation of policies and programs designed for the control and abatement of air pollution. [Section 19 and 20]
Assuming there is such an agreement between a province and the Federal Government which does adopt for application within the province national ambient air quality objectives, then the Federal Minister may recommend to the Federal cabinet with respect to each work, undertaking or business in that province and within a particular industry defined by him or within any geographical area in that province defined by him and either within a particular industry or industries defined by him or generally, specific emission standards that in his opinion represent the maximum quantity or concentration of the air contaminant in relation to which the national ambient air quality objectives have been prescribed that may be emitted into the ambient air as a result of the operation of the work, undertaking or business without creating a significant risk that the concentration of that air contaminant in the ambient air in the geographical area in which the work, undertaking or business is situated, either alone or in combination with one or more other air contaminants referred to in the objectives, will exceed the maximum acceptable limit with respect to that air contaminant or combination of air contaminants. [Section 20 (1)]

In preparing specific emission standards that would apply in the provinces the Minister, in preparing his recommendation to the Cabinet, must take into account the rate of emission and the total quantity emitted into the ambient air of the air contaminent to which the standard relates ... from other sources of air contaminent emission in the geographical areas in which the works, undertakings and businesses in respect of which the specific emission standards are being prepared, are situated; and in the case of works constructed after the national ambient air quality objectives in relation to the air contaminant have been adopted for application within the province in which the works are situated, the best available technology for control of air pollution from like works, and shall consult with the government of the province in which the works, undertakings and businesses in respect of which the specific emission standards are being prepared or situated. [Section 20 (2), emphasis added]

This section requires the Minister to take into account, among other things, "The best available technology for control of air pollution from like works " in formulating specific emission standards that would apply to sources constructed

after applicable national ambient air quality objections are adopted for application within a province. This can be compared with section 111(a) of the U.S. Clean Air Act which applies to "New Sources" [see parts 5.1.2 and 6.2.1] and which requires that standards formulated under this section reflect "the degree of emission reduction achievable through the application of the best system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated for that category of sources." [S.111(a)(1)(C)].

This provision has been interpreted by E.P.A. as requiring them to formulate standards based on best practical technology. In Canada, the Minister must take "best available technology" into account if he formulates standards however the standards need not reflect this standard and can be based on any technological standard. A measure of the actual effectiveness of these two sections can be obtained from the fact that no standards have been formulated under this section of the Canadian Act whereas American standards are in place for such new stationery sources as coal fired power plants. [see parts 5.1.2 and 6.2.1]

Assuming the above preconditions are satisfied the Federal cabinet may prescribe as a specific emission standard any such standard recommended by the Minister pursuant to Section 20. Again, no such specific emission standard comes into effect until after the expiry of sixty days following the publication of the proposal in the Canada Gazette except in the case of a local emergency whereupon the specific emission standards may come into effect within five days after the making of an Order to that effect but any such specific emission standard is subject to negative resolution of Parliament. [Section 21(2) and (3)]

Section 9 (2) makes it an offence for the operator of a work, undertaking or business in respect of which a specific emission standard has been prescribed pursuant to Section 21 to operate such work, undertaking or business in a manner that results in an emission into the ambient air in contravention of that emission standard in circumstances where the concentration of the air contaminant or combination of air contaminants to which the standard relates in the ambient air in the geographical area in which the work, undertaking or business is situated exceeds the maximum tolerable limit with respect to that air contaminant or combination of air contaminants. Again, Section 33 (1) provides that any person who does contravene such a standard is liable on summary conviction to a fine not exceeding $200,000.00 for each offence.

3.1.1.6 Regulation of Fuels

Under Section 22 of The Clean Air Act it is made an offence for any person to produce for use or sale in Canada or import into Canada any fuel that contains any element or additive in a concentration that exceeds the concentration prescribed with respect to that element or additive in relation to such fuel for the purposes of this section.

Section 23 allows the Federal cabinet to make regulations prescribing for the purposes of Section 22, with respect to any fuel, the maximum concentration therein of any element thereof or of any additive thereto that, in the opinion of the Cabinet if present in a greater concentration than that prescribed, "would result in a significant contribution to air pollution on the combustion of the fuel under ordinary circumstances" and further requiring any person who produces in Canada or imports into Canada any fuel to maintain books and records, to submit samples of such fuel and to submit information regarding the chemical composition of fuel produced or imported etc.

Section 24 gives power to the Federal Government to seize any fuel that it reasonably believes has been produced in Canada or imported into Canada in contravention of Section 22. Where a person is convicted of an offence under this Act and fuel has been seized by means of or in relation to which the offence was committed is then being detained, such fuel is subject to being forfeited to the Federal Government. [Section 26]

In addition, any person who violates the fuel requirements of the Act is guilty of an offence and liable on summary conviction to a fine not exceeding $5,000.00 for each offence.

To date regulations have been made with regard to the lead content of gasoline; however, no regulations have been made with regard to sulphur content of other fuels, particularly those that might be used in coal-fired or oil-powered power plants.

3.1.2 Bill C-51 (An Act To Amend The Clean Air Act - Passed by the House of Commons December 16, 1980)

These recent amendments to The Clean Air Act are basically intended to allow the Federal Government to order specific sources of air pollution under certain circumstances to meet specific emission standards in relation to a specific air contaminant or combinations of air contaminants.

The provisions of Bill C-51 add Section 21.1 to the Act. That new section provides that the Minister of the Environment shall, where he has reason to believe that an air contaminant emitted into the ambient air by any source, or any sources of a particular class or classes in Canada,"creates or contributes to the creation of air pollution that may reasonably be expected to constitute a significant danger to the health, safety or welfare of persons in a country other than Canada", recommend to the Governor in Council (the Cabinet) with respect to that source or each of those sources that specific emission standards in relation to that air contaminant, either alone or in combination with any one or more other air contaminants, as he may consider appropriate for the elimination or significant reduction of that danger, be made. [Section 21.1 (1)]

Where the Minister proposes to make such a recommendation for a specific emission standard he must give notice of his proposal in the Canada Gazette and any persons in Canada who would be affected by the Emission Standard "shall be afforded a reasonable opportunity to make representations to the Minister in respect of the subject matter of the notice. Further, a reasonable opportunity shall be afforded for the making of representations on the part of the country other than Canada in regard to the proposals." [Section 21.1 (2)]

However, even after such notice and an opportunity for representations to be made has been given nothing authorizes the Minister to make a recommendation to the Cabinet that there be a specific emission standard made in regard to any source other than a federal work, undertaking or business situated in a province unless and until a notice of the government of the province has an opportunity to study any representations made by the business or foreign government; and the Minister has endeavoured to determine by consultation with the provincial government whether, in his opinion, the significant danger referred to in Section 21.1 (1) can be eliminated or reduced to an extent he considers adequate by means of any step that such government may cause to be taken pursuant to the laws of the province; and, where the Minister determines that that significant danger can in his opinion be eliminated or so reduced he endeavours to procure that elimination or reduction. [Section 21.1 (3)]

Following the process outlined above the Cabinet may prescribe as a specific emission standard any such standard recommended by the Minister pursuant to Section 21.1 if the Cabinet is satisfied that the country other

than Canada has made provision by law for essentially the same kind of benefits in favour of Canada with respect to abatement or control of air pollution as is provided in favour of that country pursuant to The Clean Air Act. [Section 21.2 (1)]

Nevertheless if the Minister had earlier determined that the provincial government could through use of its laws eliminate or reduce the danger in question the Governor in Council is forbidden from establishing a specific emission standard unless the Cabinet is satisfied that a reasonable endeavour on the part of the Minister of the Environment to have that province achieve the elimination or reduction of the danger has been unsuccessful. [Section 21.2 (2)]

Assuming a specific emission standard is prescribed pursuant to Section 21.2, then a revised Section 9 (1) (c) makes it an offence subject to a maximum $200,000.00 fine for any operator of any source in respect of which a specific emission standard has been prescribed pursuant to Section 21.2 to operate that stationary source, federal work, undertaking or business or source, as the case may be in a manner that results in an emission into the ambient air in contravention of that specific emission standard.

Further, a new Section 16 (1) gives authority to a federal inspector to make an Order, in regard only however to a federal work, undertaking or business in respect of which a specific emission standard has been prescribed pursuant to Section 13 or 21.2 and which results in emissions into the ambient air of an air contaminant in contravention of that emission standard, to direct the operator of that federal work, undertaking or business to take such action as is necessary to reduce the emission of the air contaminant into the ambient air to a level that will not contravene such emission standard. This provision does not appear to apply to other than federal works, undertakings or businesses.

3.1.3 Utility of The Canada Clean Air Act for Controlling and Preventing Sources of Acid Precipitation

3.1.3.1 National Ambient Air Quality Objectives

As indicated, these objectives in themselves do not constitute any legal limitation on air pollution sources. However, they may have significance in so far as Section 20 of the Act allows the Federal cabinet to make

specific emission standards in regard to industries in a particular province where agreement has been reached between the federal government and the province to allow for the application of The Clean Air Act in that province. In that case, where national ambient air quality objectives have been adopted by the Federal cabinet, they may be used, as described above, as a basis for the Federal cabinet to make specific emission standards applicable to such a work within the province.

However there are significant problems with the concept of NAAQ objectives.

First, before they can exist the Cabinet must prescribe them; before the Cabinet can prescribe them they must be recommended by the Minister; there is no duty on the Minister to formulate such objectives. [see Section 4 (1) which provides that the "Minister may formulate ...". (emphasis added)]

Assuming the Minister does move to formulate such objectives he can only formulate these as regards an "air contaminant". "Air contaminant is defined by S.2(1)(a) as "a solid, liquid, gas or odour or a combination of any of them that, if emitted into the ambient air, would create or contribute to the creation of air pollution. Therefore in order for some substance or emission to be an "air contaminant" it must first be "emitted" into the ambient air.

Sulphates and nitrates are not per se emitted into ambient air except in insignificant quantities compared to the amounts that are created through the transformation of SO_2 and NO_x in ambient air into sulphides and nitrates. Accordingly, given the present wording of The Clean Air Act it is legally difficult if not impossible to establish NAAQ objectives for sulphates and nitrates.

The result is that no specific emission standards can be prescribed for application in a province pursuant to Section 20 of The Clean Air Act for sulphates and nitrates as no NAAQ objectives can in themselves be formulated.

While Section 31 of The Clean Air Act allows the Cabinet by regulation, to prescribe substances, quantities and concentrations of substances and treatments, processes and changes of air that shall be deemed, pursuant to Section 2 (2) to be an "air contaminant" nevertheless the definition of "air contaminant" remains as found in Section 2 (1) (a). That definition necessitates that for a solid, liquid, gas or odour or combination of any of them to be an "air contaminant" it must be proved to be "emitted" into the ambient air. This definition in Section 2 (1) (a) would seem to prevent the Cabinet from using Section 31 of The Clean Air Act to make regulations prescribing sulphates and nitrates as an "air contaminant". It would appear

that a legislative change by Parliament seems necessary in order to clarify this otherwise major difficulty.

3.1.3.2 National Emission Guidelines

The concept of national emission guidelines as set out in Section 8 of the Act is a concept only. It is completely without meaning as a vehicle for providing any further controls over sources of acid rain. However the fact that such guidelines are made could actually be detrimental to persons and governments seeking to stop present sources or new sources of acid rain from continuing. That is because these nationally recommended emission guidelines have been set without public hearing for consultation and only upon the advice from industry as to what industry could currently accept. Nevertheless, such guidelines having been published under The Clean Air Act, they may be resorted to by particular industries when government or citizens attempt to achieve abatement or sue such sources for effects of emissions within such levels. In so far as these guidelines would allow more emissions than would the application of best practicable technology these nationally published guidelines would seem to be of comfort to industries and other emitters. These guidelines accordingly ought to be examined to ascertain whether or not they ought not to be revised to demand the application of best practicable technology. Alternatively, a statement ought to be made by Environment Canada that the publication of such guidelines are not meant to indicate quantities and concentrations beyond which abatement is not to be achieved.

3.1.3.3 National Emission Standards

These standards, made pursuant to Section 7 of The Clean Air Act, can apply only to stationary sources.

There is no duty for such emission standards to be made. There is a complete discretion in the Cabinet as to whether or not they will be made.

In order that the Cabinet can consider making them it must be established that (a) an "air contaminant" is (b) "emitted" (c) into the "ambient air" (d) in concentrations and quantities that "would" [not may or is likely] (i) constitute a "significant" danger to health of persons or (ii) "be likely" to result in the violation of terms of an international obligation etc.

Assuming all these preconditions are satisfied and the Cabinet in its discretion decides to establish such standards then such standards may specify maximum quantities and/or concentrations of such "air contaminants" that may be emitted into the ambient air.

Since sulphates and nitrates are not "emitted" into the ambient air it seems impossible to establish national emission standards for these materials; they are not "air contaminants" within the definition of The Clean Air Act.

Even assuming that one could demonstrate sulphates and nitrates were emitted into the ambient air, then one would have to demonstrate, in order to set National Emission Standards, that the concentration and quantities emitted would definitely, beyond a reasonable doubt, result in "significant danger" to health or "be likely to result in violation of terms of obligations relating to control or abatement of "air pollution"".

Based on present evidence it seems impossible to establish that the emission of sulphates and nitrates at one location can be proved to be a significant danger to health of persons. As to the other possible situation where national emission standards may be invoked, i.e. when there are emissions "likely to result in violations of terms of obligations relating to the control of "air pollution"", again for the reason indicated above, that "air pollution" as defined in The Clean Air Act specifies a condition of the ambient air that "endangers" the health, safety or welfare of persons or causes other problems for animal life or property and that the presence per se of sulphates and nitrates in the air does not, in themselves, "endanger" any of the matters, the wording of The Act seems to present difficulties for using the concept of national emission standards to prevent acid precipitation.

To elaborate, the presence of sulphates and nitrates in ambient air does not endanger anything. It is only if and when deposition of these sulphates and nitrates takes place that endangerment occurs, if at all. Thus there is a severe definitional weakness in The Act which if accepted by a court, would lead to acquittal of a source if charged with breaching such a standard, even assuming the other difficulties mentioned above are overcome.

3.1.3.4 Specific Emission Standards Under Section 11

These apply only to federal works, undertakings or businesses. Because there are few, if any, federal works, undertakings or businesses that contribute significantly to acid precipitation this section seems to be without much utility for remedying problems.

Moreover the use of Section 11 is a discretionary one. Although Section 11 (1) (a) states that the Minister "shall from time to time" recommend to the Governor in Council specific emission standards, this does not apply unless an inspector, in his complete discretion, and in relation to new construction, alteration or extention or works, asks for submissions of plans and specifications needed to allow the Minister to formulate his recommendations.

Thus, a seeming duty is really discretionary in practice.

Section 11 (b) is worded more clearly to indicate that the Minister again has a discretion as to whether or not to recommend to Cabinet specific emission standards for other federal works, undertakings or businesses within any geographical area.

Again, nothing compels the Cabinet to act upon a recommendation of the Minister either under Section 11 (1) (a) or (b).

> a member of a class of substances specified in the schedule into the environment in any geographical area prescribed in respect of that substance or class of substances or, if no geographical area so prescribed, in Canada (a) in a quantity or concentration that exceeds the maximum quantity or concentration prescribed in respect of that substance or class of substances for the purpose of this paragraph; or (b) under conditions prescribed in respect of such substance or class of substances for the purpose of this paragraph.

Section 1 (2) provides that this Act is binding upon not only the Federal but also the Provincial Crown and any of their agents. However, agencies such as Ontario Hydro would be required to comply with this Act only if power plants in general were held to come within the definition of a "commercial, manufacturing or processing actifity". This is considered unlikely.

Section 2 (1) defines the term "release" to include "spilling, leaking, pumping, spraying, pouring, emitting, emptying, throwing or dumping". That section also defines the term "substance" as meaning "any distinguishable kind of inanimate matter (a) capable of becoming dispersed in the environment, or (b) capable of becoming transformed in the environment into a matter described in paragraph (a).

The Governor in Council is empowered to make regulations:

> Prescribing for the purpose of paragraph 8 (1) (a) the maximum quantity or concentration of a substance specified in the schedule or of any substance that is a member of a class of substances specified in the schedule that may be released into the environment in the course of any commercial, manufacturing or processing activity. [Section 18 (a)]

Regulations may also be made pursuant to Section 18 (d) setting out any geographical area in respect of which such maximum standards would apply.

Any person who contravenes this section is liable on summary conviction to a fine up to $100,000.00 or on conviction upon indictment, to imprisonment for two years. [Section 8 (5)] Further, where a corporation commits an offence under Section 8, any officer, director or agent of the corporation who directed, authorized, assented to acquiesced in or participated in the commission of the event is a party to the offence and liable on conviction to the same punishment. [Section 14]

Under this Act, the Federal Government could establish a maximum quantity for concentration of SO_2 or NO_x that could legally be emitted by any point source of these contaminants. Any such standards could be made to apply to the whole of Canada or to any geographic region of Canada. In fact, different standards for point sources could be established for different geographical regions based on the number of point sources within that region and the susceptibility of the areas that are determined to be receiving deposition of acidic materials originating from the region being controlled.

According to the Second Report of the United States - Canada Research Consultation Group approximately one-half the acid deposited in Eastern Canada originates from Canadian sources and "...considerable progress has been made in modelling sulphur transport, and several model estimates are now available. There is reasonable agreement amongst the models and with measured values of depositions." [p.1] This could well provide sufficient basis for distinguishing which particular sources within Canada are causing problems for sensitive areas within Canada. If these models are determined to be not sufficiently precise for this purpose then the Federal Government still has the alternative of imposing a uniform standard for all regions of the country.

If such a standard is developed to limit total emissions of SO_2 or NO_x for any point source, the total atmospheric loading of these precursors of acid precipitation could be substantially reduced.

The Act sets out the process by which the Governor in Council is entitled to add a substance or class of substances to the schedule referred to in Section 8. Section 7 (1) provides that:

> Where the Governor in Council, on the recommendation of the Minister and the Minister of National Health and Welfare, is satisfied that a substance or class of substances is entering or will enter the environment in a quantity or concentration or under conditions that he is satisfied constitute or will constitute a significant danger in Canada or any geographical area thereof to human health or the environment, he may, by Order, add to the schedule the substance or class of substances.

This power to make such an Order can only be exercised following receipt by the Minister and by the Minister of National Health and Welfare of any report of an Environmental Contaminants Board of Review established as a result of publication of a proposed order as required under paragraph 5(2)(c) or (d) [Section 7(2)] or where the Governor in Council is satisfied that the situation requires immediate action to prevent significant danger to human health or the environment, in which case he may make such an order without regard to these other requirements. Normally, the procedure leading up to the inclusion of a contaminant in the schedule is as follows:

1) The Minister of the Environment and the Minister of National Health and Welfare, no later than 15 days after they are satisfied that a substance or class of substances is entering or will enter the environment in such a quantity or concentration or in such a manner that it will constitute a significant danger to human health or the environment, shall offer to consult with the governments of any provinces that indicate that their provinces are likely to be materially affected by any recommendation that these Ministers might make to the Governor in Council and also consult with any departments or agencies of the Government of Canada that may be appropriate. The purpose of these consultations is to determine whether or not the danger as it is perceived by them will be eliminated by any action taken or proposed to be taken by any of these other agencies or governments pursuant to any other law. [Section 5 (1)]

2) If such an offer for consultation has not been accepted within thirty days or where such consultations have taken place and the two Ministers are satisfied that the danger referred to above will not be eliminated by any other action by one of these other agencies or governments and where they propose to recommend to the Governor in Council that an Order be made adding the substance or class of substances to the schedule then any such proposed Order and regulations must be published in the Canada Gazette. [s. 5(2)(c)]

3) Within sixty days of this publication in the Canada Gazette any person having interest therein may file a notice of objection with the Minister.

4) Upon the timely filing of such a notice of objection the Ministers must establish an Environmental Contaminants Board of Review to inquire into the nature and extent of the danger posed by the substance and to hold a hearing at which interested persons are given a reasonable opportunity to present evidence and make representations regarding the proposed Order. [Section 6 (1) and (2)]

5) The Board upon concluding the inquiry submits a report to the Ministers and makes recommendations with respect to the proposed Order.

6) Following the receipt of this report by the Ministers, the Governor in Council is entitled to exercise the power to make an Order adding a substance to the schedule.

Notwithstanding these normal requirements for consultations and publication of the proposed Order and a hearing by the Board of Review, the Governor in Council is entitled to make an Order amending the schedule in emergency situations as outlined above. [Section 7 (3)]

Once a substance has been placed in the schedule by such an Order the Governor in Council may then make regulations regarding that substance specifying the maximum quantity or concentration of the substance that may be released into the environment in the course of any commercial, manufacturing or processing activity.

Unfortunately, there is nothing in this Act that gives authority to the Minister to require that any sources of a contaminant identified by the schedule monitor their emissions or report to the Minister the results of such monitoring. Consequently, any monitoring necessary to enforce compliance with the Act is left up to the Department of the Environment and increases the demands upon manpower and financial resources. The Act does provide that the Minister may designate inspectors for the purposes of the Act and provides for limited powers of search and seizure.

These powers, however, require the Department to expend resources to obtain the information, are only exercisable when the inspector reasonably believes the Act has been contravened and assume the existence of records worth seizing. Since it is not an offence to have no records of emissions there may be no documents from which commission of the offence can be inferred.

Finally, there is no power under this Act to impose the installation and use of specific control technology on sources of scheduled contaminants. The absence of this power, together with the lack of a requirement to accurately monitor and report data make the enforcement of any standards under this Act dependent upon either enormous expenditures of resources by Environment Canada or else a degree of co-operation and goodwill on the part of sources of these contaminants which cannot reasonably be anticipated.

In summary, this Act provides an opportunity for the Canadian Federal Government that the United States Federal Government does not have. Nowhere in the American Clean Air Act is there jurisdiction for the Environmental Protection Agency to set standards which would limit the total emissions from any particular sources or any particular regions. The Environmental Contaminants Act clearly allows the Federal Government in Canada to set such standards for any "commercial, manufacturing or processing" sources of a contaminant included by Order in the schedule and by exercising the powers to make regulations regarding geographical applicability of such standards there is the opportunity for ensuring that any such regulation only applies where it is necessarily needed.

The Act does, however, suffer from several weaknesses which combine to make effective monitoring and enforcement virtually impossible. Amendments to the Act to rectify these difficulties would be necessary before this Act could be relied upon to control the acid precipitation problems resulting from Canadian emissions and depositions.

3.3 The Motor Vehicle Safety Act [s.c. 1969-70, c.30]

Emissions from mobile sources in Canada are controlled through the Motor Vehicle Safety Act and regulations made pursuant to it. The main thrust of this legislation is to establish national safety standards for the manufacturing and distributing of motor vehicles. Control of exhaust emissions is a relatively minor aspect of this Act. In fact, clear authority to make regulations restricting vehicle emissions is not given in the Act and must be implied from more general sections.

Section 2 (1) defines "safety standards" as meaning "standards regulating the design, construction or functioning of motor vehicles and their components for the purpose of protecting persons against personal injury, impairment of health or death". Any regulation made under this Act is therefore ultimately limited by this purpose and there would appear to be no jurisdiction for standards which go beyond what is necessary to protect persons against personal injury, impairment of health or death.

The reasons why the U.S. standards are so much stricter than the Canadian can be seen from an analysis of the relevant provisions of the American Clean Air Act. Section 202 (a) (1) requires the Administrator of the EPA to prescribe standards for any emissions from new vehicles "which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare". This not only provides a much broader authority for emission standards than does the Canadian legislation, but imposes a duty to make standards based on environmental protection criteria even where no adverse health effects can be determined.

Section 202 (a) (3) (A) (i) goes on to provide that the Administrator is required to prescribe regulations setting standards for carbon monoxide, hydrocarbons and nitrogen oxides from heavy duty vehicles which:

> reflect the greatest degree of emission reduction achievable through the application of technology which the Administrator determines will be available for the model year to which such standards apply, giving appropriate consideration to the cost of applying such technology within the period of time available to manufacturers and to noise, energy and safety factors associated with the application of such technology.

With respect to light duty vehicles, Section 202 (b) (1) (A) and (B) set out maximum standards for carbon monoxide, hydrocarbons and nitrogen oxides which cannot be exceeded by any regulations made under the Act. The maximum standard set out for nitrogen oxides from light duty vehicles is 2.0 grams per vehicle mile for vehicles manufactured between 1977 and 1980 and 1.0 grams per mile for light duty vehicles manufactured from 1981 and following.

Further limitations on the effectiveness of the Canadian Motor Vehicle Safety Act for dealing with vehicle emissions arise from the fact that vehicles only need to comply with the emission standards if they are being exported from Canada, imported to Canada or sent, conveyed or delivered between provinces. Therefore, a vehicle which is manufactured within one province for use within that province does not need to meet any standards set under this Act. These limitations in the applicability of the Act reflect the constitutional jurisdiction upon which this legislation is based: the federal power to control and regulate interprovincial trade and commerce and the power to control and regulate exports and imports.

Because of the large number of individual mobile sources involved, monitoring and enforcement of these emission standards is much more difficult than is monitoring and enforcement of standards for stationary sources. Once in use, vehicles which were able to meet emission standards at the time of manufacture are often found to deteriorate through improper maintenance. Such deterioration results in increased emissions far above the regulated limits. In 1978-79,for example, Environment Canada conducted a two-week vehicle checking project in co-operation with the Alberta Department of the Environment and the Alberta Motor Association. This project was undertaken in the cities of Edmonton and Calgary and out of approximately 1,000 vehicles checked 750 were found to have excessive emissions. [The Clean Air Act Annual Report 1978-1979, Environment Canada, p.29]

Statistics of this type indicate the need for much greater monitoring and enforcement if emission standards are to be effective in reducing the loadings of NO_X that ultimately contribute to the formation of acid precipitation.

3.4 The Canada Water Act [R.S.C. 1970 (1st supp.), c.5]

Since one of the primary adverse affects of acid precipitation concerns the destruction of aquatic ecosystems in the thousands of fresh water lakes in Canada the potential of legislation which addresses water pollution problems must be considered, even though the scope of such legislation is much narrower than the legislation considered above. .

Section 8 of The Canada Water Act provides inter alia that

> ....no person shall deposit or permit the deposit of waste of any type in any waters comprising a waste quality management area designated pursuant to Section 9 or 11, or in any place under any conditions where such waste or any other waste that results from the deposit of such waste may enter any such waters.

Section 9 permits the Minister of Energy, Mines and Resources to enter into agreements with any Provincial Governments which have an interest in the area concerned for the purpose of designating any waters either under the exclusive jurisdiction of the Federal Government or any other waters where the water quality management has become a matter of urgent national concern, as a water quality management area.

Section 11 provides that the Federal Government can act unilaterally under certain circumstances to designate "any inter-jurisdictional waters" as a water quality management area where the water quality management of those waters has become a matter of urgent national concern. This unilateral power can only be exercised where attempts to reach agreements with the provinces concerned have failed or otherwise broken down. "Inter-jurisdictional waters" include any waters "...whether wholly situated in a province or not (which) significantly effect the quantity or quality of waters outside such province" [Section 2(1)].

Since the majority of lakes affected by acid precipitation could not reasonably be considered to be "inter-jurisdictional waters" the unilateral power to designate areas as water quality management areas is not a realistic option. Therefore, for this purpose, agreements between the Federal Government and the affected province would have to be reached before an area could be so designated.

Section 2(1) of the Act defines waste as

> any substance that, if added to any waters, would degrade or alter or form parts of a process of degradation or alteration of the quality of those waters to an extent that is detrimental to their use by man or by any animal, fish or plant that is useful to man, and includes any water that contains a substance in such a quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state that it would, if added to any waters, degrade or alter or form part of the process of degradation or alteration of the quality of those waters to an extent that is detrimental to their use by man or by any animal, fish or plant that is useful to man.

In addition to this general definition of waste, Section 2(2) provides that regulations can be made deeming any substance to be a waste for the purposes of this Act.

While sulphates and nitrates would likely fall within this wide definition of waste and could in any event be designated as wastes by regulation, difficulties could be expected in attempting to prove that any person deposited or permitted the deposit of these wastes in waters within the water quality management area. This Act is designed to deal with instances where the deposit of a waste into water occurs from a relatively close source in such a manner that the connection between the source of the waste and the water can be very easily demonstrated. As has been discussed earlier, models predicting atmospheric transport mechanisms are not likely precise enough to be relied upon for proving this connection to the degree that would be necessary for a conviction under this Section.

In addition, severe problems would be encountered attempting to argue that the release of SO_2 or NO_x emissions, which later transform to the wastes being deposited, is equivalent to depositing or permitting the deposit of wastes as contemplated by section 8. In the absence of provisions expressly including such a scenario as a breach of section 8 judicial reluctance to convict, even if the actual connection could be proved, could be expected.

While improvements to these models may increase the utility of this Section for prosecuting offenders, it would still remain a highly technical scientific argument and would be a time consuming, costly and indirect way of dealing with the problem. In any event, the maximum fine under this Statute for a breach of this Section is only $5,000.00 for each offence. This is relatively insignificant in comparison to the penalties provided for under the Environmental Contaminants Act.

Finally, the utility of this Statute is limited by the fact that at best, it could only control those sources that are contributing to water pollution. As discussed in Part 1, many of the adverse impacts associated with acid precipitation occur in terrestrial ecosystems or to man-made objects. This Act has absolutely no potential as a control mechanism for the sources of those impacts, except in so far as they are incidentally protected due to controls on sources judged to be impacting water bodies.

In summary, while theoretically this Act could have some application, the requirement that individual sources of SO_2 and NO_x be linked beyond a reasonable doubt to the deposit of acid precipitation in lakes within a particular designated area together with the legal question of whether this would amount to depositing or permitting the deposit of the waste contrary to Section 8 in any event all but preclude this Act as presently worded from having any real utility.

3.5 The Fisheries Act [R.S.C.1970,c.F-10]

Section 31(1)of the Fisheries Act states that

> no person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat

"Fish habitat" is defined as meaning"spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes". [Section 31(5)]

The penalty for contravening this section is, on summary conviction, a fine not exceeding $5,000.00 for a first offence and not exceeding $10,000.00 for each subsequent offence or, on conviction on indictment, to imprisonment for a term not exceeding two years. (Section 31(3)]

In addition, section 33(2) provides that except as authorized by regulations,

> no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where such deleterious substance or any other deleterious substance that results from the deposit of such deleterious substance may enter any such water.

Because the protection of "sea coast and inland fisheries" is within the exclusive legislative jurisdiction of the federal government, the provisions of The Fisheries Act extend to all waters in Canada.

The penalty for breaching section 33(2) of the statute is, upon summary conviction, a fine not exceeding $50,000.00 for the first offence and not exceeding $100,000.00 for each subsequent offence. [Section 33(5)]

Enforcement of the provisions of this Act by members of the public is encouraged by the fact that a fine resulting from a private prosecution is shared equally between the private informant and the Minister of the Environment [C.R.C., c.827, Penalties and Forfeitures Proceeds Regulations, s.5] Given the substantial fines that can result from offences under this Act, this provides a mechanism whereby enforcement of the Act can be

enhanced without undue strain on Federal enforcement resources.

In addition to imposing a fine, the court may order that the person convicted refrain from committing any further such offence or cease to carry on any activity which in the opinion of the court will or is likely to result in the commiting of any further such offence. The court may also order such a person to take such action as may be specified in the order that in the opinion of the court will or is likely to prevent the commission of any further such offence.

Deleterious substance is defined by the Act to include

a) any substance that, if added to any water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water, or

b) any water that contains a substance in such quantity or concentration or that has been so treated, processed or changed, by heat or other means from a natural state that it would, if added to any other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water.[Section 33(11)]

In addition, for greater certainty, a substance may be prescribed by regulation to be a deleterious substance. The Act defines "deposit" as meaning

> any discharge, spraying, releasing, spilling, leaking, seeping, pouring, emitting, emptying, throwing, dumping or placing.

There is little doubt that sulphates and nitrates in the form of acid precipitation would be considered as "deleterious substances" within the meaning of

these prohibitions. It is not so clear that the emissions of sulphur dioxide and nitrogen oxides from a source many miles away followed by the chemical transformation of these emitted substances into "deleterious substances" would fall within the prohibition against depositing or permitting the deposit of such a substance in water frequented by fish. Even assuming the problems discussed earlier relating to the lack of precision associated with the use of atmospheric modelling could be overcome this definitional problem raises a further difficulty which would likely prove fatal. Given the complexities and uncertainties between the time of the emissions and the time of the deposition it is anticipated that there would be substantial reluctance on behalf of most judges to characterize this process as depositing or permitting the deposit of such a substance.

This definitional problem does not exist with respect to the use of section 31(1) as set out above. This section does not require that the harm be caused by the deposit of a substance, only that the harm results from the carrying on of any work or undertaking. This section could be useful in the same way that Section 8 of the Canada Water Act could be, subject to the limitations previously discussed, with respect to that section.

In addition to these prohibition sections, the Fisheries Act contains provisions which give the Minister of the Environment powers to review existing or proposed works or undertakings and to impose conditions or restrictions on the operation of such a work or undertaking if he determines that an offence under section 31 or section 33 is being or is likely to be committed. Under section 33.1(1),

> Every person who carries on or proposes to carry on any work or undertaking that results or is likely to result in
>
> (a) the deposit of a deleterious substance in water frequented by fish or in any place under any conditions where that deleterious substance or any other deleterious substance that results from the deposit of that deleterious substance may enter any such water, or
>
> (b) the alteration, disruption or destruction of fish habitat,
>
> shall, on the request of the Minister or without request in the manner and circumstances prescribed by regulations made under paragraph (3) (a), provide the Minister with such plans, specifications, studies, procedures, schedules, analyses, samples or other information relating to the work or undertaking and with such analyses, samples, evaluations, studies or other information relating to the water, place or fish habitat that is or is likely to be affected by the work or undertaking as will enable the Minister to determine

(c) whether there is or is likely to be a deposit of a deleterious substance by reason of such work or undertaking that constitutes or would constitute an offence under Section 33 and what measures, if any, would prevent such a deposit or mitigate the effects thereof; or

(d) whether the work or undertaking results or is likely to result in any alteration, disruption or destruction of fish habitat that constitutes or would constitute an offence under section 31 and what measures, if any, would prevent such a result or mitigate the effects thereof.

Upon reviewing such material and after allowing the persons concerned a reasonable opportunity to make representations, the Minister may, with the approval of the Governor in Council, by order

(a) require such modifications or additions to the work or undertaking or such modifications to any plans, specifications, procedures or schedules relating thereto as the Minister or a person designated by the Minister considers necessary in the circumstances, or

(b) restrict the operation of the work or undertaking, and, with the approval of the Governor in Council in any case, direct the closing of the work or undertaking for such period as the Minister or a person designated by the Minister considers necessary in the circumstances. [Section 33.1(2)]

If such an order is contemplated by the Minister he is required by Section 33.1(4) to offer to consult with the Governments of any provinces or any departments or agencies of the Federal Government that he considers appropriate however,where he considers that immediate action is necessary, he is authorized to make an interim order pursuant to Section 33.1(2) without the necessity of any such consultations.

It is important to note that these powers of the Minister to require information and order modifications to works and undertakings applies to both existing and proposed sources of pollution. In order for the powers under these Sections to be exercised a standard significantly lower than the "beyond a reasonable doubt" standard that is required for a prosecution would be sufficient. All that is necessary is that the Minister be of the opinion that an offence under Section 31 or 33 is being or is likely to be committed. This could be inter-

preted to be roughly equivalent to the standard of proof that is required in a civil action, that is, a balance of probabilities. This remains an objective test, however, since the Minister is not given the power to make such orders based on the absolute discretion of his own opinion. Therefore, objective evidence must be available to support the exercise of this power.

Obviously, the extent to which the Minister's opinion can be viewed as being arbitrary depends upon the precision of the transport models that are relied upon by the Minister in determining whether or not the particular work or undertaking in question is causing or is likely to cause a violation of Section 31 or 33. The present state of the art in this area may well prove to be sufficient to at least impose controls upon major existing or proposed sources. Such controls could include pollution abatement equipment such as SO_2 scrubbers on existing sources or alternatively restrictions on the operation of the source if co-operation in regard to such modifications was not forthcoming.

The penalty for carrying on any work or undertaking contrary to any order made by the Minister under Section 33.1 is, on summary conviction, a maximum fine of $25,000.00 for a first offence and a maximum fine of $50,000.00 for each subsequent offence. Fines of up to $5,000.00 for a first offence and up to $10,000.00 for subsequent offences are provided for failure to provide the Minister with information or material that is requested under the authority of that Section.

There do not appear to be any serious legal limitations to the use of these provisions of the Fisheries Act by the Minister of the Environment in circumstances where he is satisfied that there is sufficient objective evidence to support the contention that any existing or proposed undertaking is resulting or is likely to result in an offence under section 31 or section 33.

However, because of the potentially fruitful opportunities for litigation over whether or not objective evidence is sufficient to allow the Minister to exercise this power, any attempts to impose strict control technology on any particular source in this way can be expected to be met with a full-scale court battle. All of the problems of proof and time delays associated with litigation involving conflicting expert testimony can be expected to result.

The main advantage of this section over most other Federal legislation is that the court case would be ultimately easier to win than would a prosecution in similar circumstances because of the easier standard of proof. While such an exercise might prove successful in the long run (after all appeals are exhausted) the victory would have been extremely costly in terms of time delays and demands upon Departmental resources and expertise. What is worse, the approach is necessarily an ad-hoc one and would have to be repeated for every source that needed to be regulated. A more comprehensive regulatory approach is obviously needed.

3.6 The Migratory Birds Convention Act [R.S.C.1970, c.M-12]

This Act has potential application because of the fact that acid precipitation may be responsible for reductions in the populations of certain species of migratory birds. By destroying the ability of certain lakes to support life of all types, acid precipitation can effectively reduce the areas that can be used as breeding grounds for migratory birds such as ducks that rely upon water-based sources of foods.

Section 4(1) provides that

> The Governor in Council may make such regulations as are deemed expedient to protect the migratory game, migratory insectivorous and migratory non-game birds that inhabit Canada during the whole or any part of the year.

Further, Section 4(2), after setting out specific matters for which regulations may be made, provides that regulations may be made

> for any other purpose that may be deemed expedient for carrying out the intentions of this Act and the said Convention, whether such other regulations are of the kind enumerated in this Section or not.

The Migratory Birds Regulations [C.R.C., c.1035] prohibit the pollution of waters frequented by migratory birds. Section 35(1) and 35(2) provide that

> 35(1) Subject to subsection (2), no person shall deposit or permit the deposit of oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds.
>
> 35(2) Subsection (1) does not apply to the deposit of a substance of a type, in a quantity and under conditions authorized by regulations made by the Governor in Council under any other Act in any waters in respect of which those regulations are applicable.

This Act, like The Fisheries Act, provides that if a successful prosecution follows from the initiative of a private informant, half the fine levied may be paid to that person. While this would ordinarily be expected to encourage private citizens to help enforce The Act, the very low maximum fines under the Act make this effect negligible. The costs of a successful prosecution would more than outweigh any financial incentive to a private prosecutor. The maximum penalty for violating any provision of the Act or Regulations is, upon summary conviction, a $300.00 fine and six months imprisonment.

Unfortunately, the utility of this regulation is dependant upon the same considerations that were discussed above in regard to the Canada Water Act. Proving the connection between the source of the pollutant and the adverse impact on a particular area of wildlife habitat beyond a reasonable doubt would be a task that atmospheric models could not reasonably be expected to precisely determine. This problem is fundamental to any Act that relies upon such an indirect approach to controlling the sources of pollutants that result in acid precipitation.

In addition, the successful use of this prohibition would require proof that the substance deposited in the water is itself "harmful to migratory birds". It may not be sufficient to prove that the sulphates and nitrates are harmful to the aquatic ecosystem on which the birds depend for food. Direct harm to the health of the birds themselves may have to be proved and this, like proof of adverse effects to the health of humans, would be much more difficult to establish at the present time.

Notwithstanding these difficulties, this Act is of interest because the Convention represents an example of co-operation between Canada and the United States in a matter related to protection of the non-human environment. The movement of migratory birds across international boundaries and the protection of those birds from over-hunting posed a problem that has some similarities to the problem of trans-boundary movements of pollutants.

Just as it was not sufficient for Canada or the United States to act independently to ensure the protection of migratory birds neither is it sufficient for one country to act independently to solve the acid precipitation problem. While unilateral actions by either country in this type of situation can help to control the problem and serve as a demonstration of good faith, the ultimate solution requires a co-operative effort. Examples such as the Migatory Birds Convention and the International Boundary Waters Treaty serve as encouraging demonstrations that problems of this nature can be solved co-operatively so long as there is good faith and sufficient political will on both sides.

4.0 PROVINCIAL LEGISLATION (CANADA)

4.1 Ontario - The Ontario Environmental Protection Act

Given the division of legislative authority in Canada between the federal and provincial governments as provided in The British North America Act (as discussed more extensively in Part 2.0 of this report) it is apparent that both the Government of Canada and provincial legislatures have the right to take measures over acid precipitation for certain purposes.

The Ontario government's primary vehicle for exercising legislative jurisdiction over pollution is the Environmental Protection Act, 1971.

In contrast to the Canada Clean Air Act, the Ontario Environmental Protection Act EPA is a totally flexible piece of enabling legislation which allows the provincial Ministry of the Environment virtually unfettered discretion in achieving complete and absolute control over all sources of contamination of the Ontario environment located in Ontario and indirectly over sources in Ontario that have impacts beyond the boundaries of the Province.

As will be seen in more detail below, present regulations under the Environmental Protection Act dealing with air quality matters orient themselves in the familiar mode of attempting to prevent total loadings of given contaminants from exceeding levels prescribed by the regulations. In this sense the EPA air quality regulations do resemble American and Canadian federal requirements.

However, even in the absence of regulations limiting the discharge of specific contaminants, the Act itself makes the discharge of any contaminants that may or are likely to have described impacts illegal. Moreover, the Act allows the Provincial cabinet through the regulation-making process to prohibit or regulate and control the deposit, emission or discharge of any contaminant into the natural environment from a specific source of contaminant or any class thereof.[Section 94(1)(b)] As will be discussed below, this type of procedure had never been used in the ten year history of the Environmental Protection Act until the Ontario government determined in late 1980 to make a specific regulation as against a specific polluter,Inco Limited, in order to ensure that certain abatement of sulphur dioxide would be achieved by certain dates. Shortly

thereafter a second use was made of this executive power, granted under the EPA, to impose specific SO_2 emission limits on Ontario Hydro plants by specified dates. This flexible aspect of the Environmental Protection Act and its other attributes as well as its negative aspects will be discussed below in relation to types of sources

4.1.1 Description of Environmental Protection Act Provisions Applicable to Acid Precipitation

4.1.2 New Sources

Unlike the Canada Clean Air Act which provides a discretionary ability to inspectors under that Act to require approval of plans and specifications of new sources prior to their construction, it is mandatory in Ontario that any new source of potential contamination of the natural environment other than water, including alterations in processes or rates of production, must submit plans of methods or devices or both to be employed to control or prevent the emission of contaminants and have such methods and/or devices approved by a Director of the Ministry of the Environment prior to start-up.

Section 8 (1) provides as follows:

> No person shall (a) construct, alter, extend or replace any plant, structure, equipment, apparatus, mechanism or thing that may emit or discharge or from which may be emitted or discharged a contaminant into any part of the natural environment other than water; or (b) alter a process or rate of production with the result that a contaminant may be emitted or discharged into any part of the natural environment other than water or the rate or manner of emission or dishcarge of a contaminant into any part of the natural environment other than water may be altered, unless he has first obtained a Certificate of Approval issued by the Director for the methods or devices or both to be employed to control or prevent the emission or discharge of any contaminant into any part of the natural environment other than water.

Under The Environmental Protection Act "contaminant" is not defined by reference to ambient air or in other restricted ways. It is defined in a very broad way, as follows:

> "Contaminant" means any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from the activities of man which may,
> (i) impair the quality of the natural environment for any use that can be made of it,
> (ii) cause injury or damage to property or to plant or animal life,
> (iii) cause harm or material discomfort to any person,
> (iv) adversely affect the health or impair the safety of any person, or
> (v) render any property or plant or animal life unfit for use by man.
> [Section 1 (1) (c), emphasis added]

The Environmental Protection Act also has a wide definition of "natural environment". It is defined as meaning "the air, land and water, or any combination or part thereof, of the Province of Ontario" [Section 1 (1) (i)].

In considering an application for a Certificate of Approval under Section 8 of The Environmental Protection Act the Director has the legal ability to require the applicant to submit a wide variety of plans and specifications and other information and can insist that the applicant carry out and report on tests or experiments relating to the structure, equipment, apparatus, mechanism or thing and the methods and devices to be employed to control or prevent the emission or discharge of any contaminant. [Section 8 (2)]

Further, the Director may refuse to issue a Certificate of Approval or may issue a Conditional Certificate of Approval or alter any terms and conditions in a Certificate of Approval as he considers necessary:

> (a) To ensure that any construction, alteration, extention or replacement ... or that any alteration of a process or rate of production ... or the methods or devices or both employed to control or prevent the emission or discharge of the contaminant into any part of the natural environment other than water, will result in compliance with this Act and the regulations and any order or approval thereunder;
>
> (b) On probable grounds, to prevent or alleviate a nuisance, a hazard to the health or safety of any person or impairment of the quality of the natural environment for any use that can be made of it.
> [Section 8 (4), emphasis added]

The above provisions do not constitute legally mandated limitations on when the Director may not issue a Certificate. There are no statutory requirements that he must ensure exist prior to issuing a Certificate. The above provisions do provide grounds for him to deny a Certificate but do not, as aforesaid, constitute minimum requirements which must exist before the Director acts.

Obviously the Director should have regard to section 14 of the Act, which is a fundamental prohibition on the conduct of any person emitting or potentially emitting pollution in the Province of Ontario. For Section 14 (1) of The Act applies "notwithstanding any other provision of this Act or the regulations". In full it reads as follows:

14. - (1) Notwithstanding any other provision of this Act or the regulations, no person shall deposit, add, emit or discharge a contaminant or cause or permit the deposit, addition, emission or discharge of a contaminant into the natural environment that,

a) causes or is likely to cause impairment of the quality of the natural environment for any use that can be made of it;

b) causes or is likely to cause injury or damage to property or to plant or animal life;

c) causes or is likely to cause harm or material discomfort to any person;

d) adversely affects or is likely to adversely affect the health of any person;

e) impairs or is likely to impair the safety of any person; or

f) renders or is likely to render any property or plant or animal life unfit for use by man.

In considering the issuance of a Certificate of Approval for new sources of air pollution the Director would also have regard to the General Air Pollution Regulation first made under The Air Pollution Control Act, 1967 and now continued under the E.P.A. [R.R.O. 1970, Reg. 15]

This regulation, inter alia, prohibits the emission of a contaminant in a concentration that at the point of impingement exceeds the standards prescribed in Schedule 1 to the regulation. Maximum allowable concentrations have been established for 84 contaminants. The concentration of a contaminant at the point of impingement may be determined for the purpose of a prosecution either by direct measurement of the amount of contaminant at the point of contact, or calculated by using a complex mathematical formula prescribed in the appendix to the regulation.

Apparently any point of impingement may be taken for the purposes of enforcing the regulation and specifically the maximum concentrations of a contaminant set out in Schedule 1 to the regulation. In practice the Ministry for enforcement purposes picks points of impingement at the property boundary of the source of emission. Accordingly, the maximum concentrations for contaminants set in Schedule 1 to the General Regulation can be said to be "ambient" standards.

(It is made an offence both by section 5 of Regulation 15 and also by section 5 of the Act to emit contaminants at a point of impingement which lead to a maximum concentration greater than that set out in schedule 1 to Regulation 15. The legal and desirable limits on SO_2 and NO_x for Ontario is shown in Table 1 (supra).

Finally, the Director in considering the issuance of a Certificate of Approval for a new potential air pollution source should also consider the general prohibition contained in section 6 of Regulation 15 which largely duplicates the prohibitory standards contained in section 14 of the Act. Section 6 of Regulation 15 reads as follows:

> No person shall cause or permit to be caused the emission of any air contaminant to such extent or degree as may,
> (a) cause discomfort to persons;
> (b) cause loss of enjoyment of normal use of property;
> (c) interfere with normal conduct of business; or
> (d) cause damage to property.

The Director [illegible] but has no duty [illegible] have regard to two other prohibitions in Regulation 15.

Section 7 of that regulation provides for a "visible emission chart" and Section 8 of the regulation makes it an offence for any person to cause or permit to be caused a visible emission having shades of grey darker than certain numbers on the visible emission chart or that obstructs the passage of light to a degree greater than 20% at the point of emission. Certain exceptions for solid fuel emissions from a source of combustion are permitted for a period of not more than four minutes in the aggregate in any thirty-minute period.

Finally, section 10 of Regulation 15 also contains a broad prohibition

> No person shall store, handle or transport any solid, liquid or gaseous material in such a manner that an air contaminant is released to the atmosphere.

All of the above prohibitory standards could be validly considered by the Director in his determination not to approve any new source of potential air pollution. On the other hand, as stated above, there is no requirement to require that the Director in issuing a Certificate of Approval comply with these standards and ensure they will be achieved in the operation of a source being licenced.

There is no means for the public to have advance notice of a pending application for a Certificate of Approval sought by a new source and there is no requirement that any potentially affected members of the public be able to ask the Director not to issue a Certificate of Approval or to issue it subject to terms and conditions.

Only if the applicant for the Certificate of Approval is denied the Certificate or if the Director intends to issue it subject to terms and conditions to which the applicant objects will there possibly be an appeal whereby members of the public may participate.

Under Part IX of the EPA, when the Director refuses to give his approval of plans and specifications or refuses to issue a Certificate of Approval or requires a condition precedent to the giving of his approval, the applicant may, after discussing the matter with the Director and not having the matter resolved to his satisfaction, appeal the proposed decision by the Director to the Ontario Environmental Appeal Board. A hearing by that Board is a hearing de novo and the Board may confirm, alter or revoke the Order, refusal or requirement that is the subject of the hearing.

The person requiring the hearing, the Director to whom the application was made "and any other persons specified by the Board are parties to the hearing". [Section 81]

Following the decision of the Environmental Appeal Board, any party may appeal on a question of law to the County Court or, after final disposition of any legal appeal (from that Court to, e.g., the Ontario Court of Appeal), appeal in writing to the Minister on "any matter other than a question of law and the Minister shall confirm, alter or revoke the decision of the Board as to the matter in appeal as he considers in the public interest". [Section 80]

Ultimately the decision as to whether or not a particular new source should be licenced and the terms and conditions upon which it would be licenced are a political decision. From a practical point of view, however, in Ontario, almost all sources have the terms and conditions of their Certificate of Approval set by the Ministry internally without any review by either the Environmental Appeal Board or the Minister. That is the practice primarily because the Ministry seeks to have a close working relationship with industry, as well as other sources subject to the jurisdiction of the Ministry (for example, Ontario Hydro). Accordingly, industry well understands just how far it might propose to go in terms of new emissions and the Ministry does not generally seek to have public involvement in the process of issuing proposed Certificates of Approval. In fact, as aforesaid, such public involvement is not provided for in the Act and has only taken place on exceptional occasions. Thus in most cases the Ministry is left alone to deal with the lobbying powers of industry when it comes to the issuance of any new Certificates of Approval for new sources. Unless the industry finds

that the Ministry is opposed to the industry's plans, there will be no appeal, there will be no public review and the Certificate of Approval will be issued through this private consultation process.

4.1.3 Prohibitions on Existing Sources of Air Pollution

The most important prohibitions in the Act and regulations have already been set out above. They are found in Section 14 (1) of the Act and Section 5 of The Act (the latter making illegal the discharge from a source of any contaminant of an amount, concentration or level in excess of that prescribed by the regulations).

The main prohibitory sections of Regulation 15 have also been described above.

Violations of any of these provisions of either the Act or regulations are punishable by a maximum $5,000.00 fine for a first offence and a maximum $10,000.00 fine for each subsequent conviction. Further, where any provision of the Act or regulations or of any order, approval or permit made or granted under the Act is contravened, the Minister may apply to the Supreme Court for an injunction to restrain the violation. [Section 100]

Having regard to the recent decision of The Supreme Court of Canada in the case of Regina vs. City of Sault Ste. Marie [(1978) 40 C.C.C.(2d)353] it would appear that all offences under this Act are subject to a successful defence insofar as the accused is able to demonstrate, on the balance of possibilities, that he or it took all reasonable care to avoid committing the offence charged.

4.1.4 Abatement of Existing Air Pollution Sources

If the anti-pollution offences set out above were the sole provisions of the legislation, many industrial and government operations (for example, Ontario Hydro plants) would be in breach and liable to prosecution. For these anti-pollution apply retrospectively in the sense that they establish standards that must be met by operators of air pollution sources, regardless of whether the source existed prior to the enactment of the Environmental Protection Act or to any new standard established by regulation.

In order to encourage abatement of pollution from sources not meeting the EPA standards, immunity from prosecution is offered to pollutors who enter into, voluntarily or through administrative directive, Ministry approved clean-up programs. The immunity from prosecution given to persons acting in accordance with such directives or programs is found in Section 102 (2).

A provincial officer designated under the E.P.A. has authority to survey from time to time anything he has reason to believe may be a source of contaminants and to make findings and recommendations. The EPA gives a provincial officer the right of entry to any place and to make such enquiries and require surveys, tests and examinations as he considers necessary for the administration of the Act. There is a duty on every person responsible for the source of a contaminant to furnish such information as a provincial officer requires for the purposes of the Act and a duty to give truthful information. When the report of a provincial officer is completed he must file it with his recommendations for abatement and serve a copy upon the person responsible for the source of the contamination. [See Sections 83-86]

If a report filed by a provincial officer contains a finding that a contaminant is being discharged in an amount, concentration or level in excess of that prescribed by the regulations, or the effects of the discharge contravene Section 14 of the Act, or it is a contaminant the use of which is prohibited by the regulations, the designated Ministry Director may issue a "Control Order". A Control Order is a unilateral directive requiring a polluter to limit, control or stop its emission in accordance with the terms of the Order. The Control Order may additionally require the installation or construction of specific items designed to achieve control or elimination of the discharge or emission of contaminants, and direct other procedures to be followed to achieve these results . Such new devices, structures or alterations in a process must however receive the prior approval of the Ministry through a Certificate of Approval. [see Sections 6 and 70]

Where the Director proposes to issue a Control Order, he must give fifteen days prior notice to the polluter, together with the documents supporting his reasons for considering the order, and the polluter may make submissions to the Ministry in that time. Once served with a Control Order, a polluter may appeal its

provisions to the Environmental Appeal Board (and from there to the courts and to the Minister). Until the final disposition of an appeal or until the time for taking an appeal has passed, the Control Order is not enforceable.

In the early '70s the Ministry preferred to not issue Control Orders except to recalcitrant pollutors. The then preferred device was the "program approval" which, like a Control Order, is a statutorily authorized program of clean-up, but which differs from the latter in that it is in theory voluntarily submitted by the polluter. If the Director approves the polluter's program, the program approval is issued. Since, however, the Ministry discovered that to violate the terms of a program approval was not in itself an offence under the Act, the Ministry has administratively decided that it will almost always henceforth issue Control Orders rather than program approvals in regard to non-complying sources. [See Section 102 (1) which makes every person who contravenes any provision of this Act or the regulations or fails to comply with an order or any terms or condition of a Certificate of Approval guilty of an offence. This section does not refer to program approvals.]

Interestingly, many of the major polluters in Ontario held "program approvals" in the early '70s, some of which perhaps as of this date have not yet expired. If the companies who hold them do not clean up pursuant to their approved program it is not an offence under the Act for this failure to occur.

The Act provides encouragement to seek a program approval or Control Order. The EPA provides that a person to whom they are directed and who complies fully with the order or approval "shall not prosecuted for or convicted of an offence" in respect of the matter or matters dealt with in the order or approval that occurs in the period within which the order or approval is applicable. [Section 102 (2)]

Notwithstanding the existence of a program approval the designated Director of the Ministry may nevertheless issue a Control Order or a Stop Order where the circumstances specified in The Act are made out.

However, and notwithstanding this provision, a "Stop Order" can only be issued in any case where the Director is of the opinion, based on reasonable and probable grounds, that there is a source or level of contaminant which constitutes "an immediate danger to human life, the health of any persons or property". The issuance of such an order is a quasi-judicial act and

the Director before issuing it must have relevant objective evidence in his hands that such circumstances exist; he must not consider irrelevant factors and must apply an objective test in forming his opinion. [EPA Section 7 and Re Canada Metal Company and MacFarland [(1973) 1 O.R.(2d) 577].

Once a Stop Order is validly issued it must be complied with forthwith.

However, a Control Order does not come into effect immediately if the person to whom it is directed appeals the intended issuance thereof. The appeal of the proposed Control Order is to the Environmental Appeal Board. A further appeal lies by any party to the hearing on issues of law to the courts and on any other issue to the Minister who is directed to confirm, alter or revoke the decision of the Board as to the matter in appeal "as he considers in the public interest". [Section 80 (3)]

4.1.5 Utility of the Ontario Environmental Protection Act for Controlling and Preventing Sources of Acid Precipitation

4.1.6 Approval of New Sources

On a practical level the Ministry of the Environment approves new sources of potential air pollution on the same basis as do state regulatory agencies in the United States. Both the MOE and state agencies are concerned primarily about ground level concentrations of contaminants in the immediate vicinity of the proposed new source. Calculations of the amount of the new source emissions are made at a point of impingement just beyond the property boundary of the proposed new source. If through whatever means, including dispersion in the atmosphere, the point of impingement concentrations for any one of 84 different contaminants set out in Schedule 1 to Regulation 15 are not infringed then the Ministry practice is to issue a Certificate of Approval.

Examples of the practical workings of this philosophy in Ontario are seen in the Ministry's approvals for techniques to clean up present sources of pollution. Specifically the best example in this regard is the Ministry's approval of the "super stack" at Inco in 1970 in an effort to decrease local impacts from relatively short chimneys by improving the dispersion of the SO_2 emissions rather than by reducing the emissions.

Other examples of the Ministry's past lack of concern for long-range transport and its concentration on protecting the immediate environment around a source are seen in the Ministry's approvals of very large Ontario Hydro coal-fired power plants at Nantocoke on Lake Erie and at Atikokan in Northwestern Ontario. SO_2 scrubbing equipment was not required on either plant at the time of approval. Apparently, through the use of tall stacks and relying on meteorological conditions in the area, the point of impingement concentration set out in Schedule 1 to Regulation 15 will not be infringed. Thus these major sources of SO_2 were able to be approved without regard to their contribution to long range acid precipitation.

Under the EPA the Director in issuing a Certificate of Approval under Section 8 would be entitled to refuse to issue a Certificate of Approval or to impose conditions to prevent SO_2 emissions and NO_X emissions in so far as he could establish on objective evidence that new sources of SO_2 or NO_X were, within the wording of Section 14 (1) (a) "likely to cause impairment of the quality of the natural environment for any use that can be made of it" or within the wording of Section 14 (1) (b) "likely to cause injury or damage to property or to plant or animal life". Of course, should the applicant for the Certificate of Approval, for example, Ontario Hydro, challenge the Director's views that, for example, scrubbers should be installed on a new coal-burning power plant for those reasons, Ontario Hydro could appeal the Director's decision to the Environmental Appeal Board. It would be for the Director at that point to show that Board, on objective evidence, that SO_2 emissions from a particular plant were likely to cause those effects in Ontario and that the scrubbers would prevent those impacts from occurring. Ontario Hydro, before the Environmental Appeal Board,would be able to refer to Schedule 1 of Regulation 15 and point out that for sulphur dioxide the legal limit of emission at a point of impingement is 830 micrograms of sulphur dioxide per cubic meter of air. While the Ministry has lower "desirable ambient air quality criteria" found in Ontario Regulation 872/74 these are just that, "desirable ambient air quality criteria" and even if these were achieved they would do no more than the present U.S. Secondary Standards for ambient air quality.

The Director could also possibly base a refusal to issue a Certificate, for example, to a new coal-burning power plant without scrubbers, on the basis that he had "probable grounds" to believe that to allow such a plant to come into existence without scrubbers would lead to "impairment of the quality of the natural environment for any use that can be made of it" pursuant to Section 8 (4) (b). Again, the Director, upon an appeal by the proposed coal power plant would have to show, on objective evidence, that installing scrubbers was indeed necessary to protect the quality of the Ontario environment.

The problems for the Director in upholding any approval conditioned to impose, for example, scrubbing equipment on new coal-burning power plants, are obvious in so far as the concern is that there will be long-range transfer of sulphates and nitrates out of Ontario and in the meantime there may not be any local Ontario impacts that can be proved to result from the proposed new source in Ontario.

4.1.7 Abatement of Present Sources of SO_2 and NO_x

As indicated above, the issuance of Control Orders is the primary technique in Ontario for administratively rectifying polluting sources that are deemed to be not in compliance with the Act and regulations.

The effectiveness of the Control Order process is limited by several factors however:

1) There is no duty on the Director to issue a Control Order in any circumstance even if there is gross violation of the Act or regulations; it is entirely within the Ministry's discretion as to whether or not any abatement action will be taken.
2) Assuming the Director determines, in his unfettered discretion, to issue a Control Order, it does not come into effect immediately. Indeed the actual legal impact of a Control Order may be delayed for years by the appeal procedures provided under the Environmental Protection Act. No Control Order comes into effect until all appeals have been taken. Assuming appeals are made to the Environmental Appeal Board, to the Courts and then to the Minister the polluter can continue to emit at illegal and undesirable levels for perhaps years

prior to the Control Order actually taking effect. Additionally, during this appeal process, the original Control Order could be modified or struck down, either by the Environmental Appeal Board or by the Courts and thus the whole process of attempting to achieve abatement through the Control Order process would have to be attempted anew. Every new proposed Control Order would have a corollary appeal process attached to it.

3) For the same reasons that the Director may have difficulty, having reference to the present state of regulations allowing ambient emissions of SO_2 and NO_x to escape in great amounts into the environment, the Director may also have great difficulty in convincing The Environmental Appeal Board to cause any particular source of SO_2 or NO_x to abate its emissions on the basis that such abatement will have any measurable impact within Ontario. It may be that the Director could show more easily the desirable impact of reducing such emissions beyond Ontario but it is anticipated that the Director would have some difficulty showing how the environment of Ontario would be protected by such measures. Unless the Director can show how abatement would protect the environment in Ontario there is no jurisdiction in the Director to impose abatement measures through the Control Order process.[because of the definition of "natural environment" being limited to that within Ontario; this is constitutionally correct].

4) Since the negotiation of a Control Order up to the point where the Control Order is actually issued is a process of private consultation as between the Ministry and the polluter it is entirely possible for the Ministry to issue Control Orders which the polluter finds acceptable and yet which do not protect the environment in any significant way. There is no process of public notice or participation provided in the Environmental Protection Act for the negotiation of acceptable Control Orders. The same is true with regard to extention of deadlines in previously issued Control Orders where the deadline for abatement has expired and yet abatement in practice has not been achieved. The Ontario Ministry of the Environment has been severely criticized for its secretive method of negotiating control deadlines which do not take into account the interest of the victims of the ongoing pollution and for extending deadlines in renewed Control Orders when the polluter, again in a closed-door consultation process, comes to the Ministry to offer its reasons as to why it could not meet the original deadlines.

These criticisms can be illustrated by several examples over the past decade which demonstrate that little has changed over that period of time. The same criticisms made as the 1970's began were still being echoed in 1979 by the Ontario Legislature's Standing Committee on Acid Precipitation. These criticisms remain valid to the present day.

An examination of documents relating to the history of the Ministry of the Environment's attempts between 1967 - 1973 to clean up a very polluting but important industry, the Algoma Steel Corporation Limited, in the City of Sault Ste. Marie, provides interesting and revealing data for an analysis of how effective the Ministry's abatement program was at the beginning of the decade.

On July 7th, 1970, a Minister's Order (under The Air Pollution Control Act, 1967, the air pollution legislation immediately preceeding the EPA) was served upon Algoma Steel requiring it to take certain steps to abate emissions from various of its steel-making operation. (This original order was issued only after comprehensive emission studies had been completed - and since no appeal was taken by Algoma from the original order, it is reasonable to assume Algoma considered its requirements and deadlines acceptable).

Over two years later, and while most items contained in the original Minister's Order remained uncompleted, Algoma requested approval of a program to replace the original Minister's Order (pursuant to Section 10 of the new EPA). That request which enclosed a proposed program approval that as drafted by Algoma would have extended the deadlines for compliance another year or more for most items, was eventually approved.

An internal MOE memo from the Assistant Chief, Approvals and Criteria to the Assistant Chief, Abatement Section, dated November 28, 1972, commenting upon this application by Algoma, stated that, in summary:

> It appears that the only value of this program except for item 4 is to the company, to protect them against action by the Air Management Branch, unions or anyone else. Even item 4 is likely to result in a partial cure of one part of the problem. [Estrin, "The Legal and Administrative Management of Ontario's Air Resources 1967-74" in Environmental Management and Public Participation, p. 182 at 202-203]

Despite that and other rather critical comments on the adequacy of what the company had proposed by way of abatement (in a situation where the company was to have taken all of these abatement actions prior to seeking an extention) Algoma Steel was subsequently, on April 3, 1973, issued with a program approval that was substantially what the company requested. There was virtually no difference between that which the company sought and that

which the company received. In fact, the deadlines proposed by the company were even pushed further back, by several months in most cases.

Similar criticisms surrounded the controversy over lead emissions in the City of Toronto On December 13, 1973, the Council of the City of Toronto, after hearing public deputations, passed a unanimous motion requesting that the Ontario Cabinet appoint a Royal Commission of Inquiry "to investigate the activities, practices and/or conduct of the operations of the Air Management Branch". The thrust behind that resolution stemmed from problems of handling lead pollution, but the various deputations that appeared at a special meeting of City Council made it clear that:

> The Air Management Branch's handling of the lead pollution problem was not an unfortunate exception, but rather a part of a pattern of conduct towards polluting factories in general. The Council heard evidence from residents near a glass company, a sewage treatment plant, a generating station, a tannery, a felt factory, an animal rendering plant, an insulation plant, a foundary, as well as three lead companies. The current lead problem provided a focus for dissatisfaction about a number and variety of continuing pollution problems.
>
> Criticisms of the Air Management Branch fell into two categories: shortcomings in departmental policies; and deficiencies in present legislation ... .
>
> We heard evidence, not of the problems which are new and temporarily unsolved, but about pollution problems which have plagued communities for years. Residents noted the failure of the Air Management Branch to prosecute companies which were in violation of present standards, and which the Branch itself had assessed as non-compliant. In one instance, a residents' association itself attempted court action; in another, the Air Management Branch, after considerable public and political pressure, did lay a charge, but the two inspectors who were to testify went on holiday the day before the case came to court, and the charges were dismissed for lack of evidence.

One of the citizens' associations seemed to speak for many groups when it said:

> The Directors, engineers and inspectors for the AMB are always amiable and courteous, but as environmental watchdogs and defenders of the public interest, the Branch is deficient, to say the least. [Estrin, Ibid, p. 200-201]

In the context of the same lead controversy in Toronto the Canadian Environmental Law Association had occasion to make observations with regard to the abatement process under the Environmental Protection Act.

> The controlling or restraining provisions of the Act (Control Orders or Stop Orders) cannot be invoked by the sole initiative of the public or private citizen. There are no procedures set out in the Environmental Protection Act to provide a readily acceptable means for the public or private citizens to require or request that the Air Management Branch take steps to restrain a person polluting to the extent that it is dangerous to the health of the community. All such remedies reside exclusively in the discretion of the Ministry of the Environment. [CELA, Submission to the Public Hearings on Lead Contamination in the Metropolitan Toronto Area, January 31, 1975, p. 6]

Some insight into how effective any SO_2 and NO_X abatement initiatives by Ontario's Ministry of the Environment can be expected to be can be gained by a consideration of the effectiveness of past efforts to control effluent discharges from the pulp and paper industry. Any initiatives in Ontario to control SO_2 and NO_X emissions would in all likelihood be dependent upon the same process and be subject to the same arguments and reluctance on the part of the sources being controlled.

Pollution abatement objectives relating to pulp and paper effluents were set by the province in 1965. At that time, the Ministry's predecessor, the Ontario Water Resources Commission, prescribed certain objectives with regard to the removal of suspended solids and reducing 5 day BOD and/or OD and substances imparting taste and odours and other substances toxic to aquatic life and in regard to controlling wastes that impaired aesthetic qualities; the objectives generally being intended "to permit the existence of a warm water fishery in the receiving waters".

Eleven years after that directive was first issued in 1965, a study by the Ministry of Environment concluded that "the industry as a whole is still short of reaching the interim suspended solids objectives. Moreover it has made little progress towards curtailing BOD_5 emissions." It found only six of thirty-one mills had reduced their pollutant discharges sufficiently to meet the suspended solids objective and that only three complied with the BOD objective.

The M.O.E. 1976 Study prepared by two economists entitled "Alternative Policies for Pollution Abatement-the Ontario Pulp and Paper Industry" make the following comment in summarizing the lack of real achievement between 1965 and 1976.

> Eleven years have elapsed since the pulp and paper industry was asked to clean up its waste waters. Moreover Ontario Water Resources Commission and Ministry of the Environment officials have worked closely with these mills to try to develop voluntary programs that will be both technically and economically feasible. Despite these considerations the pulp and paper industry continues to generate about 87% of the BOD_5 being discharged by all industries directly into lakes and rivers in the province. While some mills have made substantial progress, others continue to dump hundreds of tons of oxygen-depleting wastes into lakes and rivers each week. American Can's Chlor-Alkalide Plant continues to discharge mercury compounds despite the recognized dangers of mercury accumulations in sedements of fish.
>
> It is concluded, therefore: (1) based on past experience, that 31 mills are unlikely to achieve M.O.E. BOD_5 and Federal toxicity objectives without stronger inducements from the Government; (2) despite considerable improvements in suspended solids abatement from many mills, the damages to receiving waters have been the same now as they were eleven years ago; and (3) if the industry continues to expand pollution problems could increase as well. [J.A. Donnan and P.A. Victor, "Alternative Policies for Pollution Abatement-The Ontario Pulp & Paper Industry", Summary and Up-Date, October 1976, page 19].

The study notes that the pulp and paper industry did not initially agree with the 1965 abatement objective and that subsequent efforts were made by the Ministry of the Environment to develop voluntary abatement programs that were technically feasible and were not financially damaging and that, consistent with that policy, from 1971 until late 1976 no prosecutions would be laid against pulp and paper mills in order to give the industry time to implement their voluntary program. (In Ontario such a "policy" is never made the subject of published memoranda let alone public hearings).

It seems obvious that the pulp and paper industry was realistic about the abatement process in Ontario - that is, it recognized that the Ministry of the Environment was not about to take a tough stance against that industry and concluded that their polluting mills did not have to do much - if anything. The industry obviously felt that there was only a remote chance of the Ministry taking them to court and that if they were taken to court there was not much chance of the court levying a great penalty against them.

The principal reason that the industry felt that they were safe in this position was their assertion, which one must suppose that they really believed, that they just could not afford to enter into these clean-up techniques and, on the basis of those submissions, felt that the Ministry was not about to get tough with them.

It was obvious to some Ministry personnel, however, in about the early 1970's, that the industry was perhaps dragging its feet; the study by Drs. Donnan and Victor was undertaken by these economists so that the Ministry could fully answer these assertions by the industry. The report does not say so, but it is an obvious inference, that the Ministry decided, in other words, to ascertain as knowledgably as it could, the true state of technology related to the feasibility of cleaning up such wastes and the true economic conditions and expectations for the industry relative to whether or not the industry could afford to undertake measures to achieve the desired objectives.

Some of the more interesting conclusions from that study are as follows:

> Employment losses due to achieving the ... abatement objectives ... will be exceedingly few if, indeed there are any at all. Moreover, the costs to be incurred by the polluting mills will be well within their long run financial capabilities.

> Pollution abatement is not likely to generate severe adjustment costs because firms can avail themselves of tax concessions that reduce the impact of abatement costs on their profits...the tax system actually shifts about 50% of the financial burden to the Provincial and Federal Governments.
>
> The total costs to the entire industry of the Ministry's program would be about $115 million over ten years. By contrast, the total capital expenditures undertaken by four Canadian paper companies during 1974 alone amounted to $174.5 million.
>
> There would be a net increase in employment within Canada as a result of the purchase and installation of pollution abatement equipment.
>
> Most...mills in Ontario can "afford" to control their pollution to a much greater extent than they are presently doing. Therefore adequate economic incentives are needed which will make polluting more costly than abatement. [Donnan & Victor, supra, pages 42-47]

It is extremely instructive to note that once the Ministry had that study in hand and accordingly was in a position to disbelieve the industry's assertions, it could and did begin to "get tough". Shortly after this study became public (it only became public because of the release of it by the Provincial Opposition Leader, Stephen Lewis)the Ministry initiated prosecutions against some of the mills well known for pollution. In November 1976 the Ministry laid ten charges against Reid's Dryden Mill and 22 charges against Abitibi Pulp & Paper. Additionally a series of Control Orders were issued against Reid requiring it to meet certain pollution -abatement levels. The then Minister of Environment said also that he was considering charges against one or two mills for not complying with Control Orders. Mr. Kerr, the then Minister, said his Ministry charged Reid because the company wanted too much time to begin secondary treatment of waste from its mills.

In 1979 the Standing Resources Committee of the Ontario Legislature held hearings and issued a report, referred to above, on, inter alia, pollution abatement in the pulp and paper industry. It noted that enforcement of both the Environmental Protection Act and Ontario Water Resources Act "has proven difficult with respect to the pulp and paper industry" and noted that the Ministry has earned a reputation as "a graveyard of good intentions" as regards its enforcement policy. [Standing Committee Report, page 58].

The Committee noted that reasons suggested for the Ministry's limited success in ensuring pollution abatement in the pulp and paper industry varied from "absence of sufficient will to inadequacy of present enforcement tools". An additional explanation has been concern about the financial capacity of the industry and fear of economic repercussions if companies choose to shut down operations rather than make the required pollution abatement investments" [Standing Committee, page 58]

At the time that the Standing Committee was studying this issue the Treasurer of Ontario made public a plan of giving 100 million dollars to the pulp and paper industry to modernize and also clean up some of its pollution. In testifying before the Committee, the Minister of the Environment confirmed that to that point in time the Ministry had a previously unennunciated "policy" which considered financial restraints as an acceptable reason for the industry failing to meet environmental requirements. The Minister of Environment said

> I can and will insist that extensions to Control Programs are no longer valid on financial grounds. .... with the Provincial Assistance Program now available, my Ministry has adopted this policy: ...the only delays in abatement we will consider in the future are those which are genuinely beyond a company's control. Time frame required for completing new Ministerial Orders will be shortened. Financial restraints will no longer be an acceptable excuse for failing to meet environmental requirements. Finally, the Ministry will take vigorous enforcement actions if mills fail to achieve abatement objectives [Standing Committee, page 61, emphasis added].

The Committee concluded that this statement suggest that the Ministry is now prepared to take a harder line against operators that continue not to meet abatement requirements. The Committee noted that "implementation of this policy will depend largely on the use of Control Orders and prosecutions". The Committee said that while injunctions offer another possible remedy for non-compliance "the Ministry, which has in the past made it an implicit if not explicit policy to avoid plant closures, is not likely to favour its use." [Standing Committee Report, page 61-62].

The Standing Resources Committee also studied M.O.E. abatement "action" with regard to Inco. Some observations made are the following:

> The Ministry of the Environment representatives argue that they are unable to justify requiring the company to abate its emissions beyond the 3,600 tons per day level already achieved because they consider the local and long range affects of Inco's current emissions to be minimal in comparison to the affects of pollutants from other sources.
>
> Both the unfeasibility (sic) of further abatement and the negligability (sic) of environmental damage from Inco emissions at the 3,600 tons per day rate were the subjects of skepticism and questioning during the Committee's proceedings. There was some feeling that not all of the possibly available abatement options had been examined, or examined in sufficient depth. ...
>
> Some concerns were also expressed about the adequacy of Ministry of Environment reviews of the abatement feasibility studies prepared for Inco and about the Ministry's acceptance of company judgments regarding the economic feasibility of abatement options. [Standing Committee Report, page 50]

The Committee concluded that the Ministry's position - that reduction of Inco emissions from the 3,600 tons per day rate would have virtually no effect on damage to the Ontario environment- "was left in some doubt because of the weakness of the data base required to confirm this conclusion" [page 51]

The Committee concluded that Inco should be ordered to reduce its emissions below 3,600 tons per day authorized at that time by a Control Order issued in July 1978.

In giving its reasons for this further abatement, the Committee stated the following:

> The Committee heard testimony from both Inco officials and the Ministry of the Environment's Sudbury Regional Director that there is little evidence indicating further reduction of Inco's sulphur dioxide emissions would contribute significantly to solving Ontario's acidic precipitation problem or to improving local environmental quality. However, the Committee learned that the data on which these contentions were based was incomplete and has not been evaluated by independent experts. In particular, the Committee found that there has been insufficient evaluation of the local effects of Inco emissions on Sudbury and vicinity or of the long range effects on both Canada and the United States.

> In light of this, the Committee recommends that the Ministry of the Environment immediately begin developing an assessment of the total cost of sulphur dioxide pollution in the Sudbury region. This assessment should include health costs, property damage, injury to vegetation and watersheds, and loss of recreational amenities using all existing information, including the 1974 Environment Canada Study.
>
> In general, the Committee recommends that the Ministry of the Environment undertake to produce, by the end of 1979, a review of the technical and ecological basis for setting sulphur dioxide emission standards, with a view to recognizing both the local and more distant effects of Inco emissions [Standing Committee, page 52, emphasis added]

The above comments of the Standing Committee make very clear that the Ministry of Environment personnel, from the Sudbury region, at least, had taken the attitude of sympathy towards the polluter and had not based their status quo position, i.e. that no further abatement measures are required, on adequate studies of the real cost to the environment or to the public of continuing Inco emissions. It was only after this matter was referred to public hearings before the Standing Committee on Resources Development that the inadequacies of the Ministry of Environment's approach to abatement of such emissions was logically critiqued and the various failures brought out.

Late in 1979, the Ontario Legislature's Standing Committee on Resources Development issued its Final Report on Acid Precipitation, Abatement of Emissions from the International Nickel Company Operations in Sudbury, Pollution Control in the Pulp and Paper Industry and Pollution Abatement at the Reid Paper Mill in Dryden. [October, 1979] The Standing Resources Committee had the following comments with regard to the Control Order process in Ontario:

> The Committee ... feels that the system of setting and enforcing abatement requirements needs to be opened up to much greater public input and that enforcement procedures must be drastically strengthened.
>
> The whole Control Order and enforcement process evidently needs further action by the Ministry to make it more effective.
>
> The Control Order process must be opened up to allow public input at all stages. All notices of intent, program approvals, Control Orders, and requirements and directions, Certificates of Approval and amendments and extentions to these must be gazetted and publicized in the local newspapers of the area affected. Area residents opposed to the operations in question should be notified by letter. The existing environmental legislation should be amended where necessary to meet the requirements for greater openness.

The public should be given sixty days to make representations to the Ministry of the Environment on the proposals. A public hearing should be called if a considerable number of representations are received. The public should have access to all government and industry documentation of the rationale for the proposals (exclusive of trade secrets).

Public funding should be made available to public interest groups to ensure that points of view representative of significant bodies of opinion are adequately presented. This funding should be provided under realistic guidelines and criteria to ensure accountability of expenditures.

The Committee unanimously recommended that the Ministry of Environment undertake to produce a comprehensive report on the state of the art in scrubber technology, with special reference to smelter applications and to uses of scrubber output; that the Province investigate the potential uses of Japanese nickel smelting pollution abatement technologies at Inco's Sudbury operation; and that studies be undertaken on the possibility of using sulphur and sulphuric acid produced as by-products of the SO_2 abatement process.

The Committee also recommended that a new Control Order be issued within six months after the Committee's Report, re-instituting the SO_2 abatement target of 750 tons per day and requiring attainment of this target by December 31st, 1985.

The Committee unanimously also recommended that there be public hearings should the company wish to appeal the new Notice of Intent and/or Control Order [Standing Committee Report, pages 53-54].

That the Committee was able to make such observations and felt impelled to make such obvious recommendations for appropriate action by the M.O.E. is an unfortunate indication of how little, if anything, has changed from the early 1970's within the M.O.E. in terms of it being an agency that can be relied on as regards important sources of pollution to (a) take necessary pre-abatement steps (careful analysis of emission impacts and their real costs and economic and technical analyses of the industry's ability to effect abatement) and (b) issue appropriate Control Orders and/or initiate prosecution to achieve such abatement.

Taking all of these comments and criticisms together it is apparent that while the potential scope of a Control Order is broad, in practice this device cannot be relied upon as being effective to ensure abatement of presently polluting SO_2 and NO_X sources. [Section 70 of the Environmental Protection Act provides that

the Director can issue a Control Order requiring a person to:

(a) limit or control the rate of addition, emission or discharge of a contaminant into the natural environment in accordance with the direction set out in the order;
(b) stop the addition, emission or discharge of the contaminant into the natural environment, permanently, for a specified period or in the circumstances set out in the order;
(c) comply with any directions set out in the order relating to the manner in which the contaminant may be added, emitted or discharged into the natural environment;
(d) comply with any directions set out in the order relating to the procedures to be followed in the control or elimination of the addition, emission or discharge of the contaminant into the natural environment; and
(e) install, replace or alter any equipment or thing designed to control or eliminate the addition, emission or discharge of the contaminant into the natural environment]

This deficiency in present control strategies has most recently been addressed in a recent study for the Economic Council of Canada on the regulation of sulphur dioxide in the Canadian non-ferrous metals industry. The observation was made that

> ...government agencies will never have sufficient knowledge of industry process, technology research and corporate finance to make precise regulatory decisions. They would need to duplicate substantially the industries' own capability to develop such an understanding. Therefore they will always be at a disadvantage when it comes to understanding the marketplace, corporate finances and corporate decisions.

Further, perhaps more importantly, the authors observed that

> Provincial legislation by its nature establishes a bargaining process between government and industry and that in itself may not be bad. However, the process encompasses factors which are far beyond the responsibilities of Ministers of the Environment and beyond the capabilities of their advisers. If governments have knowingly established such bargaining processes, they have inadequately provided for those who bargain on their behalf.
>
> It is clear that environmental regulation must influence and demand decisions which are economic in nature. It most often fails when it makes economic demands.

That study recommended in consequence that

> the environmental regulatory process explore other control measures against polluters which will carry sufficient weights so as to influence corporate decision-makers. This recommendation is not an endorsement of the concept of effluent charges or the other commonly recognized economic sanctions but merely a recognition that the existing process can be improved upon. [Felske, B.E. and Associates Ltd., Sulphur Dioxide Regulation and the Canadian Non-Ferrous Metals Industry. Economic Council of Canada, Technical Report No. 3, January 1981, p.274].

4.1.8 Regulations Providing for Specific Sources to Effect Abatement

Another control tool that the Ministry has available to it and which is even more legally effective than the issuance of a Control Order to achieve abatement of present sources is to issue a specific regulation, with the approval of the Provincial cabinet, under the Environmental Protection Act.

This has only been done twice, once in 1980 in regard to Inco Limited and once in 1981 in regard to Ontario Hydro, both times to limit sulphur dioxide emissions.

These regulations, Ontario Regulation 712/80 and 73/81, were made pursuant to Section 94 (1) (b) of the EPA. The Inco regulation was issued to avoid having Inco appeal a proposed new Control Order and delay the implementation of reductions in SO_2 emissions, which delays Inco threatened to effect by taking an appeal under the normal Control Order appeal process. Neither the "Inco" or "Ontario Hydro" regulations affect the present levels of SO_2 being emitted by these sources. At future dates specified some reductions are to occur. In the case of Inco, no reductions are to be effected from present levels until 1984 and even then, "on average" over a 12 month period SO_2 is to be reduced by only 550 tons per day, to 1950 tons per working day. Ontario Hydro was given five years to begin reducing its SO_2 and NO_X emissions.

The issuance of regulations to specific sources of pollution contributing to acid precipitation is a vehicle clearly open to the Ontario cabinet to use. Again, it is a vehicle that is to be used in the Cabinet's unfettered discretion. Whether it is used or not depends upon the political inclination of the Cabinet. If the Cabinet does decide to use it there is no prior notice that is required to the source involved, no hearings are to be held before such regulation takes effect, and there is no appeal under the Act. (Judicial review of such a regulation might however be predicted in an attempt to have the courts rule on whether the Statutory Powers Procedure Act requires that an opportunity to be heard be given. Even that right, if it exists, could be removed by legislation.)

Under this procedure, the M.O.E. may privately consult with the polluter prior to making a regulation but the public is clearly excluded from the process.

Further, the M.O.E. has an unfettered discretion never to issue similar abatement regulations to other sources, as well as the important unfettered discretion to amend the time and emission limits set in the present regulations. Given the cavalier manner in which the M.O.E. has chosen to extend abatement deadlines contained in Control Orders when important sources seek extensions, there is no reason to believe that this process of ordering abatement by regulation will achieve any better results. Certainly there is nothing in law to assure the public, whether in Ontario or elsewhere, that the M.O.E. will not extend abatement deadlines and consider the real impacts of continuing emissions at high levels anymore in future than the M.O.E. has done in the past 10 years.

The Standing Committee on Resources Development had certain comments with regard to the "Control Order decision making" process that can apply equally to the new process of ordering abatement by regulation.

> Throughout the Committee's deliberations there were repeatedly expressed concerns that too much of the discussion, information, exchange and negotiation relating to the replacement of the 1970 Control Order on Inco happened behind closed doors and to the exclusion of public involvement. Inco officials reported to the Committee that, after the announcement of the new Control Order in July 1978, they had felt the negative affects of what they perceived to be public misunderstanding and mistrust resulting from inadequate public information about the Control Order process, rationale, and contents.
>
> Dr. Warner stated that he thought "the public is interested in these orders and have a right to be" and said Inco would welcome procedural changes that would encourage better public understanding of the issues and options involved. Attention was drawn to the 1977 suggestion by then Minister of the Environment, Mr. George Kerr that public hearings should be held to discuss amendment of the Inco Control Order and Mr. McIntyre informed the Committee that from 1975 to the present the Ministry has been considering "the whole aspect of making the public more aware of the discussions that were going on, not only with Inco, but with all Control Orders or amendments". The issue has not yet been resolved by the Ministry. [Standing Committee Report pages 48-49, emphasis added].

It is obvious from the above comments that the Standing Committee shares the concerns expressed by us that without the public having access to the Control Order making and revision process and the similar new abatement-by-regulation process the Ministry of Environment is forced to deal with Inco and other major polluters by itself without the benefit of offsetting public pressure. At the same time it seems obvious that Inco and other industries feel that public participation may be helpful insofar as the Ministry may arbitrarily set new abatement measures which are unrealistic as far as such sources are concerned.

4.1.9 Enforcement

One of the basic assumptions built into our present system for abating pollution, whether in Ontario, at the federal or provincial level, or in the United States, is the assumption that once an agency has set a clean-up standard the polluter will have an incentive for taking corrective action. Usually that "incentive" is more properly called a disincentive. That is, the legislation generally envisions that if the polluter does not abide by the standards set after a given period of time, the legal proess will be invoked which will ultimately see the polluter fined.

Unfortunately both the assumption that the administrative agency will initiate legal action to bring about compliance in the event that clean up programs are not met, and the assumption that the judicial system can provide the necessary penalty to ensure the incentive for corrective action are assumptions that, on the whole, do not ring true in light of real experience, at least in Ontario.

Some of the reasons that lead to an enforcement agency not taking the initiative to ensure that legal action is initiated are the following:

1. the agency does not have enough staff to adequately monitor and take action against the violators;

2. the polluting industry may be very important to the economy of the jurisdiction or of various local centres within it and, therefore, there is a political disinclination to cause the company to undertake that which it claims it cannot afford. Part of this problem is that the industry has facts and figures which tend to support its claims that it cannot afford any effective abatement action; on the other hand, the agency may not have the expertise or the information to counter such arguments;

3. in many cases, the regulatory agency has a lingering sympathy for the position of the industry in that in many cases industry has trained the very personnel that the regulatory agency is now employing in its attempt to achieve abatement. Moreover, the fact that negotiations take place in secret does not allow the public to become aware of just what is taking place and therefore allow counter-pressure to be put on to the agency so that the agency's position develops in a balanced way;

4. again, since much information is secret, no members of the public could purport to enforce the terms of clean up orders that the agency may have outstanding against the polluter. If the agency does not choose to enforce its legislation for some of the reasons suggested above, the public is virtually precluded from knowing of or taking action about it. [Estrin, "Pollution Abatement: Some Observations on Political and Legal Realities" in Proceedings of the International Joint Commission Workshop on Economic and Legal Enforcement Mechanisms (1977) page 46-49].

Assuming that these difficulties in having administrative agencies take initiatives to enforce their legislation, and particularly abatement programs, are overcome, there is a second basic problem in having them achieve compliance: problems with the judicial system as it has traditionally been structured.

Despite its general adoption as the coercive mechanism in all legislative schemes in the jurisdictions being considered in this study, the legal system provides little real assistance as a coercive mechanism in regard to pollution problems for the following reasons:

Industries are in business to make money; they therefore calculate the factors that interfere with their profits. In looking at the chances of any effective coercion being brought against their firms in terms of the legal system, they know, if they have any experience or any understanding of just how that system works, that there is only a remote chance of an administrative agency either taking them to court or, if taken to court, that they will in fact be found guilty and fined any substantial amount. Indeed if court action is taken the penalties for breach of a standard are usually fines of insignificant amounts in contrast to the legal expenses involved in a company defending itself in the judicial forum and even more miniscule in relation to the amount required by the industry to meet the abatement order. All of these factors render the use of the legal system as the device for persuasion in many cases, wholly inept.

Why is it that if and when resort is had to the legal system there is a good chance that an industry may not be found in breach of the standard, or, if found in breach, that the penalty will be low?

Two factors seem to answer this question:

(1) there is a tendency in the judicial system to favour private as opposed to public rights. In such a contest the polluting industry has the sympathy of the Bench in protecting its private right to profit over general, undefined, public rights.

(2) the evidentiary rules used in judicial forums generally resolve any doubts about, for example, the harmful effects of the polluters activities or the cause and effect relationship between the alleged harm and the polluters activities in favour of proprietory interests.

The bias of the judicial system that we speak of in favour of private as opposed to public rights stems from the history of the common law. Lawyers, and thus obviously judges, respect this tradition that "statutes which encroach on the rights of the subject, whether as regards persons or property, are subject to a strict construction... it is a recognized rule that they should be interpreted, if possible, so as to respect such rights, and if there is any ambiguity the construction which is in favour of freedom of the individual should be adopted. [Maxwell, The Interpretation of Statutes, Twelfth Edition, page 251].

While this concept appears anachronistic when one is dealing with substances hazardous to health or to the environment it is nevertheless alive and well as evidenced by many recent judicial decisions over the enforcement of Ontario's Environmental Protection Act.

Even where legislation is clearly directed at providing public rights and for public officials to act in the public interest, our judges when interpreting such provisions come to the problem with a background oriented towards protecting the private rights of those against whom the environmental agency is initiating restrictions.

The problem has been put thus:

> Property is at once an inalienable right and a means of aggrandizing oneself; and the owner has a right to residuary use. Assuming that a collective decision is made that as a society we wish to husband certain resources, then the policy maker must recognize that an owner of those resources has the entire majesty and force of a thousand years of legal decisions to oppose any attempt to interfere with the owner's rights to that resource. Any policy adopted in that regard will be whittled and narrowed by the legal system not because of any malicious intentions on the part of judges or lawyers but because the development of the legal system has been based on the very principles which the policy is attacking. The notion of property as an inalienable right and the notion that owners have a right to residuary use are at the very centre of the legal system. It is a system, and like all systems, any change in one aspect creates a disequilibrium. To achieve a new equilibrium in the legal system requires a very long passage of time and is only achieved very gradually. Changes as fundamental as those confronting policy makers in the area of limiting growth or checking pollution, may cause a massive shock not only to the legal system but to the society which it serves. [K.M. Arenson, "Of Things Held in Property", in The Allocative Conflicts in Water Resource Management, Agassiz Centre for Water Studies, U. of Manitoba, Winnipeg, 1974.]

In regard to the evidentiary biases of the legal system, one writer has put it as follows: "... It is one of the simple facts of our present system that (for a host of reasons) plaintiffs must generally carry the major burden of proving most of the basic issues in a lawsuit. The result is striking: even with a system of substantive rules against resource consumption, our present rules insure that in cases of doubt about any facet of those rules, resource consumption will prevail." [Krier, "Environmental Litigation & the Burden of Proof" in Baldwin & Page (eds.) Law & the Environment, 105 (1970)]

Standards of proof that have evolved in our court systems may be impossibly high given levels of scientific knowledge. This has been the experience of many federal Fisheries Act prosecutions where it is necessary to prove beyond a reasonable doubt that the substance is "deleterious to fish" and such lethal effects on the fish of a substance are suggested but unconfirmed; in this case, expert witnesses are likely to be unwilling to say that a substance is "deleterious". Many prosecutions, as a result, are not taken. Similar problems have occurred in prosecutions under the Food and Drugs Act. Even if a lesser standard of proof is called for, such as the civil burden of proof known as the "balance of probabilities" where scientific evidence shows only that the action in question creates an unquantifiable (i.e., unknown) risk, a court is not likely to find that the balance of probability standard of proof has been met. [Franson & Lucas, "Legal Control of Hazardous Products in Canada", p.85.]

Both of the above referred to problems with regard to the judicial process the bias of the judicial system in favour of private as opposed to public rights and the requirements of clear proof to meet the standards applicable in either civil or criminal cases (the failure of which resounds in favour of property or proprietary rights), are illustrated in the case Re Canada Metal Company Limited and MacFarlane.[[1974] 1. O.R. 277.] Here, the Director of the Air Management Branch of the Ontario Ministry of the Environment (as that internal division of the Ministry was then called), issued stop orders which had the effect of shutting down the Toronto lead reclamation facilities at Canada Metal and an industry using the same stacks, Roto-Cast. The Director acted under provisions of the Environmental Protection Act which empower him to make stop orders when he is of the opinion "upon reasonable and probable grounds...that a source of contaminant is...discharging into the natural environment any contaminants that constitutes... an immediate danger to human life, the health of any persons, or to property..." This action was taken after data showing high lead blood levels in some persons residing near the plants was received by the Air Management Branch and had been publicized in the media.

The Supreme Court of Ontario had no difficulty in finding that the Director of the Air Management Branch, in issuing a stop order, must act judicially, and that he failed to do so in this case because he had adopted a subjective, instead of an objective test of the danger to health that was alleged to be caused by the applicant's operation. Mr. Justice Keith reviewed in detail the affidavit evidence and commented extensively on its value or lack thereof in terms of deciding whether the Director had acted judicially and decided that "viewing the matter objectively, which the Director should have done, his undoubted power was exercised arbitrarily and not judicially". Statements made by Mr. Justice Keith exemplify precisely the attitude of courts which one may expect to find when agencies seek to invoke their sanction-granting powers (or, as in this case, where industry invokes their power to review what are alleged to be arbitrary decisions by government officials in imposing clean up orders); in the Court's words:

> Much has been heard of the views of the community. It is all too easy to forget that the applicants and their employees and customers also have well-founded interests to be considered.
>
> All our freedoms depend on the proper exercise of the rule of law, and the rejection of the rule of man in an unjudicial way....For all these reasons, the applicants are entitled to succeed...

Even where evidence is available to prove breach of standards, the prosecutor or plaintiff must show there are alternatives available:

> The prosecutor must also show that technology exists capable of curing the problem because whatever the vogue may become with regard to shutting down polluting industries, courts today are extremely reluctant to enjoin major economic activities. I am currently dealing with one industry in Illinois which employs eleven thousand people. There is not much dispute about the fact that they are causing serious environmental degradation. We demonstrated this to the court, and the court simply said to us, "If you think I'm crazy enough to put eleven thousand workers out of work, you're sadly mistaken."...The role of the public prosecutor, however, is to do everything possible to eliminate the emission source. Thus, in terms of proof, the big problem is not proving the pollution but showing that the technology exists to deal with it. In every case in which I have been involved, that is the first question the judge has asked....[Karanganis, "Public Suits: The Search for Evidence", in C. Hassett, Environmental Law (1971) pp. 50-51] .

4.2 Ontario - The Ontario Water Resources Act

This legislation contains several prohibition sections which are designed to prevent water pollution in the Province of Ontario. The main prohibition is contained in Section 32 (1) which provides that:

> Every municipality or person that discharges or deposits or causes or permits the discharge or deposit of any material of any kind into or in any well, lake, river, pond, spring, stream, reservoir or other water or watercourse or on any shore or bank thereof or into or in any place that may impair the quality of the water of any well, lake, river, pond, spring, stream, reservoir or other water or watercourse is guilty of an offence and on summary conviction is liable on first conviction to a fine of nor more than $5,000.00 and on each subsequent conviction to a fine of not more than $10,000.00 or to imprisonment for a term of not more than one year, or to both such fine and imprisonment.

The Act also provides that the Minister may seek an ex parte injunction to restrain any person from discharging or depositing any substance in such a manner that Section 32 (1) would be contravened. Such an order can be obtained for a period not to exceed twenty-one days and may upon further application to a Judge of the Supreme Court or of the appropriate County Court be continued for such period and on such terms and conditions as the Judge considers proper. [Section 31 (3)]

The use of these sections for dealing with the acid precipitation problem is limited by the same considerations that have been discussed in Part 3.0 with respect to The Canada Water Act and Section 33 (2) of The Fisheries Act. Any attempt to deal with the affects of the deposition of these pollutants rather than attempting to deal initially with the emissions themselves is bound to face these same difficulties that are associated with all of these pieces of legislation that are primarily designed to address water pollution problems.

While they all can be seen to have some utility, dealing with the problem in such an indirect manner not only raises all of the problems of proof already discussed but also results in an excessive drain on monitoring and enforcement resources, which could be more efficiently and effectively applied to ensure that the pollutants were not emitted from sources in the first instance.

4.3 Ontario - The Environmental Assessment Act, 1975

Under this Act [S.O. 1975, Chapter 69] the Ontario government has the ability to ensure that every new source of SO_2 or NO_x emissions in the province operates in such a manner that it will not significantly contribute to an increase in the acid precipitation problem.

In fact, the Ontario government has had this power since October 1976 when the bulk of the Act was proclaimed. However, by exercising its powers to exempt undertakings from the application of the Act, the Provincial government has allowed several important new sources to become established since that time. Once a source is exempted from the application of the Act and becomes established there is no mechanism whereby the Act can be retroactively applied to remedy a problem.

The Environmental Assessment Act provides a process whereby any proposed "undertaking" to which the Act applies must be the subject of an environmental assessment document which then forms the basis for whether or not or on what conditions approval for the undertaking will be given.

The potential scope of the Act is extremely wide. The purpose of the Act is stated to be "the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment." [Section 2]. "Environment" is defined in the broadest possible terms to mean

> (i) air, land or water,
> (ii) plant and animal life, including man,
> (iii) the social, economic and cultural conditions that influence the life of man or a community,
> (iv) any building, structure, machine or other device or thing made by man,
> (v) any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from the activities of man, or
> (vi) any part or combination of the foregoing and the inter-relationships between any two or more of them, in or of Ontario
> [Section 1(c)]

"Undertaking" is defined to mean

> "(i) an enterprise or activity or a proposal, plan or program in respect of an enterprise or activity by or on behalf of Her Majesty in right of Ontario by a public body or public bodies or by a municipality or municipalities, or
>
> (ii) a major commercial or business enterprise or activity or a proposal, plan or program in respect of a major commercial or business enterprise or activity of a person or persons other than a person or persons referred to in subclause (i) that is designated by the regulations"[Section 1(o)].

An environmental assessment is required to contain not only a description of and the rationale for the undertaking but also a description of the environment that will be or might reasonably be effected and a description of what those effects might be. The environmental assessment is further required to describe what could be done to prevent, mitigate or remedy these anticipated effects taking into account the undertaking proposed, alternative methods of carrying out the undertaking and alternatives to the undertaking itself. Finally, the proposed undertaking, the alternative methods of carrying out the undertaking and alternatives to the undertaking must all be evaluated in terms of their relative advantages and disadvantages to the environment. [Section 5]

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> (v) any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from the activities of man, or
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process is provided whereby the environmental assessment must itself be approved by the Minister (or by the Environmental Assessment Board where a hearing is required by any person at this stage) prior to the actual consideration of whether or not the undertaking itself should be approved.

Once an acceptable Assessment Document is arrived at the Minister can give consideration to whether or not the undertaking should be approved with or without conditions. This decision can be referred to the Environmental Assessment Board by the Minister and must be referred to that Board where the Minister receives a reasonable request to do so from any person. If a hearing was required by any person at the stage at which the environmental assessment itself was being considered then that hearing at that point in time becomes a hearing on not only the environmental assessment but on the entire undertaking.

Where a hearing is held under the Act, the Board is empowered to make the decision and the decision of the Board, when it becomes final, is deemed to be the decision of the Minister for the purposes of the Act. The Board's decision does not become final until twenty-eight days have passed, during which time the Minister with the approval of the Lieutenant Governor in Council may vary the Board's decision, substitute such decision as he considers appropriate or require the Board to hold a new hearing.

Whether or not the Minister makes a decision himself or whether the decision is made by the Environmental Assessment Board the Act provides that any approval can be made subject to such terms and conditons as are necessary to carry out the purpose of the Act as stated above. Particular conditions that are authorized include:

1) specifying what works or actions must be undertaken by the proponent to prevent, mitigate or remedy effects of the undertaking on the environment.
2) requiring such changes in the undertaking as are considered necessary.

[Section 14(1)(b)(ii) and (iv)]

Clearly, this comprehensive pre-screening and approval process together with the powers for conditional approval of any proposed undertaking provide Ontario with absolute power to ensure that no new sources of SO_2 or NOx come on stream without being sited in the best possible location and without having installed the best available control technology for emissions.

This ability exists in regard to both private undertakings and undertakings by the Ontario Government or Ontario Crown corporations (e.g. Ontario Hydro) because of the fact that the Act explicitly binds the Crown. [Section 4]

While this power is available and absolute it is also completely discretionary. The most fundamental discretion in the process is the decision as to whether or not the Act will apply to a particular proposed undertaking. Section 3 of the Act states that:

> this Act applies to,
> (a) enterprises or activities or proposals, plans or programs in respect of enterprises or activities by or on behalf of Her Majesty in right of Ontario or by a public body or public bodies or by a municipality or municipalities on and after the day this Act comes into force;
> (b) only on and after a day to be named in a proclamation of the Lieutenant Governor, major commercial or business enterprises or activities or proposals, plans or programs in respect of major commercial or business enterprises or activities of a person or persons, other than a person referred to in Clause (a) designated by the regulations.

The parts of the Act necessary for the application of the Act to the public sector as outlined in paragraph (a) above were proclaimed in force on October 20th, 1976. Paragraph (b) above was proclaimed in force on January 16th, 1977 making the Act applicable to "major commercial or business enterprises" in the private sector insofar as those undertakings are designated by regulations. Nothing in this Act applies to any undertaking in the private sector unless such reguations are made designating the undertaking as coming within the scope of this Act. This has only occurred twice to date, both times upon the request of the companies to be so designated.

Even within the public sector, the Act has had little or no application because of the large number of exemptions which have been granted by regulations made pursuant to Section 41(f) and by Ministerial Order pursuant to Section 30.

Section 30 provides that:

> Where the Minister is of the opinion that it is in the public interest, having regard to the purpose of this Act and weighing the same against the injury, damage or interference that might be caused to any person or property by the application of this Act to any undertaking, the Minister, with the approval of the Lieutenant Governor in Council or of such Ministers of the Crown as the Lieutenant Governor in Council may designate, may by order,
>
> (a) exempt the undertaking or the proponent of the undertaking from the application of this Act or the regulations or any matter of matters provided for in this Act or the regulations subject to such terms and conditions as the Minister may impose;
>
> (b) suspend or revoke an exemption referred to in clause a;
>
> (c) alter or revoke any term or condition of an exemption referred to in clause a. 1975, c.69, s.30.

Section 41(f) provides that:

> The Lieutenant Governor in Council may make regulations,
>
> (f) exempting any person, class of persons, undertaking or class of undertakings from the provisions of this Act, the regulations or any section or part of a section thereof and designating any enterprise or activity or class of enterprises or activities or any proposal, plan or program or any class of proposals, plans or programs in respect of any of them by or on behalf of Her Majesty in right of Ontario, by a public body or public bodies or by a municipality or municipalities as an undertaking or class of undertakings to which this Act applies notwithstanding any exemption under this clause.

These sections allow for a complete exemption from the application of the Act to be granted to any proposed undertaking in the absolute discretion of the Lieutenant Governor in Council or the Minister. These exemptions are made without any public notice or opportunity for public input and appear to be unreviewable by the courts.

In fact, these exemption provisions have been so widely used that it is fair to say that every significant provincial project or program which has had the potential for causing significant environmental harm has been exempted in one or the other of these ways. Only one hearing under The Environmental Assessment Act has to date been held and completed, almost five years after the Act was proclaimed in force.

At the time that the Act was proclaimed in force a list of "public bodies" within the meaning of Section 3(a) was established by regulation which included Ontario Hydro. At the same time exemptions were granted by Ministerial Order for almost every aspect of Ontario Hydro's operations. Seven generating stations including the 4,000 megawatt coal-fired station at Nanticoke were exempted because the undertakings were "well underway before the Act came into force"; two generating stations were exempted because they had "reached a sufficiently advanced stage of design" and one generating station, the 800 megawatt fossil fuel generating station at Atikokan was exempted because "the undertaking has reached a sufficiently advanced stage of Planning". [Exemption Orders #OHN-14, OHO-15, OHP-16; Oct. 20, 1976] Even as late as July 25th, 1977, a 3,400 megawatt nuclear generating station at Darlington was exempted from the provisions of the Act on the basis that "the Provincial Government and Ontario Hydro had made significant decisions regarding the Provincial requirement for electrical capacity, the mode of generation and location prior to proclamation of The Environmental Assessment Act". [O.C. No. 1952/77]

The further in time one gets from the proclamation of the Act the more tenuous the reasons for the exemptions become. Since 1976, the Ontario Government has demonstrated a consistent reluctance to use this legislation to assess the environmental impacts of any undertaking of any consequence, preferring to undermine the application of the Act for reasons of political expediency. As recently as 1980 the Cabinet exempted, over great public outcries, a proposal for the largest hazardous waste disposal facility ever proposed for Ontario (or Canada). [See O.C. 625/80.] No legal requirement allows any review of that Cabinet discretion.

The extent to which this pattern continues into the future will be crucial in determining the extent to which Ontario sources of SO_2 and NO_x continue to increase their proportional contribution to the acid precipitation problem in Canada. Both the Nanticoke and Atikokan coal-fired generating stations operate today without controls for emissions of SO_2 or NO_x. The Nanticoke station is the largest coal-fired generating station in the free world and the Atikokan plant is in the middle of a wilderness area which is highly susceptible to acid precipitation. The Ontario government had the opportunity to impose whatever controls were necessary to reduce emissions from both of these plants and chose not to exercise this authority.

- potential proposal that bears close scrutiny and may well give an indication of the government's future intent in regard to the use of the Environmental Assessment Act is the upcoming decision which must be made as to what use will be made of the lignite to be mined from a large deposit in the Onakawana area. To date, Onakawana Development Limited has proposed the mining of a large lignite deposit in that area and has obtained a mining lease from the Ministry of Natural Resources. While it is not known at present what will be done with the lignite once it is mined the possibility of constructing a thermal generating station in that area is being investigated. If such a generating station is built in this remote part of Ontario (close to Hudson Bay) the application of The Environmental Assessment Act could well prove to be crucial in ensuring that substantial emissions of SO_2 and NO_X do not occur and threaten vast areas of Northern Ontario and Quebec with acid precipitation.

While this Act, when it is applied, provides an ideal framework for assessing potential environmental problems and imposing control technologies on new sources, it was not designed to deal with problems from existing sources and neither is it capable of doing so. As has been discussed earlier, it is not only crucial to control future sources, it is absolutely necessary to cut back emissions from existing sources in order to alleviate the adverse affects that are associated with acid precipitation.

While this legislation cannot be retroactively applied to control emissions from existing sources, it could be used to assess modifications which are proposed to be made to existing sources. The Act does not discuss the concept of minor or major modifications, however, the definition of "undertaking" as set out above is sufficiently broad to encompass these concepts. Whether in fact the Act is applied to modifications to existing sources will of course ultimately depend upon whether or not the Minister or the Cabinet determines whether or not such modifications should be exempted from the provisions of the Act. There is no guidance given in the Act as to the point at which a modification becomes "major" or the point at which a major modification becomes a new facility. All of this would be entirely within the discretion of the Minister. Given the record of the past five years, it is unlikely that modifications of any type would be required to undergo the scrutiny of this Act in the absence of any amendments to the legislation providing for a mandatory review of modifications under certain circumstances.

In summary, while this Act has great potential for dealing with new sources or modified existing sources its application to any proposal is completely discretionary. Given the extensive use that has been made of the exemption provisions of the Act, this Act should not be relied upon to contribute to a solution to the acid precipitation problem, unless it is amended to provide for mandatory duties in the place of discretionary powers.

4.4 Quebec - Quebec Environment Quality Act [S.Q.1972, c.49 as amended by S.Q.1974, c.51; S.Q.1978, Bill 69 and S.Q.1979, Bill 74 and S.Q.1979, c.49]

Within approximately one year after the enactment in Ontario of the Environmental Protection Act, the Quebec Legislature passed the Environment Quality Act. The Quebec E.Q.A. came into force on December 21st, 1972 (with certain exceptions). It was substantially amended in 1978 in order to clearly provide for a Board to hold public hearings, to provide a right to a healthy environment and to the protection of living species, and to make more explicit and comprehensive provisions for environmental impact assessment.

The E.Q.A. is designed to operate in a similar fashion to that of the Ontario E.P.A. and indeed to all other provincial environmental legislation in Canada: an administrative agency is established which has the right to licence virtually all activities which have the potential for polluting the environment and requiring that such licences be obtained prior to new sources going into operation; additionally the administrative agency has the legal authority to compel abatement of existing sources which deteriorate the environment in a general way or beyond levels prescribed by regulation.

There are certain differences however between the Quebec law and the Ontario one. Some of these differences, which will be described more fully below, include the right given to any person to take legal action to protect living species and to obtain an injunction to protect the right to a healthy environment; the duty on the chief administrative official of the Quebec Department of Environment who issues approvals to ensure that the environment is not degraded in qualitative as well as quantitative ways when he issues a new approval; and the assurance that environmental impact assessment will be carried out on specific types of projects whether in the public or private sector, once such types of projects are specified in regulations.

Another difference between the Quebec and Ontario legislation is that municipalities in Quebec clearly continue to have the right to make laws approving new sources of air pollution within their municipal boundaries and to compel abatement of those sources. The Quebec Department of Environment retains a supervisory jurisdiction.

In Ontario there is no clear contemplation of municipal jurisdiction continuing with regard to sources of pollution covered by the Environmental Protection Act. Ontario municipalities would seem to still have the right to make by-laws prohibiting and regulating all types of private industry that would lead to pollution as "public nuisances" pursuant to the Ontario Municipal Act. That subject is now under litigation in Ontario after the Supreme Court of Ontario did uphold the right of a municipality to restrict the burning of P.C.B.'s in a cement plant in the City of Mississauga. Nevertheless as a practical matter virtually no municipalities in Ontario seek to make their own by-laws with regard to air pollution sources. However in Quebec, municipal control appears to be a major factor as regards industrial sources in the largest municipalities.

4.4.1 An Outline of the Main Provisions of the Quebec Environment Quality Act and Comments on Their Utility for Controlling Sources of Acid Precipitation

The major definitions of importance in the Quebec Environment Quality Act are "contaminant", "environment", and "pollutant".

"Contaminant" is defined as

> a solid, liquid or gaseous matter, a micro organism, a sound, a vibration, rays, heat, an odour,a radiation or combination of any of them likely to alter the quality of the environment in any way [Section 1(5), emphasis added]

"Environment" is defined as follows

> the water, atmosphere and soil or a combination of any of them or, generally, the ambient milieu with which living species have dynamic relations [Section 1(4)]

"Pollutant" is defined as follows

> a contaminant or a mixture of several contaminants present in the environment in a concentration or quantity greater than the permissable level determined by regulation...[Section 1(6)]

4.4.2 The Bureau D'audiences Publiques Sur L'environnement

Bill 69, passed in 1978 established the "Bureau" to hold public hearings. It consists of not fewer than five persons which has the function to inquire into any question relating to the quality of the environment submitted to it by the Minister of Environment and to make a report to him of its findings

and of its analysis thereof.

The Bureau must hold public hearings whenever required to do so by the Minister, but apparently does not have the authority to hold public hearings on its own initiative.

When holding inquiries the members of the Bureau have the powers and immunities of Commissioners appointed under the Public Inquiries Act. Every report of an inquiry by the Bureau shall be made public by the Minister within 60 days of receipt [See Section 6a-6h].

4.4.3 Advisory Council on the Environment

Under the E.Q.A. the Advisory Council on the Environment is established to advise the Minister on any questions he submits to it. More importantly perhaps it may also, on its own initiative or at the request of groups or persons, formulate an opinion on any policy pertaining to the environment. It may, for such purposes, prepare required assessment statements.

If the Council is instructed by the Minister to advise him or, on its own initiative or at the request of other persons formulates an opinion on any policy pertaining to the environment, it must communicate its findings to the Minister as well as its conclusions and recommendations it considers expedient.

Moreover where the Council has on its own initiative or at the request of a person or group formulated an opinion on any policy pertaining to the environment it must make that public, as well as any assessment statement pertaining thereto, within 60 days after transmitting it to the Minister [See Section 7-19].

4.4.4 The Right to a Healthy Environment and to the Protection of Living Species

Section 19a of the Act, in force as of December 22nd, 1978, provides as follows:

> Every person has a right to a healthy environment and to its protection, and to the protection of the living species inhabiting it, to the extent provided for by this Act and the regulations, orders, approvals and authorizations issued under any section of this Act.

The Act provides that any natural person domiciled in Quebec frequenting a place or the immediate vicinity of a place in respect of which a contravention of this right is alleged may apply to a Judge of the Superior Court to grant an injunction to prohibit any act or operation which interferes or might interfere with the exercise of the right conferred by Section 19a. Such application for an injunction may also be made by the Attorney General and by any municipality where the contravention is being or about to be committed. [See Section 19b and 19c]

A potentially major exception to this right is provided in Section 19g which states that the right to seek an injunction does not apply "in the case of a project duly authorized under this Act, except with regard to any act contrary to the provisions of the Certificate of Authorization or of any applicable regulation".

As will be seen below, the words "duly authorized" in Section 19g are of considerable importance because, as will again be seen below, the Director has the duty, under the Quebec legislation, to assure himself that no new source of pollution is approved that has the potential of affecting either the environment or human beings in any substantial way.

4.4.5 Prohibitions on Pollution of the Environment

The prohibitions sections in the Act are worded in such a manner as to arguably allow their use as regards sulphates and nitrates in addition to the normal things that are actually emitted from stacks such as SO_2 and NO_x.

The relevant portion of those prohibition sections are as follows:

> No one may emit, deposit, issue or discharge or allow the emission, deposit, issuance or discharge into the environment of a contaminant in a greater quantity or concentration than that provided for by regulation.... [Section 20]
>
> No one may...allow the...deposit...or discharge of any contaminants the presence of which in the environment is prohibited by regulation ...or is likely to affect the life, health, safety, welfare or comfort of human beings, or to cause damage to or otherwise impair the quality of the soil, vegetation, wildlife or property.
> [Section 20, emphasis added]

4.5.6 Approval of New Pollution Sources

By Section 22 of the E.Q.A. it is made an offence for any person to

> -erect or alter a structure
> -undertake to operate an industry
> -carry on an activity or use an industrial process
> -increase the production of any goods or services
> if it seems likely that this will result in an emission, deposit, issuance or discharge of contaminants into the environment or a change in the quality of the environment....

without receiving a Certificate of Authorization.

Section 22 requires that an application for such a certificate must include the plans and specifications of the structure or project and must contain a description of the apparatus or activity contemplated, indicate its precise location and "include a detailed evaluation in accordance with the regulations of the Lieutenant Governor in Council of the quantity or concentration of contaminants expected to be emitted, deposited, issued or discharged into the environment through the proposed activity"[Section 22(b)].

Further, the Director has the discretion to require from the applicant "any supplementary information, research or assessment statement he may consider necessary to understand the impact the project will have on the environment and to decide on its acceptability...."[Section 22(c)].

By Section 24 of the Act the Director is under a duty, prior to giving his approval to an application made under Section 22 to "ascertain that the emission, deposit, issuance or discharge of contaminants into the environment will be in accordance with the Act and regulations." For that purpose, the Director is empowered to require "any alteration in the plan or project submitted".

Certain projects have been exempted by regulation from the requirements found in s.22 and 24 of the Act.

[Quebec Regulation 75-430 (made by O.C. 3789-75) as amended by O.C. 3734-80 made December 3, 1980]

Those matters withdrawn from the application of Sections 22, 23 and 24 of the Act relevant to the generation of acid precipitation are the following:

> (d) the maintenance, restoration, repair or putting to another purpose of any equipment, machinery, vehicle or removable ...;
>
> (e) structures, works and activities for which authorization is already provided for in Division V or VI of The Act [Division VI deals with "depollution of the atmosphere and will be discussed below];
>
> (h) any fuel-burning system of a capacity of less than 3,000 KW (10,238,535 BTU/hour), except where it is part of an incinerator;[s.2]

However, the regulation continues:

> Despite paragraphs a, e, f, g, i, and j of Section 2 above, a Certificate of Authorization is required for the construction or extention of a fuel-burning system with a capacity equal to or greater than 3,000 KW ... . [s. 3]

Section 6 of the same regulation requires that in any application for a Certificate of Authorization, certain information of relevance must be provided, including:

> (f) a description of the nature and quantity of waste that will be produced by the proposed activity as well as the method for eliminating such waste;
>
> (g) a list indicating:
>
> (i) all points of emission of contaminants into the environment
>
> (ii) the nature of the contaminants that will be emitted into the environment as a result of the project;
>
> (iv) in the case of emissions of solid or gaseous matter into the atmosphere, the flow of gas in actual M cubed per minute, the gas temperature and humidity, the concentration and quantity of smoke emission projected as well as the efficiency of the purification equipment;
>
> (h) an evaluation of the proposed volume of production in kilograms per hour as well as the feed ratio of the process in kilograms per hour,where applicable ....;

These regulations apply to the whole of the territory of Quebec except the Northern portions governed by the James Bay Agreement and as specifically mentioned in Sections 168 and 203 of The Act [O.C. 3734-80, Section 15]

Given the wording of Section 24, and taking into account the prohibitions on pollution found in Section 20 and the right to a healty environment and to the protection of living species found in Section 19a of the Act, it would seem that the Director is under a duty to consider how emissions or deposits from any new source are "likely to affect health, welfare or comfort of human beings or to cause damage to or otherwise impair the quality of the soil, vegetation, wildlife or property [within the context of Section 20] and also under a duty to ascertain that the deposit will not infringe any persons right "to a healthy environment" and to "the protection of living species" (provided by Section 19a).

It would appear that if the Director failed to require that the deposits etc. into the environment from a new source comply with these requirements then any person would be entitled, as against the source that received the purported Certificate of Authorization, to apply for an injunction to prevent it from operating insofar as the applicant could allege that the source was not in the possession of a Certificate of Approval that was "duly authorized" within the meaning of Section 19g of the Act.

While this argument seems legally valid it is necessary, in order to avoid litigation, that the Director recognize his duty and not approve any new source that will result in deposits of matter contributing to acid precipitation; accordingly it would be desirable to clarify the wording of the Act to make this duty obvious and specific. At least the present Quebec legislation attempts to provide some type of duty, as contrasted to the Ontario legislation wherein the Director is completely unfettered in terms of his discretion to approve new sources without regard to impacts on the environment.

4.4.7 Control Orders (Orders to Abate Pollution)

Under Section 25 of the Act the Director has the ability to make an order directing that the persons responsible for a source of contamination cease finally or temporarily or limit emissions, deposits, issuance or discharge of contaminants named in his order into the environment.

This type of abatement order is very similar to the "Control Order" process in the Ontario Environmental Protection Act.

Such order can be issued only when the Director ascertains that there is present in the environment a contaminant "contemplated by Section 20". This wording implies that there is a contaminant in the environment which goes beyond those levels set in regulations or which is prohibited to be emitted by regulations or perhaps more importantly, is a contaminant "likely to affect the life, health, safety, welfare or comfort of human beings, or to cause damage to or otherwise impair the quality of the soil, vegetation, wildlife or property".

Assuming that the Director is able to ascertain the presence in the environment of such a contaminant and can ascertain "whoever is responsible for the source of contamination" he may then issue the order contemplated by Section 25. It would seem that in order for such an order to be legally issued the Director must be able to prove that a specific source of contaminants is responsible for the "presence in the environment" of the contamination that he is concerned about; alternatively the Director might be able to issue such an order to all potential sources of that type of contamination. It would appear that this type of abatement order is more clearly directed at sources which cause impairment of desirable ambient concentration levels in a given geographic area rather than sources which lead to long range contamination of the environment. Nevertheless it may be possible to usefully utilize the present wording by adopting the interpretation proposed.

However, assuming the Director wishes to issue such an order, he must give notice to the alleged source. The source is then entitled to appeal the issuance of the proposed order to the Quebec Municipal Commission. If the alleged source of contamination does make such an appeal the proposed order is stayed until any hearing is held by the Quebec Municipal Commission.

The right of the alleged polluter to appeal an abatement order and to have a stay of the proposed abatement order pending an appeal is exactly similar to the Ontario process. However, what is quite different in the Quebec legislation, as contrasted to the Ontario EPA, is the right of the public to receive notice that the Director intends to make such an order. The Act provides that notice of the contemplated order must be published in a daily newspaper circulated in the region

in which the contemplated source of contamination is located and additionally a copy of the prior notice must be sent to the clerk of the municipality in question who must "place the prior notice at the disposal of the public for a period of 15 days".

Section 96 of the E.Q.A. provides an appeal by "any municipality or person" contemplated by an order issued by the Director may appeal it to the Quebec Municipal Commission "if there is error of fact or law in the reasons invoked in support of the decision, if the proceedings are affected by some gross irregularity or if the decision was not rendered with impartiality".

A hearing before the Commission must allow the parties the opportunity to be heard and to summon witnesses. Any person, group or municipality may intervene before the Municipal Commission. The Commission is entitled after hearing the evidence, to "confirm, alter or quash" the decision of the Director. The decision of the Municipal Commission is to be final and without appeal. [See Sections 96-103]

The above wording may not allow any person but the polluter to whom a proposed order is issued to appeal. The wording is sufficiently ambiguous to contemplate that, as intimated, "any municipality or person" might make the appeal. If the latter is not the case then the legislation becomes very similar to that of Ontario, wherein only the purported polluter can appeal and only at that time does the public have the ability to challenge the need for the pollution to continue. Nevertheless public notice of the proposed abatement order is given in Quebec and this is important as it does allow the public to at least make submissions to the Director.

The same appeal procedure is used in regard to proposed Certificates of Authorization where the Director refuses to grant an approval or requires a change in an application made to him and in regard to other powers of the Director applicable to sources of acid precipitation. For example, section 27 of the Act provides that the Director may, when he considers it necessary in order to ensure the protection or sanitary condition of the environment, to order whoever is responsible for a source of contamination to

use any class or type of apparatus which he indicates to abate or eliminate the emission, etc; to install equipment or apparatus for measuring the concentration, quality or quantity of any contaminant and to provide the data to the Government; and to provide works necessary to enable sampling and analysis of any source of contamination.

Under these provisions a Director could order the installation of scrubbers, but any such order would of course be subject to appeal as provided in Section 96-103 described above.

4.4.8 Power to Make Regulations

The Provincial cabinet is entitled to make regulations under this Act, inter alia, to:

(a) classify contaminants and sources of contamination;

(c) prohibit, limit and control sources of contamination as well as the emission, deposit, issuance or discharge into the environment of any class of contaminants throughout all or part of the territory of the Province of Quebec;

(d) define for any class of contaminants or sources of contamination a maximum permissible quantity or concentration of emission, deposit, issuance or discharge into the environment throughout all or part of the territory of the Province of Quebec;

(e) define standards for the protection and quality of the environment or any of its parts throughout all or part of the territory of the Province of Quebec;

(h) determine the methods for collecting, analyzing and computing any emission, deposit, issuance or discharge of a contaminant;

(l) regulate or prohibit the use of any contaminant and the presence of any contaminants in products sold, distributed or utilized in Quebec; [Section 31, emphasis added]

It can be seen from the wide scope of the regulation-making power granted to the Quebec cabinet under the EQA that it is open to the Cabinet to prohibit any particular source of contamination or any class of contaminants and that because of the definition of "contaminant" referred to above there is no doubt that the Government of Quebec could, as could the Government of Ontario under the EPA, by regulation order a particular source or sources of sulphates and nitrates to cease operation or impose controls

on such sources of specific kinds.

Such orders, made by regulation, would not be subject to requirements of prior notice or public hearings or to appeal but may perhaps be subject to judicial review.

A regulation has been made establishing ambient air standards and emission standards for various contaminants and establishing control measures for the prevention or reduction of the discharge of such contaminants from stationary sources. [Regulation respecting the quality of the atmosphere, O.C. 3843-80, 17 Dec. 1980; Gazette Officielle du Quebec. Jan. 14, 1981, Vol. 113, No. 2]

Ambient air standards are established for SO_2 and NO_2 (among others) as shown in Table III below [from Section 6].

TABLE III

AMBIENT AIR STANDARDS

Type of contaminants	*average value*	*duration*
Nitrogen dioxide (NO_2)	0-0,22 ppm* (0-414 µg/Nm³)	average over one hour
	0-0,11 ppm* (0-207 µg/Nm³)	average over 24 hours
	0-0,055 ppm* (0-103 µg/Nm³)	annual average
sulfur dioxide (SO_2)	0-0,50 ppm* 0-1310 µg/Nm³)	average over one hour
	0-0-11 ppm* (0-288 µg/Nm³)	average over 24 hours
	0-0,02 ppm* (0-52 µg/Nm³m)	annual average

These ambient standards, however, are not of great utility in controlling acid precipitation as these standards were designed primarily to protect local air quality. Measurements are taken at ground level in areas close to sources and as long as those areas are within the allowable concentrations any amount of the contaminants can be emitted. Local air quality can be improved merely by building taller smoke stacks and emitting the contaminants higher in the atmosphere. This contributes markedly to the acid precipitation problem but does not contravene ambient standards such as those set out in Table III. [This

With respect to the scope of application of the standards three points should be noted. Firstly, the standards apply only to stationary sources- no regulations exist with respect to emissions from mobile sources. Secondly, to a large extent the regulations apply equally to new and existing sources- the exceptions have been noted above and the importance of controlling emissions from existing sources as well as new sources has been stressed elsewhere in this report. [see part 5.2.1 and generally part 6.0]. Thirdly, this regulation fails in a substantial respect insofar as control of emissions from non-ferrous metal smelters is concerned. The only smelters of this type that are subject to specific emission limits are zinc smelters. Copper, nickel or other non-ferrous metal smelters are subject only to the ambient air standards set out in section 6 of the regulation [see Table III of this report]. Since Noranda Mines Ltd. is the single largest point source of SO_2 in Quebec [see part 1.4] and since non-ferrous smelters are the largest category of sources of SO_2 in Canada this is a significant deficiency to the effectiveness of this regulatory scheme for controlling acid precipitation.

Finally, it is worthy of note that this regulation sets out standard methods for measuring emissions of contaminants which must be used (or equivalents) for sampling and analysis for the purpose of determining compliance with the Act or regulation. [see s.96]. These methods are drawn from methods used by agencies throughout North America such as Environment Canada, the Environmental Protection Agency of the U.S.A. and the American Society for Testing Materials (A.S.T.M.) which have developed expertise in these techniques. It is highly desirable that such methods be specified in this manner in order to simplify the enforcement of these standards and to eliminate the necessity of proving the acceptability of these methods in every subsequent court action.

4.4.9 Environmental Impact Assessment and Review of Certain Projects

Quebec does not have a separate law, as in Ontario, for requiring environmental impact assessment. Rather, such requirements are made under The Environment Quality Act and regulations thereto.

The Quebec environmental assessment process has some fundamental differences from and some comparable provisions to the Ontario Environmental Assessment Act.

An essentially similar provision is that found in Section 31 (a) of the EQA which provides that:

> No person may undertake any construction, work, activity or operation, or carry out work according to a plan or program, in the cases provided for by regulation ... without following

that no maximum height is prescribed indicates that short range pollution problems are the target of these emission standards, as with the ambient standards, and that long range transport of these pollutants is not the primary concern.

Emission standards are also established for NO_X for "gas turbines" [s.35(c)], "stationary internal combustion engines" [s.36(b)] and "nitric acid plants" [s.83]. Additional SO_2 emission standards are established for "ovens of coke manufacturing plants" [s.44], "zinc smelters" and associated sulfuric acid plants [s,92], "sulfuric acid plants using elementary sulfur as raw material" [s.93], and "sulfuric acid concentrators" [s.94].

For the categories of "nitric acid plants", "zinc smelters", "sulfuric acid plants associated with zinc smelters" and "sulfuric acid plants using elementary sulfur as raw material" a distinction is made between existing and new plants. The standards for new plants are somewhat more stringent than for existing plants of these types [see s.83, s.92 and s.93]. For the other categories of sources listed above no such distinction is made.

Whether or not these various emission limits and the restrictions on sulfur content of fossil fuels are adequate to result in a significant reduction in the contribution of acid precursors from these sources is a technical question which should be addressed by Environment Canada. It is not clear whether these standards were set at levels which were intended to reduce the acid precipitation problem or whether they are designed to simply avoid local pollution problems.

Emission standards of this sort are certainly the most direct and probably the most cost-effective way of dealing with the acid precipitation problem [see part 6.3 for a discussion of alternatives] and in formulating such standards for a wide variety of sources Quebec has created a regulatory scheme which comes closer than any other considered in this report to dealing with this problem directly and comprehensively. Whether in fact this scheme does deal adequately with the problem depends upon whether or not the standards are stringent enough, whether they are adequately enforced and whether the seemingly wide application of the standards covers most or all of the major contributors of SO_2 and NO_X in the province.

No person may burn a fuel with a sulfur content higher than:

(a) 3,0% in weight for heavy oil.

(b) 1,0% in weight for intermediate oil;

(c) 0,5% in weight for light oil; and

(d) 2,0% in weight for coal.

Moreover, from December 1, 1980, the sulful content of heavy oil must not exceed 2,5% in weight.

Sections 30 and 31 go on to allow such fuels to be burnt if controls are applied to reduce the sulfur emissions resulting from the use of such fuels to below what would be emitted by burning fuels with allowable sulfur content with no controls. Section 30 provides:

Standards prescribed in section 29 for heavy oil and coal do not apply in cases where:

(a) a portion of the sulfur contained in the flue gases is recovered and combined to a raw material coming in contact with these gases;

(b) a portion of the sulfur contained in the flue gases is retained by a gas cleaning equipment; or

(c) another fuel with low sulfur content is used simultaneously in the same establishment.

In the case provided for in paragraph c, the person in charge of the establishment must keep a record book in which he must enter at least twice a week the nature, quantity, sulfur content and heating value of each fuel used.

Section 31 provides:

Notwithstanding section 30, the quantity of sulfur dioxide discharged into the atmosphere by burning any fuel must not exceed the one discharged by burning an equivalent quantity in heating value of heavy oil or coal, whose sulfur content does not exceed the standards prescribed in section 29.

Notwithstanding any of these emission standards any establishment must still comply with the ambient standards as set out in Table III. [s.34].

An indication of the purpose of these emission standards can be gained from section 33 which regulates stack heights. That section provides that stacks must be a minimum height as calculated in a prescribed manner. The fact

problem is discussed further with reference to the American ambient air standards in Part 5.0].

In addition to ambient standards the Quebec regulation also provides emission standards for certain contaminants. A fuel used in new "fuel burning equipment" must not emit nitrogen oxides into the atmosphere beyond the standards set out below in Table IV [s.28].

TABLE IV

heat input capacity as fired	*type of fuel*	*emission standards (ppm, dry basis à 3% O_2)*
≥ 70 MW	coal	500
	oil	250
	gas	200
between 15 and 70 MW	coal	450
	oil	325
	gas	150

"Fuel burning equipment" is defined in the regulation as meaning "any indirect heat transfer equipment which uses a fuel for heating purposes or for an industrial purpose". [s.1(a)]. This is obviously an extremely wide definition, however the application of the standard is limited to "new" sources, which are sources which are "established, put into operation or whose construction is begun after the date of publication of this Regulation..." [s.1(u)], that is January 14, 1981. Enforcement of this provision will likely keep the problem originating from such sources from getting any worse but will do nothing to alleviate the present problem.

In addition to these emission standards for nitrogen oxides, the regulation provides maximum sulfur content for various fuels. Section 29 provides that:

the environmental impact assessment and review procedure and obtaining an Authorization Certificate from the Lieutenant Governor in Council.

In other words, when the environmental impact assessment and review process does apply, it is illegal for any activity or work etc. to be carried out except according to an approval granted under the assessment procedures.

However, the Quebec process differs from the Ontario process in the following ways:

(a) there is a specific list of categories of activities and projects to which the Act does apply. That list was made by regulations following the required sixty day public comment period. Once that list of projects to which the environmental assessment process applies is part of the law, that list may not be changed without revisions to the regulation. Revisions to the regulation under the Quebec EQA require publication of draft changes in the Quebec Official Gazette and the public must be given an opportunity to comment. No changes in the regulations can be made without the sixty days expiring. Neither the Quebec cabinet nor the Minister of the Environment is authorized to exempt any person or activity from the environmental impact assessment and review procedure except in one limited circumstance. That circumstance is in regard to "any project, the physical realization of which is to begin not later than one year after the coming into force of the regulation ... making that project subject to the said procedure". [Section 31 (f)] However, even then public notice must be given prior to that exemption being granted; notice of the decision to exempt must be published after it is made; and any such exemption ceases to have effect if the physical realization of the project is not begun within the one-year period referred to.

The Cabinet does have the power, "where the realization of the project is required in order to repair or prevent the damage caused by an actual or aprehended disaster" to, without notice exempt, exempt a project from the environmental impact assessment and review procedure. This emergency type of exemption is again a much more stringent and narrow exemption power than anything found in the Ontario Act.

While the above provisions give more certainty to the scope of the matters to which the Quebec process will apply, and in that context is a considerable improvement over the Ontario Act, another provision of the Quebec Act gives discretion to the Quebec government which is not present in the Ontario Act. That discretion is the extent to which an environmental impact assessment statement must be prepared.

Assuming that the Act does apply to a certain construction, work, activity or operation etc., it is up to the Minister to determine the "nature, the scope and the extent" of the environmental impact assessment statement the proponent must prepare. [See Section 31 (b)]

Regulations implementing the environmental impact assessment and review procedures under The Quebec Environment Quality Act were finally published December 3, 1980.[O.C. 3734-80]

Section 2 of those regulations provides a list of the "constructions, works, plans, programs, operations and activities ... subject to the environmental impact assessment and review procedure". That list includes the following relevant matters:

> (l) the construction or increase in power of a station for the production of electrical power exceeding 10 MW or the construction or increase in power of such a station resulting in an increase in the total power to 10 MW or more.
>
> (n) the construction of a heavy water plant, pulp and paper mill, (making of pulp, paper or board), petro-chemical plant, cement plant, oil refinery, steel mill, aluminum smelting plant, ore pelletizing, a refining plant, metal smelter, ferro-alloy plant, non-ferrous metal smelter or dismembering-rendering plant;

The same section of the regulation makes clear that the projects listed do not, however, include the restoration or repair of works or constructions on land, on the replacement or modification of technical equipment incidental to works or constructions, except for any extention expressly referred to. [Section 2] Thus, as with the Ontario E.A.A., environmental assessment will only be useful as regards new sources of acid precipitation ~~and not as regards existing~~ ones.

Items listed in section 2 (l) and (n) of O.C. 3734-80 appear to include the major sources of acid precipitation.

Section 3 of the regulation sets out the potential scope of a full environmental impact assessment statement; nevertheless it is up to the Minister to determine how broad any particular statement must be. Certainly the potential scope for an environmental impact assessment statement under the Quebec legislation is very broad and would require almost as comprehensive an assessment as the mandatory minimum requirements for an environmental impact assessment under the Ontario Act. But, as aforesaid, this potential breadth of such a statement could be narrowed to virtually nothing by administrative directive.

Section 17 of O.C. 3734-80 provides that all of this regulation dealing with environmental impact assessment comes into force on the date of its publication in the Gazette except for paragraph (n) of Section 2 "which shall come into force on a date determined by regulation of the government". In other words, the most important provision of the assessment procedures applicable to sources of acid rain in the private sector, i.e. steel mills, aluminum smelting plants, metal smelters, and other smelters, will not have the assessment and review procedures applied to them until and unless the government makes a regulation actually bringing the assessment procedures to bear on them. In that context the EQA environmental impact assessment and review procedures are similar to Ontario in so far as Ontario does not provide at the present time for mandatory environmental assessment in the private sector.

Assuming that the environmental impact assessment and review process does apply to projects of relevance to acid precipitation, then, once an environmental assessment is prepared, public notice of the filing of the environmental assessment must be given and the public is then given an opportunity to request a public hearing. Virtually all information is to be made public. Assuming that a request for a public hearing is made by any person, group or municipality, a public hearing must be held unless the Minister considers the application for the public hearing to be "frivolous". [EQA Section 31] If a public hearing is requested then it will be held before the Bureau which must hold a public hearing and make a report within four months from the time when it receives authorization from the Minister to hold the public hearing.

Following the public hearing, the decision to authorize the project or not is not up to the Bureau but up to the Cabinet. The Cabinet may issue or refuse a Certificate of Authorization for the project with or without amendments, and on such conditions as the cabinet may determine. That decision may be made by any committee of ministers of which the Minister of the Environment is a member and to which the Cabinet has delegated that power. [EQA Section 31 (e)]

While, under the Quebec legislation, the Bureau that holds the public hearing does not make a decision as does in Ontario the Environmental Assessment Board, nevertheless, in both provinces, the final decision as to whether or not a project should proceed and the terms and conditions of proceeding, are up to the Provincial cabinet.

4.4.10 Depollution of the Atmosphere

Section 48 of the EQA provides that any person intending to install apparatus or equipment to prevent, reduce or cause the cessation of the issuance of contaminants into the atmosphere 'must submit the plans and specifications to the Director and obtain his authorization". (This section however does not apply to motor vehicles or motor boats.) This power should be read with section 22 of the Act, and makes clear that the Quebec Environmental Department has ample ability to scrutinize and impose controls on new sources of acid precipitation.

4.4.11 Penalties

The EQA provides a minimum penalty for violation of the basic anti-pollution provisions and requirements for Certificates of Authorization of not less than $200.00 and no more than $5,000.00 for the first offence and not less than $400.00 nor more than $10,000.00 for a subsequent offence from natural persons. A corporation guilty of an offence is liable to a minimum fine three times higher and to a maximum fine six times higher than those provided above.

[These penalties specifically apply to the following sections: 20, 21, 22, 25, 26, 27, 28, 29, 31A, 49, 68, 72, 73, 91, 114A, 123A, 189 or 224, as well as to conditions imposed under section 31 e, 31 f, 199, 202, 236 or 238; see section 106].

Further, a natural person who refuses or neglects to comply with an order of the Director or the Minister or who does something without first obtaining approval, authorization, permission or a permit, commits an offence, and is liable, upon summary proceeding, in the cases other than those contemplated in section 106 to a fine of not less than $100.00, not more than $3,000.00 for the first offence and of not less than $200.00, not more than $5,000.00 for every subsequent offence. A corporation contemplated in this paragraph is liable to a minimum fine three times higher and to a maximum fine six times higher. [Section 107]

The Minister has the power, when someone refuses or neglects to do something he has been ordered to do under this Act, to do the thing at the expense of the offender and recover the cost from him with interest. Further, the Minister may order the demolition of any work done by anyone in contravention of the Act or the regulations or contrary to an order he has issued or an order of the Director or a Certificate of Authorization. [Sections 113 and 114]

4.4.12 Depollution Programs

Sections 116 b - 116 d make provisions for a "depollution program". This is similar to the "program approval" contemplated by the Ontario Environmental Protection Act. Section 116 c provides that a person responsible for the source of contamination may request the approval of a depollution program. If such a depollution program is approved by the Director then no proceedings for violating pollution limits may be instituted and no judgment may be pronounced for an offence contemplated under Section 20 of the Act against the person responsible for a source of contamination if that person faithfully complies with its requirements and schedule of implementation.

However, unlike under the Ontario EPA, public notice of the receipt of a contemplated depollution program must be given. A notice must be published in two consecutive issues of a daily newspaper circulated in the region where the source of the contamination is situated and notice must be given to the clerk of the municipality where the source of the contamination is situated and that notice must be given to the public for a period of at least fifteen days. Any person, group or municipality may submit representations to the Director with regard to the proposed depollution program and the Director must wait to approve any such program until the time limited for receiving such representations has expired.

4.4.13 Duty of Minister to Make Inquiry and Report on Complaint of Emissions Etc. Causing Impairment of Health or Property

If a person believes that he can attribute to the emission, deposit, issuance or discharge of a contaminant, impairment to his health or damage to his property, he may within thirty days after ascertaining the damage request the Minister to make an inquiry. The Minister must then furnish a report of the results of any inquiry which he considers necessary to undertake to the alleged polluter to the complainant and to the municipality in which the source of contamination is situated. [Section 117 and 118]

4.4.14 Municipal Control

The Cabinet, on such conditions as it determines, may exempt the whole or part of a municipality from the effect of certain sections of this Act, to the extent that the municipality has formally agreed with the Minister on the control of sources of contamination of the environment, and the issuance of contaminants in a territory of that municipality. This exemption takes effect upon publication in the Official Gazette. [Section 118 (c)]

The above provision clearly allows the Quebec government to delegate to a municipality virtually all of the control features of the EQA to the municipality. The importance of that delegation for the effective working of air pollution laws in particular will be discussed below.

4.4.15 Rights to Information

By amendments made in 1978 to the EQA, every person has the right to obtain from the Environment Protection Branch a copy of any available information concerning the quantity, quality or concentration of contaminants emitted, issued, discharged or deposited by a source of contamination. [Section 118 (d)]

4.4.16 Municipal Control of Air Pollution

In addition to provincial laws relating to public health, municipal corporations in Quebec, by virtue of the Municipal Code, The Cities and Towns Act and Special Charters have always had certain powers allowing them, if they so wished and if funds were available, to intervene in order to control or prohibit activities causing pollution within their municipality (included in this category are by-laws concerning drainage, nuisances, noise and sanitary conditions in industrial buildings). In 1969, when the three urban municipalities were created, regulatory powers respecting the control of air pollution were granted to the Montreal Urban Community. The special status granted to urban communities was maintained by The Environmental Quality Act of 1972 while at the same time ensuring certain rights of the Director and the Minister responsible for the application of the Act to oversee the activities of the urban communities. According to Quebec writers, these rather complex provisions actually sanction the independence of the urban communities with respect to the Environment Quality Act. They have commented that "this decentralization of decision-making power with respect to the most densely populated urban areas of Quebec, may render one of the objectives of the 1972 Act illusory, that is, the establishment of uniform standards throughout the province for the protection and improvement of the environment". [P. Kenniff and L.Giroux, "The Law Relating to the Protection and Quality of the Environment in Quebec" in Environmental Management and Public Participation, Toronto, 1976]

Further, there are real problems in enforcement of such by-laws, assuming they are made. A study done by members of the Faculty of Law at the University of Montreal in 1976 reviewed the handling of air pollution cases in Montreal Island Municipal Court. The study reviewed cases initiated against polluters since the Montreal Urban Community began enforcement of its own by-laws in 1970.

This study found that many polluters promptly pleaded guilty if summoned under the legislation. Most accused never appeared in court but were represented by a lawyer, an employee or relative. In 20% of the 856 cases, the accused did not even send a representative and was found guilty by default.

That employees, relatives or no person was sent to represent the accused is not surprising in light of the fines that were imposed.

In the 833 cases where the accused either pleased guilty or was found guilty, the average fine imposed was $91.45 -$68.81 in Montreal and $154.93 in the suburbs. In the eleven municipalities no air pollution court actions have been conducted.

According to the authors "to read some of the judgments of the Municipal Courts, we are inclined to believe that industry - probably because of the standard of living it has provided because it provides bread and butter for a number of people - has acquired a right to pollute".

In reacting to this study, the Head of the Montreal Urban Community Pollution Control Department put the onus for the inefficient prosecution of pollutors on the courts, saying that cases often get lost in the shuffle of municipal court business and fail to receive the attention they deserve from the presiding Judge. "Our pollution cases might come up between a minor traffic offence and a parking violation. In the mass of cases the important ones don't stick out enough" he said. [See J. Hetu and Y. Deuplessis, "Le Pollution de l'air et les Cours Municipales du Territoire de la Communarte Urbaine de Montreal" as quoted in Estrin, IJC Proceedings, at p. 53]

4.4.17 Summary

It can be observed that the Quebec environmental legislation is similar in many respects to the Ontario legislation. Despite these similarities there are important differences relating to the actual duties on officials to carry out certain investigations prior to authorizing certain sources of new emissions to occur, providing rights to the public to protect the environment through judicial review, providing rights to information, and ensuring that activities in certain sectors will receive an environmental impact assessment.

There is sufficient administrative scope under the Quebec Environmental Quality Act to allow the government to abate any present sources of acid precipitation as well as prevent new sources from coming into existence. There may in fact be a legal duty to ensure that any new sources of acid precipitation affecting the Quebec environment do not come into existence.
Whether such legal duties can be expected to be acted on in light of economic considerations is another matter, however. Nevertheless, at least the law in Quebec has less discretion in its application and provides to the public more assurance that sources of acid rain will be controlled, than does Ontario law.

However, the delegation of responsibility for major industries located in the largest urban centres to the urban municipality may be a fundamental weakness in the practical functioning of the Act.

5.0 THE U.S. CLEAN AIR ACT

5.1 Description of the Main Features

5.1.1 National Ambient Air Quality Standards & State Implementation Plans

Air pollution in the United States is subject to control by the Clean Air Act, as amended [42USC ss7401-7642] which as one commentator has noted, "is as technically and legally complicated as any regulatory scheme in the Nation." [Parish, page 489]. The cornerstones of the Clean Air Act are the National Ambient Air Quality Standards (NAAQS) and the State Implementation Plans (SIPs). NAAQS have been established for seven pollutants to date: sulphur dioxide, carbon monoxide, total suspended particulates (TSP), photochemical oxidants, hydrocarbons, nitrogen dioxide, and lead. The Clean Air Act further provides that the Administrator shall issue NAAQS for any air pollutant "emissions of which, in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare" [section 108]. Pollutants for which NAAQS have been established are known as "criteria pollutants."

The process by which NAAQS are established is a complex and time consuming one which involves preparation of a "criteria document" which sets out the scientific basis for the standard, publication of a proposed standard, provision of a public comment period, review and modification of the proposed standard, and application of the final standard.

Standards are classified as primary (to protect public health) or secondary (to protect public welfare). While these standards are set at the National level, the attainment and maintenance of the standards for each criteria pollutant are primarily the responsibility of each state. Each state must develop a comprehensive State Implementation Plan (SIP) which must then be submitted to the EPA for approval and must set out the state's control programs which will control emissions of each criteria pollutant from mobile and stationary sources within the state so that the NAAQs will be achieved by specified deadlines.

The scheme of the Act is designed to generate a degree of co-operative federalism as between the two levels of government. Nevertheless, the U.S. Congress has determined that in the event a state fails to fulfill its obligations the Federal government should ensure appropriate measures are taken.

Before a state can adopt a SIP and submit it for approval to the EPA, reasonable notice must be given within the state and public hearings must be held. Even taking these requirements into account, a state must still submit a SIP for approval within nine months after the promulation of a NAAQS. [Clean Air Act, s. 110(a)(1)]. The administrator then has four months in which to approve or disapprove the SIP or any portions thereof. The Administrator is required to approve such a plan if he determines that it was adopted by the State after reasonable notice and public hearings and if it meets the content requirements of s. 110(a)(2) of the Clean Air Act.

A SIP is required to contain extensive details concerning exactly how the State proposes to restrict and monitor sources of each criteria pollutant to ensure that the NAAQS for that pollutant will be met in each air quality region of the State. Although the NAAQS are "ambient concentration" standards and not "emission limit" standards, States are required to impose "emission limit" standards through their SIPs to ensure that the NAAQS are met. Although SIPs are required to include both monitoring of ambient air quality [s. 110(a)(2)(C)] and a "...program to provide for the enforcement of emission limitations...", the emission limit enforcement program is only required as necessary to assure that NAAQS are achieved and maintained. [s.110(a)(2)(D)]. The EPA consequently does not have any basis for requiring stricter emission limits on individual sources within a State as long as the NAAQS for those emissions are being met locally. In fact, a state may well successfully petition the EPA for a revision to its SIP to relax emission standards in areas where it can be demonstrated that such relaxation will not result in the NAAQS being exceeded.

In addition to these monitoring requirements a SIP must include:

1. provisions to ensure that the primary standard for each criteria pollutant is achieved as expeditiously as practicable and in no case later than three years from the date of the approval of the SIP and that secondary standards for any criteria pollutant will be attained within "a reasonable time";

2. such emission limitations "as may be necessary to ensure attainment and maintenance of such primary or secondary standard" together with schedules and timetables for compliance with such emission limitations;

3. provisions prohibiting any stationary source within the state from emitting any air pollutant in any amount which will prevent or interfere with any other State complying with the Act;

4. provisions ensuring that the state will have adequate personnel, funding and authority to carry out their SIP;

5. provisions "to the extent necessary and practicable" for the periodic inspection and testing of motor vehicles to enforce compliance with applicable emission standards;

6. provisions for revision of the SIP as may be necessary from time to time;

7. provisions that in the event that an area of the state fails to attain the NAAQS that no major stationary source shall be constructed or modified in such a non-attainment area if the emissions from such facility will cause or contribute to concentrations of any pollutant for which the NAAQS is exceeded in such an area;

8. provisions that meet the requirements of the regarding consultation with local government or regional agency officials as defined by Section 121;

9. provisions that meet the requirements of the Act regarding public notification as set out in Section 127; and

10. provisions that major stationary sources pay a permit fee sufficient to cover the costs of issuing such a permit and enforcing its terms and conditions [Clean Air Act, s. 110(a)(2)].

While section 110(a)(2)(A) requires that SIPs must provide for the attainment of primary NAAQS within three years and for the attainment of secondary NAAQS within a reasonable time, an extension of the deadline for meeting primary standards was granted by the 1977 amendments. Section 107(d) required each State, within 120 days of August 7, 1977, to submit a list to the Administrator identifying those air quality regions within the State that were failing to meet the NAAQS for any criteria pollutant as of August 7, 1977. Such regions were labelled "non-attainment"

areas and states were required to prepare and submit revised SIPs for these areas.

SIPs for non-attainment areas must contain more stringent provisions than normal SIPs including:

1. provisions for the implementation of "all reasonably available control measures as expeditiously as practicable";

2. provisions requiring "reasonable further progress", to be demonstrated annually, toward meeting NAAQS previously not attained;

3. a permit program for the construction of new or modified major sources that would ensure that any new or modified sources would not interfere with an areas's progress toward attainment;

4. a "comprehensive, accurate, current inventory" of actual emissions from all sources for each pollutant for which the NAAQS is not attained,to form the basis for further action.

States were required to adopt and submit such revised SIPs by not later than January 1, 1979 [Pub. L. 95-96, s.129(c)] and were required to provide for the attainment of any NAAQS not being attained "as expeditiously as practicable" but, in the case of national primary ambient air quality standards, not later than December 31, 1982. [Clean Air Act, s.172(a)(1)].

While there are substantial number of areas in the United States which are classified as non-attainment areas for certain pollutants the primary ambient standards for both SO_2 and NO_2 have been attained in most of the Nation's Air Quality Control Regions. [Council on Environmental Quality, Environmental Quality 1978, p. 4-33]. Particulate matter (TSP) and sulphur dioxide are the only pollutants for which secondary ambient standards are more stringent than primary ambient standards. As of January 1980, the secondary NAAQS for SO_2 was exceeded in eight counties attaining the primary SO_2 standard and the secondary NAAQS for TSP was exceeded in 146 counties which attained the primary TSP standard [NCAQ, p. 3.3-4]

Geographically, the TSP non-attainment areas are concentrated in the North-Central Region which includes the Great Lakes States. This region currently has almost twice as many TSP non-attainment areas as any other region. (3.3-6) Areas which surround major individual sources of sulphur dioxide (especially locations around the large coal burning power plants in the Ohio and Tennessee River Valleys) are the main areas which have failed to attain the SO_2 NAAQS. Other areas primarily in the far West, surrounding large non-ferrous smelters which are exempt from meeting SIP continuous emission control requirements until January 1988 have also failed to meet the SO_2 standard to date.[NCAQ, p.3.3-7]

Non-attainment areas for nitrogen dioxide are currently limited to Chicago, Denver, and five counties in Southern California. Most of these non-attainment areas are associated with heavy concentrations of motor vehicles.

Where a SIP is being considered for approval by the Administrator and the Governor of the State so applies, the Administrator may extend the three year deadline for meeting the primary NAAQS by up to two years. Before such an extension can be granted, the Administrator must be satisfied that the source or sources responsible for the requested delay are unable to comply because "the necessary technology or other alternatives are not available or will not be available soon enough to permit compliance within such three year period." [s, 110 (e) (1)]

The Clean Air Act also contains provisions for the revision from time to time of SIPs. States are required to include in their SIPs provisions for revisions, after public hearings, as may be necessary to take into account revisions in NAAQS or the availability of "improved or more expeditious methods" of achieving the standards. [s. 110 (a) (2) (H)]

In practice, this does not always mean that SIPs are constantly being made more stringent, In fact, many States have successfully petitioned the EPA for increases in allowable SO_2 emissions based on new modelling techniques and on the use of taller stacks which make it possible to demonstrate that NAAQS will be met notwithstanding the relaxation of emission standards in the SIPs.

[Testimony of Robert Rauch before the House of Representatives Subcommittee on Oversight and Investigations, February 27, 1980, p. 421].

Emission limits on numerous coal fired power plants in the midwestern States have been relaxed in this manner in recent years [Rauch, p. 421 to p. 426] and EPA presently has before it petitions for SIP relaxations for five Ohio coal-fired power plants, for eight Indiana plants, for three Michigan plants and for single plants in Tennessee, Illinois and West Virginia.
[Table B: Proposed SO_2 Emission Increases
(midwest power plants), prepared by EPA, 1981].

The EPA Administrator may himself initiate SIP revisions if he finds on the basis of information available to him that "the plan is substantially inadequate" to achieve the NAAQS which it is supposed to implement or fails to comply with any other requirements for SIPs established by the Clean Air Act Amendments of 1977 [s. 110 (c)].

Where a state fails to submit an acceptable implementation plan or fails to revise an implementation plan within sixty days of notification that such a revision is necessary the Administrator of the EPA has the duty to "promptly prepare and publish proposed regulations setting forth an implementation plan" for such a state. [s. 110 (c)].

In addition to the threat of Federal intervention in the State's affairs, the 1977 amendments provide for the imposition of three different types of sanctions against States that do not submit acceptable SIPs: firstly, a prohibition against the construction of major stationary sources of any criteria pollutant in an area that has not complied with the SIP requirements [section 110 (a) (2) (I)]; secondly, a provision for the withholding of certain highway funds in areas needing measures to control transportation related pollution when the EPA Administrator finds that the Governor of a State is not making reasonable efforts to develop an acceptable SIP [s.176(a)]; and thirdly, a discretionary power in EPA to place conditions and restrictions on, or to withhold EPA grants for the construction of sewage treatment plants in areas where a SIP has not been approved [s.316].

5.2.1 New Source Performance Standards

Section 111 of the Clean Air Act requires the EPA to set up a system of New Source Performance Standards (NSPS) to limit the emissions from new sources of air pollution. A central purpose of this section is to ensure that new sources pollute less than old sources that they replace thereby reducing pollution in the long term. Standards are to be developed for new sources that are considered to contribute significantly to air pollution and which may reasonably be anticipated to endanger public health or welfare.

"New" sources are sources which are built after EPA proposes an NSPS for that category of sources. This mechanism establishes an emission based control system which overcomes many of the problems discussed in Part III which are associated with the present controls on existing sources based on the NAAQS and SIPs.

New Source Performance Standards have been formulated for most major sources of sulphur dioxide and total suspended particulate emissions including the category of coal-fired power plants. [Wetstone, footnote 59; National Commission of Air Quality Report, p. 3.6-6] While these standards are not as stringent as could be achieved using the best available control technology they are six to seven times stricter than emission limits imposed on existing sources by most State Implementation Plans.

These New Source Performance Standards are the main reason why the total sulphur dioxide loadings in the United States are not expected to significantly increase over the next twenty years. They are, however, too limited in application to result in an actual reduction of total emission loadings in the next twenty years because of the fact that existing stationary sources are expected to last for a substantial time. It is estimated that 75% of all sulphur dioxide emitted in the United States in the year 2000 will come from stationary sources built before 1970 [Valerie Lee, footnote 103]. Therefore, in order to solve the acid precipitation problem before widespread irreversible environmental damage is caused it is necessary to control existing sources of SO_2 as well as new sources.

Present New Source Performance Standards for NO_2 are not sufficiently stringent even to keep the total NO_X loadings over the next twenty years constant. Coal-fired power plants, for example, are required by a recent NSPS to reduce uncontrolled NO_X by 20%. [44 Fed.Reg.33580(June 11,1974)] It appears that the reason why the NSPS standards are not stricter for NO_X is because of the lack of an affordable and efficient control technology being available. In any event, because of the fact that motor vehicle emissions contribute at least 40% of the problem, stricter controls on power plant emissions would not sufficiently reduce the problem in the absence of equally stringent controls on motor vehicle emissions.

5.1.3 Controls Over Mobile Sources

Sections 207 through 216 of the Clean Air Act establish a number of different mechanisms for the control of emissions from mobile sources. EPA is mandated to set limits on the various pollutants that are emitted by motor vehicles and provisions are made to ensure compliance with these emission limits.

Standards have been established to regulate the emissions of hydrocarbons, carbon monoxide, and oxides of nitrogen (NO_X). These standards apply throughout the useful life of a vehicle which is defined as five years or 50,000 miles. The Act further requires the establishment of particulate emission standards and provides that further pollutants may be similarly regulated if evidence shows that they cause adverse health or welfare effects.

Several mechanisms exist in the Act to ensure that these standards are complied with. Firstly, before a manufacturer can offer a vehicle for sale it must be issued a Certificate of Conformity by the EPA. Before EPA will issue such a Certificate several prototypes must be submitted to EPA for testing. Secondly, EPA is empowered to test production vehicles as they leave the assembly line and may revoke Certificates of Conformity if 40% of those vehicles do not conform to the standards. Thirdly, EPA may order the recall of any class of vehicles that do not conform to the standards throughout their useful life. Fourthly, the Act requires that the manufacturer of a new motor vehicle must warranty the design and workmanship of all components that

affect emission levels. This warranty must remain in effect throughout the useful life of the vehicle. Fifthly, EPA has the power to prosecute manufacturers, dealers, service facilities and fleet owners who tamper with pollution control devices or who use leaded fuel in catalyst equipped vehicles. Sixthly, EPA has authority to regulate the lead content or any other fuel additive that may be used in gasoline. Seventhly, the Act requires that inspection and maintenance programs be implemented by States in areas that will not have attained ozone or carbon monoxide ambient air quality standards by 1982. [Section 172] A similar requirement could be made applicable to areas that have failed to meet the NO_2 ambient air quality standards by that time. [For references on all of these mechanisms to ensure compliance with emission standards see pages 3.5-7 to 3.5-12 of the Report of the National Commission on Air Quality.]

New cars are presently allowed to emit up to two grams of NO_x per vehicle mile, however, by August of 1981, the standard will be tightened to one gram per vehicle mile [Wetstone, footnote 74]. The National Clean Air Commission Staff Report concludes that

> Further reductions in NO_x emissions from gasoline engine passenger cars to the 0.4 grams per mile level is technologically feasible using three-way catalyst control technology, and fuel injection. However, the task will be more difficult for larger vehicles than for small vehicles. Even lower NO_x levels are possible with some current gasoline vehicles already certified at NO_x emissions below 0.2 grams per mile. [p. 3.5-62]

5.1.4 Emission Standards for Existing Stationary Sources

Section 111 (d) of the Clean Air Act allows EPA to set standards of performance for existing stationary sources under certain conditions. EPA can only set standards under this Section if:

1. there is an NSPS established for the pollutant in question which would apply if the existing source were a "new source", and
2. if a NAAQS has not been issued for the pollutant in question and it is not listed as hazardous within the meaning of the Act.

This section is designed to provide a means of regulating pollutants which are not widespread enough to merit a NAAQS and are not dangerous enough to

be classified as hazardous but are a local problem and would be regulated if the source was a new one.

This section is potentially useful for regulating nitrates and sulphates which are the main components in acid precipitation. However, there are substantial difficulties in practice. These are discussed in part 5.2.2.

5.1.5 Inter-State Pollution Provisions

The Clean Air Act contains two sections which are designed to deal with pollutants that cross state boundaries. Section 110 (a) (2) (E) requires that all SIPs must contain adequate provisions prohibiting any stationary source within the State from emitting any air pollutant in amounts which will:

1. prevent any other state from attaining or maintaining any NAAQS; or
2. interfere with any other states' programs to prevent significant deterioration of air quality or to protect visibility.

Section 126 of the Act requires that a state provide notice to any other state of any existing or proposed major stationary source that "may significantly contribute" to air pollution in that other state in excess of the NAAQS. That section also provides that a state which believes that it is receiving inter-state pollution may petition EPA for a finding that a major stationary source in another state is resulting in a violation of section 110 (a) (2) (E).

If such a finding is made pursuant to a state's petition then it would be a violation of the state's SIP for any major new or modified source to be constructed or to operate or for any major existing source to operate for more than three months after the finding has been made.

This section theoretically provides a mechanism by which EPA can use the existing Act to control sources of SO_2 and NO_x from creating acid precipitation in downwind states. There are however some difficulties with the wording of these Sections and with their application in practice. These will be discussed in part 5.2.1.

5.1.6 International Air Pollution Provisions

Section 115 of the Clean Air Act provides that whenever the Administrator

> "upon receipt of reports, surveys or studies from any duly constituted international agency has reason to believe that any air pollutant or pollutants emitted in the United States cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign country...(he) shall give formal notification thereof to the Governor of the State in which such emissions originate." [s.115(a)]

In addition, the Administrator must give such notification

> "...whenever the Secretary of State requests him to do so with respect to such pollution which the Secretary of State alleges is of such a nature..." [s.115(a)]

This section has application only to foreign countries which the Administrator determines has given the U.S.A. "essentially the same rights" with respect to pollution originating in that foreign country. [s.115(c)]

The Notice given to the Governor of the State causing the problem under this section has the effect of triggering a mandatory revision of that State's SIP to eliminate the problem. The foreign country affected under this section is invited to take part in any public hearing associated with such a SIP revision. [s.115(b)]

This section raises many opportunities and problems for dealing with the acid precipitation which originates in both Canada and the U.S.A. and which impacts on both countries. Recent amendments to Canada's Clean Air Act are believed to fulfill the requirement for reciprocity in the U.S. legislation. A full discussion of these opportunities and problems follows in part 5.2.6.

5.1.7 Prevention of Significant Deterioration (P.S.D.)

The 1977 amendments to the Clean Air Act included provisions to prevent the significant deterioration of air that was cleaner than the levels established in the National Ambient Air Quality Standards (NAAQS). Conceptually, the PSD program can be considered as three inter-related elements: (1) reduction of the total tonnage of new pollution being emitted into the atmosphere; (2) limitations on the degradation of clean air with respect to SO_2 and suspended particulates (on both an annual average and a short-term twenty-four hour and three hour basis); and (3) prevention of the adverse affects of air pollution on pristine areas of special national or regional significance.

Section 107 (d) of the Act required the EPA to designate all the areas of the country with air cleaner than the National Standards and all the areas for which inadequate information was available, as areas that were subject to the PSD requirements. Those regions were then divided into three classes: Class 1, which included international parks, all national wilderness areas and national memorial parks which exceed 5,000 acres in size, and national parks which exceed 6,000 acres in size; Class 2, which initially included all other areas; and Class 3, the most lenient classification, to which other areas except for the mandatory Class 1 areas as set out above could be redesignated in accordance with the provisions of the Act.

For each class the Act sets out maximum permissible increases for sulphur dioxide and particulates over and above the area's "baseline concentration".[s.163(b); s.169(4)]. Section 166 establishes deadlines for the promulgation of PSD regulations for other criteria pollutants and EPA is currently developing additional increments for other criteria pollutants including NO_2. [Wetstone, Footnote 82]

Like the NAAQS standards, the implementation of the PSD program is the primary responsibility of the State. The States are directed by Section 163 to revise their SIPs to ensure that concentrations of these pollutants do not increase beyond these statutorily specified increments in any applicable class.

The main mechanism by which the violation of PSD increments is prevented is a program of preconstruction review for major sources which propose to modify existing facilities or construct new facilities. This review is required for sources of

pollutants in twenty-eight different industrial categories which have the potential to emit 100 tons per year or more of any pollutant, and for all industrial sources emitting over 250 tons per year. [s. 169]

A new source, or a modification of an existing source, would only be permitted if they agree to use the best available control technology (BACT) and can demonstrate that they will not exceed the allowable increments for that particular area.

The extent to which the PSD provisions of the Clean Air Act can be a useful tool for reducing the acid precipitation problem is limited because the mechanism is dependent upon the SIP revision process and upon triggering by excessive concentrations of pollutants at ground level. These limitations are discussed in part 5.2.3.

5.1.8 Protection of Visibility

In Section 169 A of the Act, Congress declared as a national goal "the prevention of any future and the remedying of any existing impairment of visibility in mandatory Class 1 areas..." where the impairment results from man-made air pollution. This protection of visibility-related air quality values is closely related to the PSD program already discussed.

EPA has determined three general categories of visibility impairment resulting from human activity: regional haze, plume blight, and layered discolouration. The NCAQ reports that "sulphates exist in the atmosphere almost entirely as fine particles and probably contribute more to regional haze visibility impairment than do any other chemical species of fine particles. This is particularly true in the eastern half of the United States and in non-urgan areas of the south-west". [p. 3.4-109]. Further, "visual range reduction within fifty miles (80 kilometers) of major point sources usually is in the form of plume blight and is caused by both suspended fine particulates and nitrogen dioxide gas." [p.3.4-113].

As sulphates, nitrates and their particulates are the primary components resulting in acid precipitation, control of visibility impairment has the potential to result in a decrease of acid precipitation. This program, however, is of very limited geographical application. While it applies to 156 of the 158 Class I areas, this represents only a very small percentage of the country. Even a complete elimination of sources within these areas would not in all likelihood significantly decrease the total loadings of sulphates and nitrates that contribute to the acid precipitation problem. Other limitations on the applicability of these provisions are outlined in part 5.2.4.

5.2 Analyses and Critique of the Clean Air Act*

5.2.1 The State Implementation Plan (SIP) Process Under the US Clean Air Act and its Utility for Dealing with Acid Precipitation

Under the federal U.S. Clean Air Act the State Implementation Plan (SIP) is the basic device designed to achieve control of presently existing sources of air pollution.

The international provisions of the Clean Air Act (Section 115) as well as the sections dealing with inter-state effects (Section 126 and Section 110 (a) (2) (E)) are also predicated on using State Implementation Plans to cause reductions on specific sources of pollution in any given State.

A basic problem with State Implementation Plans is that they are aimed at achieving and are legally capable of achieving no more than ambient air quality standards at a point not far distant from emission sources. Unfortunately as discussed in Part 1.0 the ambient air quality of a local area is only very indirectly related to the amount of acid precipitation created downwind. Local air quality can be improved by either reducing emissions or by releasing these emissions higher into the atmosphere so that they are not detected by local monitors. Further, the spatial distribution of sources and local weather and wind patterns have significant effects on decreasing local concentrations of a pollutant. None of these factors does anything to reduce total loadings of these pollutants on a regional basis and yet total regional loadings are crucial in determining the amount of acid precipitation in a receptor area.

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* Further analyses and recommended improvements to the U.S. Clean Air Act will be found in Part 6.0.

The following observations of the Preliminary Report of the U.S. National Commission on Air Quality are of significance on this topic.

> The pollution control programs established under the Clean Air Act were designed primarily to address ground-level air relatively near the pollution sources. The programs have not required consideration of the effects associated with source emissions that are dispersed into downwind areas. However, the long-range transport and chemical transformation of air pollutants cause emissions to have important effects much further from the source than had previously been believed.
> [p. 3.9-1]

> The state implementation plan (SIP) process focusses on the control of sources within a state to attain ambient standards in that state; pollutants transported beyond state boundaries often escape regulation. The Clean Air Act, as amended in 1977, provides that the Environmental Protection Agency (EPA) is not to approve any SIP that allows pollution that would "prevent attainment or maintenance" of any ambient standard in another state. Unfortunately, no EPA regulations that would clarify this directive have been issued, and so no real guidance has been given on how states where pollution originates and those that receive it might equitably divide the burden of reducing interstate pollution.
>
> . . .
>
> Present ambient-based requirements do not reflect consideration of the cumulative effect of numerous pollutants that are transported 20 miles to 50 miles from the source. Because the control emphasis has been on local, ground-level effects, sources have been encouraged to disperse pollution upward or outward, which contributes to long-range transport.
>
> A recent EPA study reports that more than 175 smokestacks over 500 feet high have been constructed since 1970. All but eight of these sources are powerplants, which emit sulfur and nitrogen pollution that can contribute to visibility deterioration and acid deposition in distant areas.
> [p. 3.9-1-2]

In a memo in late 1979 the EPA Associate General Counsel for Air, Noise and Radiation gave a legal opinion with regard to whether or not EPA can place a burden on utilities to prove that construction of taller stacks will not hurt either local or inter-state air quality.

That opinion is as follows:

> Except in limited circumstances, EPA has no authority to place a burden on utilities, or other sources, to prove the effect taller stacks will have on air quality. [The following discussion is limited to existing sources.] When a State submits a State Implementation Plan Revision allowing a source to construct a taller stack, the State must make a demonstration of the revision's air quality impacts. Only if EPA has promulgated a State Plan under Section 110 (c) may it require the source to make an air quality demonstration.
>
> When a State submits a revision, EPA must review it to determine if it meets various statutory requirements. Among the requirements are those of Sections 110 (a) (2) (B) and 161. These provisions respectively require that the revised emission limitation, along with all other emission limits in the State's Plan, ensure attainment and maintenance of national ambient air quality standards and prevent significant deterioration of air quality in areas where standards are already achieved. Under these provisions, EPA can approve the revision only if the State demonstrates to EPAs satisfaction that the revision will not adversely affect local air quality.
>
> In addition, Section 110 (a) (a) (E) (i) requires each SIP to contain provisions prohibiting sources in that State from preventing standard attainment and maintenance in another State or interferring with measures required in another State's plan to prevent significant deterioration or protect visibility in clean air areas. Under this provision, EPA must review a proposed revision for its impact on air quality in another State. EPAs review of inter-state air quality impacts is restricted to pollutants for which EPA has set national standards. Additionally, while EPA has authority to require an analysis of inter-state effects, the difficulties of modelling or monitoring long range pollutant transport limit EPAs ability to evaluate long distance inter-state impacts. [US House of Representatives, Sub-committee of the Committee on Government Operations, "Clean Air Act and Increased Coal Use: E.P.A. Oversight" Sept. 11 & 13, 1979,p.187, emphasis added.]

When the EPA was asked specifically, when considering requests for SIP revisions for tall stacks, whether it had considered the issue of long-range atmospheric transport of sulphates and fine particulates in reaching those decisions, Paul Stolpman, EPA Director, Policy Analysis, Office of Air, Noise and Radiation, replied as follows:

> No. Right now our policy is to look at the criteria pollutants, the SO_2 and the TSP. At this time, we do not really have adequate models that would allow us to consider the long range transport and the impact of the secondarily formed particulates on downward TSP loading. So, at this time, using our existing models, we just look at the surrounding area SO_2 and TSP contributions. [Ibid, p.188]

When asked whether EPA was approving modifications to SIPs to increase emissions of SO_2 and fine particulates while it was in the process of evaluating the various health and environmental effects of these pollutants and while it was developing new standards for these pollutants, Stolpman replied:

> Well, if there is a direct correlation between SO_2 emissions and downwind sulphates - which is not necessarily that well nailed down at this point - the answer would be yes, because the way we proceed now is to find out if the plant, in raising its emissions of SO_2, would violate the local SO_2 ambient standard. If it does not and is allowed to raise its SO_2 emissions, and if you conclude that that increases downwind sulphates, then the answer is yes. [Ibid, p.188]

The same topic was pursued again in the context of Department of Energy proposals to convert certain power plants in the New York area to coal and whether or not EPA favoured the conversion of these power plants to coal. Mr. Stolpman was asked whether EPA was only looking at how the conversion would affect local ambient air quality or whether it was also looking at the effects on downwind States.

Mr. Stolpman replied:

> My staff is exploring whether, indeed, there exists models that will allow us to look at downwind TSP contributions. It is not something that we generally do. If we did do it, it would be a precedent setting act. We probably do not have those models on hand that would allow us to do that, but we are exploring that to see whether those kinds of things can start to be worked into the process. ... It is a very difficult technical task which I do not believe we have yet resolved. I think it will take perhaps some resolution of those models before we can know how best to regulate, if we are going to go into that area of regional transport. [Ibid, p.189-190]

Douglas M. Costle, Administrator of the Environmental Protection Agency until the end of 1980, testified on the same topic in February, 1980, before a House of Representatives Committee on Acid Rain . On the subjects of proof and enforcibility and further actions by the EPA given current knowledge,he had the following to say:

> ...There is a footprint to these emissions from individual stacks. We essentially model them currently, that is - if I don't over-simplify- we say what impact will stack A have on hill B perhaps twenty miles away. But we don't have our models which tell us what impact stack A will have on hill B five hundred or six hundred miles away.
>
> We find that the average half-life of sulphur emissions - and there are a multiplicity of variables in it in terms of factors such as climate, terrain, height of stack, weather patterns - is about three days or three hundred miles, which means that within that period of time, all other things being equal, half of the sulphur emitted will fall out. Half continues to go on in a declining tail, and basically what you have in New England now are thousands of those tails coming together to create an ambient condition, which are high sulphate loading.
>
> The simple phenomenon is that some of the sulphur goes out as gas. It can travel perhaps seventy-five miles down range as a gas. Then it will form into a very fine particle with a highlight scattering effect, and that particle in turn can be borne by the wind for hundreds of miles. <u>That is essentially the phenomenon that air quality control regions, existing modelling techniques for regulatory purposes and the existing state implementation plan process do not effectively deal with</u>. [U.S.House of Representatives,Sub-committee on Oversight & Investigations of the Committee on Interstate & Foreign Commerce, "Acid Rain", Feb.26 & 27,1980,p.234]

Mr. Costle was then asked with regard to the height of the stack whether in many areas of the country, including the Ohio Valley, tall stacks are used to attain ambient air quality standards measured at ground level. Mr. Costle replied that that is correct. Mr. Costle was then asked what is EPA doing about considering total sulphur dioxide emissions. Mr. Costle replied:

> We have been exploring for sometime now the feasibility of establishing an ambient air quality standard for sulphates .... Frankly the bottom line has been that we do not think that we presently have enough health effects information to set an ambient air quality standard for sulphates. [Ibid,p.234]

Thus there is very little utility in attempting to use Section 126 or Section 110 (a) (2) (E) of the Clean Air Act (provisions dealing with inter-state air pollution) in an attempt to achieve reductions of SO_2 and NO_x emissions that are arguably having a downwind impact by way of acid precipitation.

As one commentator has put it:

> Section 126 is an inadequate way to control total regional emissions. Section 126 focuses on individual sources. It is, however, impossible to identify the small contribution of a single source to the air masses of sulphate that cross state lines. Thus downwind state cannot identify sources for a petition to EPA under section 126 nor can upwind states notify downwind states of new and existing sources creating downwind violations of the National Air Quality Standards. [Valerie Lee, "Interstate Sulphate Pollution: Proposed Amendments to the Clean Air Act" (in print) Harvard Environmental Law Review, p.3]

In writing or rewriting SIPs, states establish limits for sources that ensure that ground level concentrations of air pollution do not exceed the national ambient air quality standards. However, in doing this, states use air quality models that can only trace air pollutants for fifty kilometers; States ignore impacts beyond this. In effect, states let sources maximize emissions subject to the constraint that ground level concentrations within a fifty kilometer radius must not exceed the national standards. Because inter-state sulphate pollution frequently travels much further than fifty kilometers, it thus cannot be traced to individual sources [Lee, supra, footnote 68 and 69; 43 Fed.Reg. 26238 (1978)].

The former EPA Administrator, Mr. Douglas Costle, when testifying in February, 1980, before the House Sub-committee dealing with the topic of "Acid Rain", was asked about the efficacy of using regional air standards as opposed to present state by state standards. Mr. Costle replied that you can make the theoretical legal argument that under the Clean Air Act the EPA does have the authority to set regional standards. But he continued:"The question is whether we have the knowledge to do it and the technical capacity to make it stick. On that point, I think, we have serious problems in trying to deal with what we can all acknowledge as a <u>bona fide</u> regional problem ... I don't think that we presently fully understand the extent and nature of the problem, nor do we know enough now to begin to take a myriad of steps even though there is a lot more we would like to know." [House "Acid Rain" Report, Feb. 26 & 27, 1980, supra, p. 321]

Although Mr. Costle in these hearings of February, 1980, spoke of his hope for the development of a regional standard, the proof problems he spoke of are also real ones and probably for that reason as well as for the reasons connected with the change in administration nothing has really been done in that area. As a result of the hearings in February the Sub-committee on Oversight and Investigations wrote to the EPA asking for further information following up certain matters raised. One request asked of the EPA was to comment on the assertion that under the Clean Air Act EPA does not have the power to control inter-state air pollution and set regional air quality standards.

In a letter dated June 20, 1980, the response given by EPA was the following:

> EPA has authority under Section 126, 110 (a) (2) (e), and 161 of the Clean Air Act to deal with inter-state air pollution. The scope of such authority is currently undergoing analysis by EPA staff. Included in that analysis will be an examination of EPA's authority to set regional emission limits. [Ibid, p.392]

In an interview conducted in February, 1981, by the authors of this report, officials of the EPA Legal Department were able to confirm that nothing has happened since June of 1980 in regard to such an analysis and that no regulations or guidelines have been promulgated that would further the use of these sections of the Act to deal with inter-state pollution.

It might be asked, cannot SIPs be utilized to deal with the problem by having more stringent primary or secondary National Ambient Air Quality Standards promulgated? The answer is not hopeful. Primary National Ambient Air Quality Standards must be set on the basis of effects on public health. The likelihood of being able to scientifically prove that nitrates and sulphates are a hazard to public health at the present time is low. While secondary standards can be promulgated to protect the "public welfare", even if such are promulgated there is no requirement that SIPs be revised to achieve these secondary

standards within any certain time. The Act reads that states are required to achieve such secondary standards only within a "reasonable time".

Further, the section dealing with achievement of National Ambient Air Quality Standards and requiring State Implementation Plans to set limits on emissions so as to achieve these standards is written in terms of "emissions". Sulphates and nitrates are not "emitted". Thus there is a legal definitional problem which could hamper severely the ability of using revisions to SIPs. However, even if the legislation could be interpreted so as to allow for NAAQSs for substances that are not strictly "emitted", it is unlikely that any standard, no matter how strict, would be exceeded in the local area as a result of the emissions of a local source. Since these substances are created in the atmosphere during the long-range transportation process, local monitoring at ground level would be ineffective at detecting them.

Finally, there is the factor of "institutional drag" and the mechanisms built into the present Clean Air Act that must be taken into account assuming that a technical revision to a SIP would actually cause reductions of sources of SO_2 and NO_x that would result in reductions of acid rain. The problem is that the Clean Air Act requires certain formal legal processes to be adhered to in developing and promulgating new standards. Assuming there was a sufficient scientific basis to conclusively show that sulphates or nitrates were causing a health problem, and that accordingly a primary standard could be set for them, and the other problems set out above could be overcome, we still must face the difficulty of the time that it would take to achieve abatement.

In February, 1980, Mr. Costle addressed this issue in his testimony before the House Sub-committee on "Acid Rain". He was asked whether or not the EPA had enough information to set a sulphate standard. He replied as follows:

> ...In the existing Clean Air Act even assuming you could set a [sulphate] standard and we had enough information to do it, the estimate given me is that we are probably two, three, maybe more years away from being able to meet that kind of burden of proof. The effect of such a standard would be simply to trigger the states the individual states under the Implementation Plan Revision process, to call for a rollback of emissions in order to meet that standard. That in itself is probably a one to two year process. Then it has to be followed up by approval, litigation, and normally by implementation. Therefore you are talking about a seven-, eight-, ten-year plus period.

> Frankly, the fundamental problem I have in my own mind with this issue is that I don't think that is a very efficient way to deal with the problem. Canadians in the meantime are telling me that they don't think there are that many years left before we should do something to reverse the problem. [Ibid., p. 321, emphasis added]

To summarize in this area, regarding the utility of using the interstate provisions of the Clean Air Act to deal with sources of Acid Rain, taking into account proof problems discussed above, we offer the following comments:

Firstly, Section 126 focuses on individual sources of pollutants. It is difficult enough to trace the origin of acid precipitation back to regions or individual States. It is virtually impossible to identify the relatively minor contribution of any single source within such a region. Long-range transport modelling is not sufficiently accurate to make such predictions with the degree of accuracy that would be necessary to meet a legal standard of proof.

The implication of this is that downwind states (or provinces) are not likely to be able to sufficiently identify sources in a manner that would entitle them to petition the EPA successfully under section 126. Neither can the states in which these sources are contained be required to notify downwind states of individual new and existing sources that create downwind violation.

Secondly, Section 110 (a) (2) (E) refers to any stationary source within the state "... emitting any air pollutant in amounts which will ..." cause the violation set out in that section. With this wording, difficulty arises because of the fact that sulphates and nitrates are not "emitted" as such. Further, there are no NAAQS for the downwind states for these substances so the emitting states can in no way be considered to be preventing the attainment or maintenance by that downwind state of any NAAQS. And for the reasons discussed above it would be difficult if not impossible to make a primary NAAQS standard for sulphates or nitrates. In addition, the standard required by this section is that the emissions "will" cause the problems outlined and this is a standard of proof that under the circumstances would be very difficult to meet.

Thirdly, if this section attempted to deal with SO_2 or NO_x which are emitted from such sources, a problem would arise because they do not come down in a downwind state

in sufficient concentrations to prevent attainment or maintenance of the NAAQS for those pollutants. They come down in an altered form - as sulphates and nitrates.

Finally, attempts to use these two sections to deal meaningfully with the acid precipitation problem will necessarily meet with the same fundamental problem as is met in attempting to use any other section of the existing legislation. Fundamentally, it is necessary to control loadings of sulphates and nitrates into the atmosphere on a regional basis. Amounts of acid precipitation in a receptor area are only very indirectly related to local concentrations of pollutants as defined by the NAAQS.

5.2.2 Analysis of Section 111 (d) - Emission Standards for Existing Stationary Sources - Their utility for Dealing with Sources of Acid Rain

Section 111 (d) provides, as set out in Part 5.1.4, that emission standards may be set on present sources in certain instances. Since neither sulphates nor nitrates are pollutants covered by the NAAQS and because neither is "hazardous" it is legally possible for emission standards to be set for these particular compounds. However, for that to be done a New Source Performance Standard (NSPS) for these pollutants would have to be established. Both the issuing of NSPSs for sulphates and nitrates and the subsequent issuance of standards for existing sources would be an extremely time-consuming process even if these standards were eventually upheld. Because such standards are only implemented through SIPs, the SIP revision process would have to be gone through and opposition from most states would be anticipated.

Strong arguments could be expected from interests opposed to regulation of this type on the grounds that sulphates and nitrates were not "any air pollutant emitted" from such a source. In addition, this section would be a somewhat clumsy and imprecise method of reducing the total sulphate and nitrate loadings into the atmosphere because of the fact that any NSPS established would have to apply uniformly on a national basis and therefore would not likely prove to be strict enough in the relatively few areas that are causing most of the problem.

For all of these reasons the usefulness of section 111 (d) for resolving the problem of acid precipitation is quite limited and potentially extremely time-consuming and quite possibly not supportable on the strict wording of the section.

5.2.3 The Prevention of Significant Deterioration (PSD) Aspects of the Clean Air Act and Their Utility for Preventing Acid Precipitation

The basic problem with the application of these provisions to solve the acid rain problem is that they apply only to emissions of SO_2 and particulates from new or modified major sources. [A standard for NO_2 is being developed: see above]

The only real hope of utilizing the PSD preconstruction review process in regard to present major SO_2 and NO_x sources would be in applying a strict definition of what a "new" or "modified" major source is. The major sources of SO_2 and NO_x that must be dealt with to prevent acid precipitation are presently existing sources and as long as such presently existing sources do not, even under most utility renovation programs, come within the definition of "new" or "modified" major sources, then the PSD preconstruction review will have absolutely no application and therefore be completely without utility for dealing with the acid rain problem. According to one commentator, short-term improvements in air quality cannot be reasonably expected and in the long-term, air quality can be expected to improve but only because major <u>new</u> sources will likely locate in clean areas; there will be no abatement of present levels of SO_2 and particulates due to this program. Wetstone, footnote 86]

Finally, it is relevant in commenting on the PSD program, to note the observations of the National Commission on Air Quality:

> ...The PSD program, because of its ambient-based system of baseline and increments, requires a technical mechanism to describe precise air quality levels. Examination of the analytical tools available (namely, dispersion modelling, occasionally supplemented with monitors at a few locations) suggests that such a precise mechanism may not exist.
> [National Commission on Air Quality, p.3.4-66]

.2.4 The Clean Air Act's Visibility Program (Section 169 of the Act) and Efficacy for SO_2 and NO_x Abatement given Certain Proof Problems

The visibility regulations published by EPA in December 1980 are directed at one class of visibility impairment, plume blight (this appears to be not important in controlling sulphates but may be important for nitrates). The regulations became effective on January 2nd, 1981 and are the first phase of a long range program directed towards visibility improvement.

The regulations outline visibility protection programs for Class I areas that are to be included in SIP revisions for the 36 states containing mandatory Class I areas.

EPA notes that the specific source or sources of plume blight impairment usually can be identified. On the other hand layered discoloration and regional haze [an important effect of SO_2 emissions] require models and more information than are currently available to relate impacts (and therefore control strategies) to specific sources or source categories.

The visibility provisions of the Act require that the best available retrofit technologies (BART) be used to retrofit pollution sources adding to visibility impairment. However because most existing sources now incorporate high levels of control for particulates, the BART requirement is likely to be used principally to control nitrogen oxide plumes. However, emission controls to reduce nitrogen oxides are of limited effectiveness.

Moreover in its January 2nd, 1981, regulation the EPA stated that most point sources initially identified as potential BART candidates are not now anticipated to be affected by the retrofit requirements because visibility impairment cannot reasonably be attributed to them [National Commission on Air Quality, p.3.4 - 119-120]

Therefore one may conclude that the visibility requirements will not have any impact in controlling present sources or even new sources unless it is technically possible to identify sources of visibility impairment which are located outside the Class I areas to be protected.

This problem of proof as implied by the visibility requirements of the Act will not prevent new sources of acid rain from developing or allow abating of the present sources unless the rules of proof are changed.

5.2.5 Comments on the Clean Air Act Mobile Source Limitation Requirements

The Preliminary Staff Report of the National Commission on Air Quality concluded that:

> In-use vehicles have been found to exceed applicable emission standards substantially. This situation has persisted since vehicle emissions were first regulated, and is predicted to continue in the foreseeable future. [p. 3.5-13]

They also commented as follows in regard to NO_x:

> It is apparent that before NO_x emissions or mobile sources can be expected to decrease, standards need to be stricter, enforcement needs to be more effective, and older vehicles (which emit approximately 76% more NO_x than controlled cars) need to be slowly replaced by controlled cars. [p.3.5-63]

Further analysis of the law and recommendations regarding this subject are found in Part 6.2.3 and 6.2.7.

5.2.6 Section 115 of the Clean Air Act - International Air Pollution Impacts and the Utility of Section 115 for Abating Emissions Impacting Canada

As can be seen from the wording of section 115 (see above Part 5.1.6) there are two preconditions to the Administrator of the Environmental Protection Agency invoking the provisions of Section 115 in a manner that could assist Canada.

With regard to these two preconditions, the former Administrator of EPA, Mr. Douglas M. Costle, recently set out his opinion in two letters dated January 13, 1981; one to the Secretary of State, the Hon. Edmund Muskie and one to the Hon. George Mitchell, U.S. Senator.

With respect to the first precondition Mr. Costle states:

> The International Joint Commission which is a duly constituted international agency under Section 115, has recently transmitted a report which addresses the issue of acid deposition. My review of the October, 1980, Seventh Annual Report on Great Lakes Water Quality of the International Joint Commission (IJC) leads me to conclude that the IJC has found acid deposition results in significant harm in both the U.S. and Canada and that emission sources in both the U.S. and Canada contribute to the problem through the long range transport of air pollution. [p.3, letter to Mitchell]

With respect to the second precondition Mr. Costle concludes, in his letter to the Secretary of State that:

> The Canadian Legislation [referring to Section 21.1 and 21.2 of the Canadian Clean Air Act] provides,the Government of Canada with authority to give the United States essentially the same rights as Section 115 of the Clean Air Act given to Canada.

He goes on to say that:

> In addition to this initial determination based on the language of the Canadian Legislation, the Administrator must be able to determine that the Government of Canada is exercising or interpreting that authority in a manner that provides essentially the same rights to the United States. This second aspect of EPAs determination is necessarily a dynamic one which will continue to be influenced by Canadian action now and in the future.

While Costle concludes that this Canadian Legislation meets the requirements of section 115 as far as providing the Canadian Government with the necessary authority he does go on to point out several important distinctions between the two pieces of Legislation.

One significant difference between the two pieces of legislation is that while the Canadian legislation authorizes the establishment of specific emission standards to deal with international pollution the American Legislation provides that the Administrator shall give formal notification thereof to the Governor of the state in which the emissions originate and that such notice shall be deemed to trigger a requirement for a SIP revision in that state. As discussed above in the section which describes the process by which SIPs are revised, this process is a relatively lengthy one. The initiative regarding setting of emission limits would then rest with the individual state causing the problem and would only revert back to the EPA where the state failed to submit an acceptable plan to the EPA as required by the legislation.

In Canada, while the Minister is required by Section 21.1 (3) to give notice to the provincial government concerned and to consult with that province to determine whether the problem can be solved through the laws of the province the Federal government at all times retains the ultimate authority to act if such consultations do not result in a solution at the provincial level.

It is difficult to estimate whether this process would be more time-consuming than the parallel process in the United States. However, by retaining the ultimate authority at all times the Federal Government is in all likelihood in a better position to control the pace of the process.

A potentially major obstacle to the use of these international air pollution sections in both the American and Canadian Clean Air Acts is the extent to which the cause of the problem must be proved to originate from particular sources or from particular

States. The United States legislation requires that the Administrator "shall give formal notification thereof to the Governor of the State in which such emissions originate". This section clearly requires that the Administrator be able to single out a "State" that is causing the international air pollution problem and this may well not be possible given the current state of the art in modelling and predicting long-range transportation of pollutants (see above re Problems of Proof)

Similarly, the Canadian legislation [Section 21.1 (1)] refers to "an air contaminant emitted into the ambient air by any source, or any sources ..." and further gives authority to the Minister to recommend to the Governor in Council specific emission standards " ... with respect to that source or each of those sources as the case may be ...". By the strict wording of this section it would be necessary for the Minister to be able to trace the origin of the international air pollution problem to a particular source or sources before he could recommend emission standards for that source or sources. Again, given the present accuracy of long-range transportation models it may not be possible to do this with the degree of accuracy necessary to satisfy a legal standard of proof in the event of a challenge by any such regulated source. These and other problems affecting the utility of the recent amendments to the Canada Clean Air Act are discussed further in Appendix "E".

5.2.7 General Probems of Enforcement Under the US Clean Air Act and its Administration

Assuming that all of the above discussed difficulties could somehow be overcome so that the regulatory provisions of the US Clean Air Act could be utilized to prevent sources of acid precipitation one then has to address the issue of the enforcibility of such measures. The problems of proof in our regulatory system have already been discussed above. The present discussion is limited to the ability to initiate enforcement actions.

Under the US Clean Air Act enforcement can be taken by Federal, State and Local agencies.

On the states or local enforcement levels the National Commission on Air Quality Staff Report concluded that

> Few states or local agencies have enforcement programs designed to bring about continuing compliance.[p.3.7-4].

The Commission noted that a recent Study for EPA showed that 71% of one hundred and eighty sources in nine different states had documented incidents of excess emissions and that each of these sources had been previously reported as complying with the standards [NCAQ p.3.7-4].

The Commission also noted that:

> Surveillance methods currently relied on by most States and Local enforcement agencies are either not well suited to detecting chronic or repeated violations or are limited to certain types of violations. Some methods, which may serve well to determine initial or one-time compliance, cannot be used to determine continuing compliance without a major additional commitment of agency resources [NCAQ p.3.7-4].

The Commission noted that as of 1981 it was reasonable to predict that the budgets of most pollution control agencies will, at best, remain constant with little likelihood of future increases.

The Commission concluded that,even with the potential for the Federal government enforcing the Act,resources are limited, and the number and variety of air pollution sources and the technical complexity of pollution controls require that, to be effective, enforcement programs must encourage a high level of voluntary compliance. The Commission concluded that for voluntary compliance to be realistically achieved it will most likely be ellicited only when regulated industries understand clearly what controls are required, know that failure to comply is likely to be detected, and see that non-compliance results in significant sanctions.

The implications of the Report prepared by the National Commission on Air Quality are that present enforcement programs are unlikely to detect major failures to comply and that there are not significant sanctions actually being levied on non-complying sources.

The Commission in fact stated that:

> While many sources, nonetheless,voluntarily complied with air pollution control requirements, it is clear from the EPA Study of one hundred and eighty sources that large numbers do not conclude that compliance must be a high priority. [NCAQ p. 3.7-8 - 3.7-9]

Under state laws penalties are not assessed until a source fails to comply with a Notice of Violation. The NCAQ Report noted that state and local agencies rely heavily on administrative resolution of control violations because of the substantial commitment of resources and time required to pursue judicial remedies. They noted that preparation of a case for a legal action places a large burden on an agency's legal staff, which is often quite small, and that officials of state and local agencies noted that low pay, compared to salaries paid by EPA and industry, contributed to high turnover and inexperience amongst state and local technical personnel.

One observation made by the NCAQ Staff is particularly important as regards attempting to achieve abatement of SO_2 and NO_X emissions through the SIP revision process. That observation is as follows:

> ... Enforcement officials state that their most difficult decision is whether to require a source to institute major rather than minor changes. Requiring major changes escalates the likelihood that the source will seek administrative review or more significantly, that court action will be required, thus involving a substantial commitment of limited agency staff to a single enforcement action. None of the state agencies studied believed they had sufficient resources even for officially required inspection activities.
> [NCAQ p. 3.7-10 - 3.7-11, emphasis added]

In addition to state and local enforcement, the EPA has an enforcement capability and indeed EPA can initiate enforcement actions as a result of its own surveillance, following the receipt of data from states showing non-compliance, or by joining a citizens suit. However, EPA relies to a considerable extent on state and local programs to detect violation and to report compliance status of sources.

The Staff Report of the National Commission on Air Quality had some disturbing conclusions with regard to both EPA and State and Local enforcement activities.

> ...There is a great need for improvement in activities to ensure continuing compliance by stationary sources of air pollution. Neither EPA nor state and local agencies have adequate programs to detect and penalize routine or repeated violations of control requirements. The level of non-compliance identified in studies reviewed by the Commission may seriously reduce benefits expected from sources equipped to meet control requirements and inhibit progress towards the nation's air quality goals. The variety of surveillance and enforcement tools already available to federal, state and local enforcement agencies could be used in a more effective manner to increase the level of continuing compliance [p. 3.7-15 - 3.7-16].

Such comments do not augur well for expecting reductions in SO_2 and NO_x emissions through the use of State Implementation Plans.

A further problem that can be anticipated in the enforcement area as a result of trying to use reductions in State Implementation Plans to stop sources of acid rain is that such revisions to SIPs can create confusion as to what in law must be observed.

Revisions and approval of SIPs sometimes take several years. This can create confusion over the status of significant portions of the SIP and accordingly lead to confusion over the legal significance and enforcibility of an SIP. A disturbing observation was made by the National Commission on Air Quality when it found that:

> It is seldom possible to obtain a copy of most states' current federally approved Implementation Plan,

and that;

> In many cases the regulatory portions of a federally enforcible SIP do not correspond to the regulations (and emissions limitations) enforced by the State. [p. 3.8-47].

A most extreme case found by the NCAQ was in the north-central region where there were either procedural differences or differences in the emission limitations between the federally approved SIP and the regulations for four states. Assuming that these are the Ohio Valley states then again we have a most serious enforcement problem. [see NCAQ p. 3.8-47 - 3.8-48]

To conclude, based on these observations, air pollution control agencies may find it difficult to be confident of the basis of enforcement actions. Sources may be uncertain about which actions will be sufficient for them to achieve compliance, and citizens' initiative to achieve abatement through the use of citizens' suits may effectively be prevented.

All of the above observations as to enforcement difficulties do not augur well for the use of present provisions of the Clean Air Act to effectively deal with acid rain sources.

6.0 OBJECTIVES FOR REGULATORY REFORM - ALTERNATIVE SOLUTIONS TO THE PROBLEM

6.1 Introduction

It is clear that the problems associated with proving the connection between emissions of sulphur dioxide and nitrogen oxides and the ultimate deposition of sulphates and nitrates in the form of acid precipitation and the harm alleged to be caused to the environment and man as a result are such that, in any particular case, it would be very difficult or impossible to prove this connection beyond a reasonable doubt. Further, attempting to control the problem by prohibiting the deposition of these acidic compounds into water or onto land in the way that many of the present anti-pollution laws attempt to do will always face these same difficulties because of the indirect nature of the control mechanisms and the complexities of the chemical transformations and the long distance transportation that these pollutants undergo. Present anti-pollution legislation relies in a large part upon being able to prove conclusively that a certain prohibited substance is either deposited, permitted to be deposited, or caused to be deposited in some part of the natural environment that is protected by the legislation in question. The complexities of long range transport limit the effectiveness of this approach for the purposes of dealing with acid precipitation to the point where tremendous commitments in terms of manpower, scientific expertise, money and time would be required to allow a regulatory agency to initiate abatement and enforcement action, let alone achieve a conviction for breach of statute.

The lack of adequate scientific and manpower resources, together with the necessity of controlling the problem within a relatively short period of time, requires that the traditional approach to pollution control be abandoned in favour of a more direct mechanism which would eliminate the necessity of dealing with these complexities in each particular instance.

There is general agreement in the scientific community that the most direct way of reducing the amounts of sulphates and nitrates that are deposited as acid precipitation is by reducing the amounts of sulphur dioxide and nitrogen oxides that are emitted into the atmosphere in the first instance. While ideally, one would only restrict emissions from those sources that actually

result in acid deposition to sensitive receptor areas, predictive models do not appear sophisticated enough at this time to make such precise distinctions. What is clear is that all sources in all jurisdictions are contributing to some extent to acid precipitation in all jurisdictions. Since many of the areas of Canada and the United States that are receiving acid precipitation are sensitive to its effects and these effects are serious and largely irreversible, some reductions in total loading of SO_2 and NO_X from all or some of these sources is necessary if the acid precipitation problem is to be controlled.

There are several ways in which a reduction in total SO_2 and NO_X loadings can be achieved. For example, if it is determined that a 50% reduction in these emissions is required in order to achieve a certain level of environmental protection then this can be accomplished by requiring all sources to cut their emissions by 50% or, at the other extreme, requiring those sources which emit 50% of the pollutants to reduce their emissions to zero. Somewhere between these two extremes lies the most administratively feasible and cost effective approach.

This part will discuss new regulatory objectives that should be pursued by the U.S., Canadian and provincial governments with respect to new stationary and mobile sources of SO_2 and NO_X and with respect to existing stationary and mobile sources of these pollutants. These objectives will not be limited to goals that can be achieved directly through the Canadian government's legislative authority but will also address initiatives that can only be taken by the U.S. Federal government or by provinces in Canada that should be actively encouraged by the Canadian Federal government.

Having identified these objectives for these different types of sources this part will discuss the methods that can be used to achieve these objectives. These methods will include the use of existing legislation to the extent possible and will discuss whatever legislative amendments are necessary in all four jurisdictions to ensure that solutions are implemented.

6.2 Objectives

6.2.1 New Stationary Sources of SO_2 and NO_X in the U.S.A.

Any new stationary source of either SO_2 or NO_X in the United States is required to meet the New Source Performance Standards under the Clean Air Act. Such standards have been formulated for most major sources of these contaminants,

including the category of coal-fired coal plants.[44 Federal Register 33580 (June 11, 1979)]

Section 111(a)(1)(A) of the Clean Air Act provides that New Source Performance Standards must contain both allowable emission limitations for the particular category of sources together with requirements that sources already operating below such emission limitations achieve specified percentage reductions in any event. Standards formulated by E.P.A. under this section of the Act are required to reflect "the degree of emission reduction achievable through the application of the best system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated for that category of sources". [Section 111(a)(1)(C)]

These requirements taken together have the effect of requiring what is commonly referred to as "best practical technology".While it has been argued that section 111 of the Clean Air Act in fact imposes a technological standard of "best available control technology" [See Banks, W.C.,"E.P.A. Bends to Industry Pressure on Coal NSPS and Breaks", Ecology Law Quarterly, Volume 9, page 67(1980)], E.P.A. has formulated its NSPS standards only with regard to best practical technology.

In spite of this somewhat weaker standard, NSPS standards for coal-fired power plants are six to seven times stricter than emission limits imposed on existing sources by most State Implementation Plans. The standard established on June 11th, 1979 for SO_2 emissions from new coal-fired power plants allowed for the emission of 1.2 pounds of SO_2 per million BTU's and set the percentage reduction requirement at 90% where uncontrolled emissions would be greater than or equal to 0.6 pounds per million BTU's and only 70% where uncontrolled emissions would be less than that figure. This two-tier sliding scale system was an attempt to strike a balance between economic and environmental requirements and to be equitable between different regions of the country to the extent that they relied upon coal of varying sulphur content.

While a substantial amount of controversy surrounded the procedure by which this standard was established [Banks (1980)], and the final result is not completely satisfactory to either environmentalists or industry, the standard does represent a substantial reduction in the total loadings of SO_2 that will be allowed from new sources.

The standard also represents a balance between the competing interests and is designed to achieve the purposes of the NSPS provisions. According to the House Report, the NSPS was intended to:

1) insure that no State would have a competitive advantage in attracting new industry;

2) reduce new source emissions as much as possible to maximize long term economic growth ;

3) reduce long term costs by forcing new plants to install all the control technology that they would ever need at the time of construction;

4) encourage the burning of high sulphur coal to expand available energy resources and free low sulphur coal for use in existing facilities for which retrofitting would not be feasible;

5) encourage the use of low sulphur coal in older and smaller sources, prolonging their lives and preventing unemployment; and

6) provide incentives for the development of improved technology through regularly revised standards.[H.R.Rep. No. 294, 95th Congress, First Session 187, (1977) at pages 183-186].

Within the parameters of the Clean Air Act, the E.P.A. is always entitled to formulate new standards which can take into account advances in technology or "the cost of achieving such emission reduction, any non-air quality health and environmental impact and energy requirements". While it is assumed that any such future standards will be stricter as new technology is developed, one cannot completely dismiss the possibility that consideration of these other factors could justify a relaxation of these standards should E.P.A. be convinced that that is appropriate.

The present emission control program for new sources under these New Source Performance Standards, while not as rigorous as best available control

technology could require, are nonetheless believed to be strict enough that, if they were applied to all sources, the acid precipiation problem would be significantly reduced. The objective that the Canadian Federal Government should seek to achieve insofar as new U.S. sources are concerned is that the NSPS provisions are preserved in the Clean Air Act as at present and that standards themselves become progressively stricter as technological improvements warrant.

6.2.2 New Stationary Sources of SO_2 and NO_X in Canada

Because Canadian sources contribute up to 50% of the acid precipitation problem in Canada as well as impacting substantially on areas in the United States, new stationary sources of SO_2 or NO_X should be required to comply with a standard equally as strict as the U.S. standard for such sources. The importance of having an equivalent standard is also underlined by the necessity of demonstrating that Canada is prepared to do at least as much as it is asking the U.S. to do in regard to controlling sources of acid precipitation. This is crucial to maintain the element of good faith which is so important for the co-operative resolution of this problem.

In Canada, while the Clean Air Act recognizes the concept of specific emission standards, severe definitional problems as well as constitutionally unnecessary requirements for provincial consultation and agreement regarding the application of such specific emission standards to sources in each province, prevent the Federal government imposing specific emission standards on new sources having regard to best practical technology under the Clean Air Act. Amendments to this Act are accordingly necessary.

Under the Environmental Contaminants Act, while specific emission limits could be imposed (subject to prior consultation with the provinces and only if the Cabinet is satisfied that no appropriate action will be taken by such provinces) by the Federal Cabinet by regulation on specific sources of SO_2 and NO_X emissions, the Act is limited to being applicable to sources that are a commercial, manufacturing or processing activity [s. 8(1)]. Accordingly such sources as power plants, whether privately or publicly owned (e.g. all Ontario Hydro Stations) are probably exempt from the reach of this Act. In addition, amendments are needed to the Environmental Contaminants Act to make monitoring and enforcement of any standards formulated less difficult and less demanding of governmental enforcement resources. Nevertheless, the Federal government should commence the process outlined in Part 3.2 to enable them to set standards for SO_2 and NO_X under this Act.

In Ontario and Quebec, legislation is in place which would allow for standards this strict to be imposed or for specific control technology to be imposed on a case-by-case basis however, unlike the U.S.A., there is no requirement that these standards or technology be imposed in any uniform way and because of the ad hoc nature of the approval processes in these provincial jurisdictions any future application of best practical technology or an equivalent standard can be expected to be patchwork at best. (Under the Quebec E.Q.A., unlike under Ontario or Federal law, there may be a duty to apply best practical technology. [See our discussion of the Quebec E.Q.A. in Part 4.4.]

Given these problems and given the past record of reluctance by the provincial governments to use their powers to the fullest extent necessary, substantial legislative amendments are believed to be necessary in order to ensure that Canada, either through the Federal authority or through provincial legislative power, has both the power and the duty to uphold its end of the bargain.

Because of the fact that the amendments that are required at both the Federal and provincial levels to properly control new sources in Canada are essentially the same as the amendments that are required to properly control existing sources, a full discussion of how this objective can be achieved will be left to the section which discusses achieving the objectives for existing stationary sources in Canada. (Part 6.2.6)

6.2.3 New Mobile Sources in the U.S.A.

Under Section 202 of the U.S. Clean Air Act, emission standards for heavy duty vehicles have been prescribed by the Administrator pursuant to his duty under that section. Such standards must reflect the "greatest degree of emission reduction achievable through the application of technology which the Administrator determined will be available for the model year to which such standards apply, giving appropriate consideration to the cost of applying such technology within the period of time available to the manufacturers and to noise, energy and safety factors associated with the application of such technology". [Section 202(a)(3)(A)(i)].

This standard represents what is commonly known as "the best practical control technology" and can be expected to become stricter over the years as new technology emerges.

With respect to light duty vehicles, the Clean Air Act itself sets out maximum standards for carbon monoxide, hydrocarbons and nitrogen oxides which cannot be exceeded by any regulations made under the Act. As discussed earlier, the U.S. standard for nitrogen oxides is 1.0 grams per mile for light duty vehicles manufactured from 1981 and following. This represents what Congress felt was the "best practical technology" at that time. While this does not represent the standards that could be achieved through the use of best available control technology it is a substantial reduction over uncontrolled vehicles and as has been pointed out is over three times stricter than the Canadian standard.

It is felt that this standard for new mobile sources would be sufficient to achieve a significant reduction in the acid precipitation problem resulting from these sources if it is adequately enforced. Enforcement of such standards is extremely difficult at present. The preliminary staff report of the National Commission on Air Quality concluded that:

> In-use vehicles have been found to exceed applicable emission standards substantially. This situation has persisted since vehicle emissions were first regulated, and is predicted to continue in the foreseeable future. [page 3.5-13]

That report also commented as follows in regard to NO_X:

> It is apparent that before NO_X emissions from mobile sources can be expected to decrease, standards need to be stricter, enforcement needs to be more effective, and older vehicles (which emit approximately 76% more NO_X than controlled cars) need to be slowly replaced by controlled cars [page 3.5-63]

Obviously, unless effective enforcement of standards takes place, the establishment of a standard in the first place is not going to be sufficient to result in a significant decrease in the problem.

The National Commission on Air Quality has identified a number of factors which contribute to the widespread failure of in-use vehicles to meet emission standards. These factors include: emission control system deterioration, improper maintenance, component failures, tampering, fuel switching and operation at high altitude. [page 3.5-19]. The principle reason for excess emissions from vehicles built between 1975 and 1979 is improper maintenance--primarily carburetor and ignition timing misadjustment.

Two approaches can be taken to ensure that excess emissions due to improper maintenance are minimized: routine inspections or fail-safe technology.

In the United States, for 1981 and later model years, light duty vehicles will no longer be susceptible to carburetor misadjustment because of the fact that regulations have severely limited the amount of adjustability that is allowed in a carburetor. Further, approximately 75% of the 1981-82 light duty vehicles manufactured will be equipped with electronically controlled fuel systems and a catalytic converter designed to minimize this problem. By 1983, 90% of all vehicles manufactured will have to employ these systems. Therefore, in the future, vehicles will be manufactured with a properly functioning emission control system that will not be susceptible to failure due to improper maintenance. Consequently, the vast majority of these vehicles are expected to continue to meet the standards through their useful lives although some increases in emissions will occur with high mileage as catalytic converters deteriorate. [National Commission on Air Quality Report, page 3.5-21].

To the extent that these technological modifications are made, increased efforts in the area of monitoring and enforcement of vehicle emission standards are not so crucial. Nevertheless, the potential for component failures and intentional tampering with control equipment makes monitoring and enforcement activity still necessary. In addition, monitoring and enforcement are crucial in ensuring that vehicles manufactured prior to the introduction of this "fail-safe" technology do not contribute excessively to total NO_X loadings. However, because monitoring and enforcement efforts with respect to mobile sources are more crucial for the control of existing mobile sources rather than new mobile sources, the discussion of this factor will be left to the section dealing with existing mobile sources.

It is predicted that if this Federal vehicle program imposing fail-safe technology and improved monitoring and enforcement programs is implemented as planned that nationwide mobile source emissions of NO_X will be reduced by 73% between 1979 and 1987. [N.C.A.Q. Preliminary Report, 1981, p.3.9-30]

Canada's objective with respect to new mobile sources in the U.S.A. should be to ensure that standards presently in the Clean Air Act do not become weakened and that regulations presently requiring the future use of this more "fail-safe" technology are not weakened. Canada should also be concerned to determine that to the extent necessary adequate monitoring and enforcement programs are in place in the U.S.A. to prevent component failures and intentional tampering with this new control technology.

6.2.4 New Mobile Sources in Canada

In Canada, as discussed in Part 3.3 the Federal government has promulgated regulations under the Motor Vehicle Safety Act which limit exhaust emissions from gasoline powered or diesel powered vehicle engines. For nitrogen oxides the standard is 3.1 grams per vehicle mile. As noted above, this standard is over three times more lenient than the equivalent American standard. For the same reasons discussed above in regard to new stationary sources, the Canadian standard should be at least as strict as the standard required for new American mobile sources.

Technically, there appears to be no reason why a stricter standard cannot be met in Canada if it can be met by American automobile manufacturers. The manufacturers in both countries are the same and since the pollutants from these vehicles travel in both directions across the International boundary and contribute to acid precipitation in both countries the standards should be equivalent.

However, as discussed in Part 3.3 of this report there may be limitations inherent in the Motor Vehicle Safety Act which would require legislative amendment to that Act before it could be used to impose standards stricter than are necessary to protect persons against "personal injury, impairment of health or death". Alternatively, emission standards from motor vehicles need to be incorporated within a completely revised Clean Air Act based on the rationale that such emission standards are required for the "peace order and good government" of the country.

Further, amendments to the legislation are necessary to ensure that there is a duty to apply the concept of best practical technology to the formulation of emission standards to be promulgated under the Act together with a duty to promulgate such standards by a definite date. Only in this way can there be assurance given to the United States that Canada will in fact match the standards that are in force in the U.S.A. and therefore be able to demonstrate that Canada can meet any obligations that it enters into through an International agreement.

As in the United States, monitoring and enforcement of mobile source emissions are crucial to the actual reduction of these pollutants. Unlike the situation

in the U.S.A. however, the situation in Canada is complicated further by the constitutional constraints previously discussed with respect to the control of vehicle emissions. Very briefly, since the Canadian motor vehicles emission standards, as presently formulated under the Motor Vehicle Safety Act, are based on the Federal constitutional jurisdiction to regulate inter-provincial trade and commerce and exports and imports the Federal jurisdiction ends as soon as the car is sold. Consequently, all monitoring and enforcement activity in Canada is left up to individual provinces.

In Ontario, a regulation made under the Environmental Protection Act [O.Reg. 561/79] sets out provisions designed to ensure that in-use vehicles comply with certain emission standards. This regulation restricts emissions of hydrocarbons, carbon monoxide or "visible emissions" but does not provide emission limits for nitrogen oxides.

Section 6 of that regulation sets out a Table which specifies the maximum emission standards for each of these regulated contaminants for vehicles of differing model years and engine displacements. Section 6(3) specifically provides that "every motor vehicle for which emission standards are prescribed (in the Table) shall comply with such standards". The penalty for breaching this regulation is the same as the penalty for breaching any other part of the Environmental Protection Act or any regulation, that is upon summary conviction a maximum fine of $5,000.00 for a first offence and a maximum fine of $10,000.00 for each subsequent offence.

Section 5 of that regulation provides as follows:

> In respect of a motor or motor vehicle manufactured with a system or device to prevent or lessen the emission of any contaminants, the system or device, or any replacement therefor,(a) shall be maintained and kept in such a state of repair that it is capable of performing the function for which it was intended; and(b) shall be kept installed on, attached to or incorporated in the motor or motor vehicle in such a manner that, when the motor or motor vehicle is operating, the system or device functions in the manner in which it was intended to function.

Further, under section 5(b) of the regulation anyone disconnecting or otherwise intentionally tampering with an emission control device which was installed by the manufacturer would be liable for prosecution.

Sections 23 and 24 of the E.P.A. also set out comprehensive offences making it illegal for anyone to operate a motor vehicle that is equipped with such a system or device if it is not properly maintained and making it illegal to intentionally tamper with or completely remove such emission control equipment.

Finally, section 7 of that regulation provides that

> (1) A provincial officer, designated for the purpose of carrying out the provisions of Part III of the Act, or a police officer may, by written notice in Form 1, require the driver or owner of a motor vehicle to submit such motor vehicle for testing and inspection.
> (2) Every driver or owner of a motor vehicle shall comply with a written notice given to him under subsection 1.

This section provides the authority for spot checks of vehicles to ensure that they comply with the provisions of this regulation.

In Quebec, the Environmental Contaminants Act contains similar provisions.

Section 50 provides that

> No one may offer for sale, exhibit for sale or sell an engine or motor vehicle
> (a) the operation of which has the effect of emitting pollutants into the atmosphere; or
> (b) in respect of which a regulation of the Lieutenant-Governor in Council requires the installation of an apparatus to reduce or eliminate the emission of contaminants into the atmosphere, unless the engine or motor vehicle is provided with such apparatus.

Section 51 provides that

> No one may use or permit the use of either an engine or a motor vehicle
> (a) the operation of which has the effect of emitting pollutants into the atmosphere; or
> (b) the use of which requires, under a regulation of the Lieutenant-Governor in Council, the installation of an apparatus to reduce or eliminate the emission of contaminants into atmosphere, unless the engine or motor vehicle is provided with such apparatus.

And Section 52 provides that

> Every owner of a motor vehicle which is a potential source of contamination of the atmosphere must ensure its maintenance in accordance with the standards provided by regulation of the Lieutenant-Governor in Council.

However, all of these sections rely for their effectiveness upon regulations and although the necessary regulations are authorized in the Act, there are no mandatory deadlines for any such regulations and none has been made to date. Section 53 reads as follows:

> The Lieutenant-Governor in Council may make regulations applicable to the whole or to any part of the territory of Quebec, to:
>
> (a) classify motor vehicles and engines to regulate their use and withdraw certain classes from the application of this act and the regulations;
>
> (b) prohibit or limit the use of certain classes of motor vehicles or engines to prevent or to reduce the emission of pollutants into the air;
>
> (c) determine the manner in which certain classes of motor vehicles or engines may be used and the manner of maintaining them, and prescribe, if need be, the installation of purification devices in accordance with the specifications which he determines and provide for the inspection of such devices...

Since other provinces are not within the scope of this report, consideration has not been given to whether or not any other provinces have regulations of this type however, it is believed that it is unlikely that such regulations do exist in any comprehensive fashion across the country. The result of a lack

of adequate provincial regulations is that the Canadian Federal standard for nitrogen oxides is not likely to be maintained or enforced at any point in time after the manufacture of the vehicles.

The objectives for the Federal government with regard to new mobile sources in Canada should be as follows:

1) to adopt the principle of best practical technology in formulating federal emission limits for nitrogen oxides (this would probably involve simply adopting the American standard of 1.0 grams per vehicle mile);

2) to ensure that a comprehensive scheme designed to monitor and enforce this standard for new vehicles once they are in use is in place right across the country.

This second objective requires either that all of the provinces bring in comprehensive monitoring and enforcement regulations for in-use vehicles or that the Federal government does this itself. If the Federal government decides to act in this manner, the Motor Vehicle Safety Act is not broadly enough based, in constitutional terms, to support such a scheme. Therefore substantial amendments to the Clean Air Act are recommended.
Suggestions concerning improvements to existing monitoring and enforcement programs will be discussed in more detail in the section dealing with existing mobile sources as these comments are relevant to both new and existing sources in Canada.

6.2.5 Existing Stationary Sources in the U.S.A.

In the U.S.A. the existing stationary sources of greatest concern are the coal-fired power plants particularly those in the Eastern U.S.A., concentrated in the Ohio Valley. As discussed earlier in this report, controls over emissions from existing stationary sources are considered to be crucial if any reductions are to be achieved in the next 25 years in the acid precipitation problem.

In addition, Canada must realize, as previously discussed, that many states are presently petitioning for relaxation of their State Implementation Plans in order that sources within these states can be allowed to increase their present emissions. Therefore, Canada must be prepared to fight a defensive battle to ensure that present controls are not weakened at the same time as fighting an offensive battle

to attempt to have stricter controls placed upon emissions from existing stationary sources in the U.S.A.

In light of the present political and legal factors concerning controls over existing stationary sources in the U.S.A., Canada's objectives should be as follows:

1) to do everything possible to prevent present SIP's from being relaxed pursuant to the petitions identified earlier in this paper;

2) to do everything possible to seek to have State Implementation Plans revised pursuant to s. 126 of the Clean Air Act to impose stricter emission standards where appropriate. Canada and Canadian provinces could seek to have such stricter revisions made by invoking section 115 of the U.S. Clean Air Act coupled with the findings of fact made by Mr. Douglas M. Costle, the former Administrator of the E.P.A;

3) to seek to have specific emission reductions imposed upon existing stationary sources in the U.S.A. within certain limited periods of time after which, if compliance is not achieved, the facility would be required to shut down; and

4) to seek to have a re-definition of the circumstances under which modified existing sources become subject to the New Source Performance Standards to ensure that existing sources do not have their useful lives artificially prolonged.

With regard to the defensive strategy outlined in Objective 1 above, the Province of Ontario has recently taken an initiative with respect to petitions for SIP relaxation for eighteen fossil fuel-fired thermal generating stations in six states in the Ohio Valley area. [The Ontario Ministry of the Environment, A Submission to the United States Environmental Protection Agency Opposing Relaxation of SO_2 Emission Limits in State Implementation Plans and Urging Enforcement, March 12th, 1981]

These petitions from polluting sources are being heard pursuant to section 110(a)(2)(H) of the U.S. Clean Air Act which confers the right to petition for revisions of SIP's to take into account "improved or more expeditious methods of achieving such primary or secondary standards." Notwithstanding that the SIP revision process does not clearly include the right of Canada or a province to be heard, Ontario based its claim to intervene upon 1) the Administrative Procedure Act, 2) certain U.S. judicial decisions, 3) section 115 of the U.S. Clear Air Act and 4) International law. These same arguments for standing could equally support intervention in these same proceedings by the Canadian Federal government as an affected or an aggrieved party.

While there are substantial problems with the use of the SIP process to achieve particular limits on emission sources of concern, interventions of this type may

nevertheless be valuable. Perhaps most importantly, such interventions will serve to raise the profile of the issue above that of a local nature and result in increased awareness among the American public of the problem as it affects Canada. Such interventions also demonstrate to American political leaders that Canada's grievances with respect to acid precipitation are serious and that Canada is prepared to take all possible steps to attempt to alleviate the problem. Finally, from a practical point of view, any relaxations of standards under these SIP's that are granted will conflict with any stricter standards that may be imposed on existing sources in the near future as a result of any negotiated agreement between Canada and the United States. Consideration of any such relaxations should therefore be delayed until such time as such an agreement is in place. Otherwise, it appears that the Americans are negotiating in bad faith if they are allowing relaxations of emission limits on existing sources at the very same time that they are purportedly negotiating stricter controls to reduce the problem of acid precipitation in Canada. Canada should therefore intervene to ensure that this does not occur, either by having such proceedings adjourned or by delaying the proceedings by the very fact of their intervention.

With respect to Objective 2 above, seeking to have SIP requirements made more stringent by invoking s.115 of the Clean Air Act, Canada should press for further progress in the process initiated by Mr. Douglas Costle before he resigned his position as Administrator of the E.P.A. following the change in administrations in the U.S.A.

As discussed in this paper, there are two pre-conditions to the exercise of the Administrator's power under section 115 and according to Mr. Costle's letters of January 13th, 1981, both of these pre-conditions have been satisfied. In this circumstance, the Administrator is <u>required</u> to give formal notification to the Governor of the State in which such emissions originate that the emissions are causing or contributing to problems in Canada of the nature specified by that section. Such a notice by the Administrator to the Governor automatically results in a requirement that revisions to the state's SIP be initiated to prevent a continuation of the problem.

For the purposes of this section "any foreign country so affected by such emission of pollutant or pollutants shall be invited to appear at any public hearing associated

with any revision of the appropriate portion of the applicable implementation plan" [section 115 (b)].

Canada should therefore make representations to the new administration in the United States to the effect that they expect that the formal notification provisions will be complied with and that they expect to be invited to any resulting public hearings.

Again, while there are substantial problems and time delays associated with this procedure as discussed earlier in this paper this is an initiative that the Canadian government can and should take for the same reasons as discussed above in regard to interventions in SIP revision hearings.

Further, the problems associated with the use of this section in the future should be a subject of discussion between Canada and the United States at the time that negotiations on acid precipitation take place this summer. The obstacles identified and discussed in the earlier part of this paper should be eliminated by legislative amendment to the Clean Air Act to ensure that Canada's access to this process in the future can result in faster and more effective resolution of any international pollution problems.

In regard to the Objective 3 outlined above, the limiting of specific pollution sources, it is clear that there is no authority in the U.S. Clean Air Act that would allow the Environmental Protection Agency to impose any of the various measures that could achieve this objective, as described in Part 6.3 , on existing sources of SO_2 and NO_X pollution. Amendments to the Clean Air Act by Congress are necessary in order for this to be possible. Of course, economic incentives could be offered to sources to seek to have them voluntarily install such controls; however in the absence of a legislative sanction for failing to do this, such economic incentives would have to be great enough to result in a net benefit to the source in question. This would not therefore be a cost effective approach. Economic incentives are more cost effective when combined with legislated requirements.

Specific reductions in emissions from existing sources can be achieved in a number of different ways as discussed in Part 6.3. The Canadian government should formulate a position setting out what it believes are the appropriate ways of imposing such controls over existing sources and should determine which standard (whether best available retrofit technology or best practical retrofit technology) it considers necessary to base such controls upon in order to ensure that the problems associated with acid precipitation in Canada are alleviated. Having formulated these positions, Canada should communicate them in the strongest possible terms to the administration in the U.S.A.

Given the numerous problems discussed with respect to monitoring and enforcement of controls on existing sources it is desirable to ensure that penalties for intentional non-compliance or non-compliance due to negligence are as strict as possible. The most effective sanction in these situations would be to require the source in question to cease to operate until such time as it could operate within the requirements specified. Such a sanction would operate as a strong deterrent, hopefully resulting in greater compliance and making monitoring and enforcement requirements less onerous.

Objective 4 identified above, (a redefinition of a "modified" source to prevent artificial prolongation of the use of sources without emission control technology) only becomes necessary if Objective 3 fails to result in the achievement of emission standards for existing stationary sources which are as rigorous and as uniformly applied as are the standards for new sources. At the present time, New Source Performance Standards in the U.S.A. are substantially stricter than the emission limits imposed on existing sources by most State Implementation Plans. In this situation, utilities or other companies which own a facility which is a source of one of these pollutants have an added incentive to prolong the life of the existing facility rather than to build a new facility which would be subject to much stricter standards. Consequently, the useful life of existing sources is artificially extended beyond what would normally be the economic life of such a facility. This can be accomplished by undertaking major modifications to the facility that would not otherwise be economically justified.

Where there is a marked differential between the standards applicable to new sources and the standards applicable to existing sources, this will inevitably result in a substantial extension in the number of years that it would take for standards applicable to new sources to achieve a significant reduction in the total emissions which result in acid precipitation.

If it becomes apparent to Canada that such a differential will continue to exist into the future then Canada should press for a legislative re-definition of the facilities to which NSPS standards would apply, to include major modifications to existing facilities.

Presently, the New Source Performance Standards under section 111 of the Clean Air Act are applicable to any "new source". "New source" is defined to mean

> any stationary source, the construction or modification of which is commenced after the publication of regulations (or, if earlier, proposed regulations) prescribing a standard of performance under this section which will be applicable to such source.[section 111(a)(2)].

Section 111(a)(4) provides that

> the term modification means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.

However, the Act goes on to provide that a conversion to coal by reason of an order under the Energy Supply and Environmental Co-Ordination Act of 1974 shall not be deemed to be a modification for the purposes of this section. [section 111(a)(8)].

This exemption by itself is a substantial present and future exception to the otherwise widespread application of New Source Performance Standards. For economic and other domestic political reasons the United States is actively encouraging utilities to convert from oil and natural gas to coal and it is expected that a substantial number of utilities will in fact make this conversion in the near future. The exemption granted to these facilities by this section of the Act will result in emissions from these facilities which will be six or seven times greater than would be allowed if they were subjected to New Source Performance Standards.

Canada should attempt to determine the number of conversions that are expected to take place pursuant to this policy and attempt to determine the increase in acid precipitation that will result. If, as expected, this exemption will result in substantial increases in acid precipitation in Canada, strong representations should be made to the administration in the U.S.A. to encourage them to require

such converted sources to install the same pollution control equipment as if required of any other new source.

In addition to this specific exemption, E.P.A. has, pursuant to their rule-making authority, clarified the types of modifications and reconstructions that NSPS will apply to.

The "reconstruction" of any existing facility is sufficient to bring that source within the ambit of the New Source Performance Standards regardless of whether or not there is any increase in emissions. Unfortunately, however "reconstruction" is defined as meaning

> the replacement of components of an existing facility to such an extent that:
> (1) the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility, and
> (2) it is technologically and economically feasible to meet the applicable standards set forth in this part. [40 C.F.R.S60.15 (b)].

This means that an existing source of SO_2 and NOx can be continually repaired and continue to pollute to the same extent so long as any repairs at any time do not exceed 50% of the capital cost of an entirely new facility. Obviously, the scope for modifications to existing facilities is extremely wide and it is only in the most extreme cases that the modification would be so extensive as to amount to the equivalent of half the cost of a new facility.

Even where the modifications would be that extensive, the facility is not necessarily subject to New Source Performance Standards unless "it is technologically and economically feasible" to meet such standards. Whether or not a proposed modification amounts to a "re-construction" is a determination that must be made by the Administrator, within 30 days of receiving a notice from the owner of the facility in question, and his determination must be based upon:

> (1) the fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new facility;
> (2) the estimated life of the facility after the replacements compared to the life of the comparable entirely new facility;
> (3) the extent to which the components being replaced cause or contribute to the emissions from the facility; and
> (4) any economic or technical limitations on compliance with the applicable standards of performance which are inherent in the proposed replacements. [40 C.F.R. s. 60.15(e)and (f)].

Canada should make representations to have this definition amended insofar as the 50% requirement together with the requirement of "economic feasibility" effectively allow existing stationary sources to modify at will, so long as they do not increase their emissions, without becoming subject to the NSPS.

It cannot be emphasized too strongly how important it is to have the existing sources of these pollutants subject to more stringent controls. While controls over new sources are expected to reduce the rate at which emissions increase so that the absolute amount begins to level off, they will not have the effect of reducing current levels of emissions which are causing present problems so long as existing facilities are allowed to continue to emit SO_2 and NO_X at their same rates. The longer these existing sources are allowed to extend their useful lives and pollute at their existing levels, the longer the present rates of acid deposition will continue and the more severe the effects will become.

There is evidence to suggest that reductions in emissions from existing sources would have the effect of reducing acid precipitation in downwind areas. The preliminary staff report of the National Commission on Air Quality in the U.S.A. concludes that

> Although the results of a Commission study [Atmospheric and Environmental Research, Inc." Study of the Role of Transport in Fine and Total Suspended Particulate Air Quality" Report to the National Commission on Air Quality. Contract No. 18-AQ-9127, November 1980.] suggests that about a 15% reduction in emissions of sulphur dioxide from major sources in the Ohio River Valley would reduce average sulphate concentrations in downwind areas by about 10%, accurate estimates of the improvement in acid deposition cannot be made. However, any reduction in the amount of precursor pollutants would result in some lessening of acid deposition.[N.C.A.Q. p.3.9-19 to 3.9-20].

6.2.6 Existing Stationary Sources in Canada

The objectives for existing stationary sources of SO_2 and NO_X in Canada should be as follows:

1) to prevent relaxation of present provincial and Federal standards insofar as these are in place;

2) to achieve specific reductions in emissions of SO_2 and NO_X from existing stationary sources over and above present requirements within certain limited time periods, or require such sources to shut down:

3) to ensure that major modifications to existing sources of SO_2 and NO_X in Canada come within controls required for new sources of these pollutants if such controls are more stringent than the controls for existing sources.

As in the United States, regulated sources in Canada periodically mount campaigns to have such regulations relaxed. While the process in Canada is not so formalized as in the U.S.A. where petitions are specifically provided for in the legislation the process nevertheless goes on. In fact, because of the informal nature of the process in Canada, relaxations can be more difficult to defend against.

Since all enforcement of air pollution legislation in Canada (except in the Yukon and N.W.T.) to date takes place at the provincial level, it is relaxations of provincial control mechanisms that are of primary concern. In Ontario, as discussed in Part 4.1.1 the main vehicles of control are Certificates of Approval, Control Orders and most recently, abatement regulations. As discussed, the procedures leading up to the imposition of any of these mechanisms or leading to a subsequent revision of any of them is a completely internal process between government and the regulated industry and there are absolutely no assured or meaningful opportunities for public input into this process.

Consequently, there are absolutely no restraints or formal processes limiting the government's ability to alter, repeal or rescind any existing control orders or abatement regulations.

In addition, the ad-hoc nature of this form of control means that relaxations can take place on a case-by-case basis without consideration being given to the overall effects of these relaxations and without the public having an opportunity to become aware of such relaxations or their impact.

Such relaxations in fact occur from time to time whenever an industry is successful in convincing the Provincial Ministry of the Environment that it is unable to meet the control requirements. The most controversial example of such a relaxation is the relaxation of the control order which would have originally required Inco Limited in Sudbury to cut its sulphur dioxide emissions to 750 tons per day by 1978. When it became obvious that Inco was not going to meet this deadline, the deadline was extended and then eliminated. All of this occurred based on Inco's own submissions that it was unable to meet this standard and no formal process existed that would have required a more thorough review before any such relaxation was allowed.

The recently adopted, ad-hoc strategy of the Ontario Ministry of the Environment to issue

abatement regulations, is subject to the same ultimate weakness. There are no requirements in Ontario legislation, unlike the U.S. situation and unlike the requirements under the Environment Quality Act in Quebec, that require the publication of proposed regulations together with provisions for a public comment period prior to the finalization of any regulation. Therefore, in Ontario, a regulation can be rescinded just as easily as it is made in the first instance--- usually however, without the same media coverage.

The Canadian Federal government should concern itself with this lack of formal process in Ontario and other provinces insofar as it would rely upon provincial environmental agencies to fulfill any obligations that the Federal government makes with the United States Federal government. The alternatives open to the Federal government in Canada are clear. Either it should press the Ontario government to formalize these processes as other jurisdictions have done, to ensure that controls are not withdrawn in an arbitrary fashion without the opportunity of public knowledge or comment, or else the Federal government should be prepared to amend the Clean Air Act in a comprehensive fashion, to provide itself with the necessary authority and duty to control sources of these pollutants and ensure against relaxations that will increase the problem of acid precipitation.

With respect to the second objective, the same legislation and the same limitations are relevant to existing sources as to new sources in Canada. All of the comments made in the section concerning new stationary sources in Canada are equally applicable to existing sources in Canada. Essentially, all of the potentially useful pieces of legislation, both provincial and Federal, have limitations which must be corrected by amendment before they can be relied upon to deal effectively with the problem. All of these weaknesses have already been dealt with in detail in Part 4.0 and recommendations are summarized in Part 7.0.

With respect to the third objective, again this is only relevant if standards applicable to existing sources are not as stringent as standards which are applicable to new sources. If Canadian legislation sets standards which differentiate between new and existing sources in this manner then provision should be made, as discussed with regard to U.S. existing sources, to ensure that existing sources are not allowed to modify to prolong their useful lives without becoming subject to the more stringent standards applicable to new sources. This is essential to adequately deal with the existing sources of emissions leading to acid precipitation.

6.2.7 Existing Mobile Sources in the U.S.A.

Vehicle emissions of nitrogen oxides in the U.S.A. have been controlled since 1975-76. Since that time, the emission standard for NO_x has been made progressively more stringent: in 1975-76 the standard was 3.1 grams per vehicle mile; between 1977 and 1980 the standard was 2.0 grams per vehicle mile; and beginning in 1981 the standard has been reduced to 1.0 grams per vehicle mile.

Prior to 1975, there was no standard for NO_x emissions and therefore any vehicles built prior to that time which are still on the road are not restricted. Emissions from these vehicles will only be reduced with time as these vehicles are replaced by newer vehicles. This is not believed to be a substantial problem as vehicles do not have useful lives very much longer than the period these cars have already existed.

For vehicles manufactured since 1975 monitoring and enforcement of the applicable standard is considered to be crucial if actual reductions in NO_x emissions are to result from these standards.

E.P.A. has recognized this necessity and over the past several years has increased its efforts in regard to monitoring of in-use vehicles and in regard to encouraging the implementation of inspection and maintenance programs. The National Commission on Air Quality Preliminary Report found that

> E.P.A. has increased the number of vehicles subject to its in-use surveillance and testing program and as a result has instituted a large number of investigations and ordered a greater number of recalls in instances where a substantial number of a particular class of vehicles are exceeding standards.[p.3.5-26]

In 1977, in amending the Clean Air Act, Congress recognized that the overwhelming evidence was that in-use vehicles were substantially exceeding emission standards. As a result, any states that requested an extension of the attainment date for ozone or carbon monoxide ambient standards were required to implement vehicle inspection and maintenance programs before such an extension would be granted. The purpose of such inspection and maintenance programs is to identify, and have repaired, vehicles emitting excess amounts of hydrocarbons, carbon monoxide and nitrogen oxides all of which, through chemical reactions, can result in increased ambient concentrations of ozone and carbon monoxide.

Unfortunately, such inspection and maintenance programs are not imposed upon all states or even necessarily upon all states which are contributing to the acid precipitation problem. This is because the pre-condition for the imposition of this requirement is unrelated to acid precipitation. Therefore, its usefulness in controlling NO_X is only fortuitous. If such inspection and maintenance programs were required in every state substantial improvements in in-use vehicle compliance could be anticipated.

Programs of this type can either be centralized or decentralized depending upon whether the testing is done at government owned and operated facilities or privately licenced facilities. Whichever way the programs are administered, they contain the following necessary elements:

1) vehicle inspection and/or testing;
2) determination of whether the vehicle passes or fails;
3) certification of passing vehicles by means of a certificate of compliance (needed to register the vehicle) or windshield sticker;
4) repair of failed vehicles; and
5) re-testing after repairs are made.[N.C.A.Q. Report, p.3.5-35].

It is anticipated that in addition to ensuring that vehicle emission standards were not being exceeded because of improper maintenance or mechanical failure, such programs would also provide a deterrent to practices such as fuel switching and intentional tampering with control equipment.

Canada's objective in regard to existing mobile sources in the U.S.A. should be to encourage legislators in the U.S.A. to expand the present inspection and maintenance program to cover every state. This would ensure that the strict standards in the Clean Air Act do in fact result in substantial reductions in NO_X and in the proportion of the acid precipitation problem that originates with those emissions.

6.2.8 Existing Mobile Sources in Canada

Canada's objective in regard to existing mobile sources within Canada should be along the same lines. Assuming that the standard for nitrogen oxides is made more stringent for vehicles manufactured in future years (as recommended in section 6.2.4), inspection and maintenance programs are crucial to ensure that in-use vehicles comply with the standards.

Such vehicle inspection and maintenance programs are presently left up to the initiative of individual provinces. In Ontario, such inspection programs are only imposed on a spot-check basis not in any comprehensive manner. In addition, because of the fact that the Ontario regulation [O. Reg. 561/79] does not impose a maximum emission standard for NO_x at the present time there is in fact nothing to monitor existing mobile sources for in so far as the acid precipitation problem is concerned. The same is expected to be true as far as most or all other provinces are concerned.

Therefore, the first priority for the Federal government must be to ensure that a maximum emission standard for NO_x in-use vehicles is implemented across Canada. As discussed in the section respecting new mobile sources in Canada, this can be done either by the Federal government or by each of the provinces.

Only after such a nationwide standard for in-use vehicles is in place, does an effective inspection and maintenance program become important.

Any inspection and maintenance program developed should be comprehensive in application and require every vehicle to undergo a regular periodic examination to ensure that the standards are being met. Compliance with such a program could be indicated by stickers to be attached to windshields or licence plates or could be a prerequisite for the registration and licencing of the vehicle. Either way, vehicles that fail to meet the standard and were not repaired would not be allowed to be driven.

Because of the fact that a federal standard for NO_x is presently in existence, it would not be unreasonable to expect that any automobile manufactured since the standard was made should be able to comply with it so long as the control equipment is properly maintained. Therefore, the Federal government through new legislation could reasonably require that such in-use vehicles comply with this present standard while at the same time requiring that any such new vehicles comply with any such new standard that is made.

The Federal Government's objectives in this area therefore should be:

1) to develop or ensure that provinces develop maximum emission standards for NO_X that are based upon best practical technology; and
2) to develop or ensure that all provinces develop comprehensive inspection and maintenance programs which would require all vehicles to pass an annual inspection of emission control equipment.

6.3 Alternative Methods of Achieving Abatement of Existing Stationary Sources

6.3.1 Introduction

The following alternatives have been identified as ways of achieving reductions in total loadings of the pollutants which contribute to acid precipitation. Each of these has its own strengths and weaknesses and may make different demands upon monitoring and enforcement resources. Further, there are important differences in terms of the extent to which each of these options can achieve the goal desired and within what time framework. Finally, the ultimate choice of which technical/economic alternative or alternatives are most appropriate is a political decision which must be made considering all of these factors together with the legal abilities of each jurisdiction to effectively implement the solution.

6.3.2 Economic Incentives

6.3.2.1 Emission Fees

Under this scheme a monetary charge would be legislatively imposed for each unit of certain pollutants emitted by each source. There would be no mandatory limits that any particular source of group of sources would have to meet, however, properly structured emission fees would remove the economic incentive associated with non-control. To be effective, fees would have to be determined taking into account the costs of technology that would be required to reduce emissions. In this circumstance, a rational business would install and use control technology whenever the costs of so doing were less than the costs associated with the emission fees.

Distinctions among categories of sources could be made based on the particular economics of pollution control for any particular industry. Similarly, within any one category differences between the design and operations of a particular facility could be expected to result in differences in the average marginal air pollution control costs. Under these circumstances, the category or categories, or certain sources within any category would find it more economically advantageous to impose emission control than would others. Controls would be installed to the point where the cost of control balanced the cost of the emission fees for each particular source. In this way, the amount of reduction achieved per dollar spent on control is maximized.

Once such a scheme was in place it could be expected that sources would respond relatively quickly, where it was in their economic interest to do so, and reductions in total loadings would be achieved in a reasonably expeditious manner.

As with any kind of pollution control scheme, emission fees would require a certain amount of monitoring in order to ensure that the proper fees are being paid. It is expected that a scheme could be devised whereby sources were required to produce production records from which total emissions could be reasonably estimated. Spot checking would be required from time to time to ensure that installed equipment is in fact being used, however, it is probably reasonable to expect that this would not require any more manpower or resources than proper enforcement of existing air pollution control laws would.

The National Commission on Air Quality has identified certain problems associated with emission fees:

> Problems associated with emission fees include the difficulty of establishing appropriate fees and assuring that accurate monitoring data are collected. If the fee is too low, appropriate air quality goals will not be achieved. If it is too high, overcontrol and excess cost will result. If adequate monitoring data are not available the fee payment could be either lower or higher than necessary for the achievement of air quality goals.
> [Preliminary Report, p.4.1 - 66]

Another question that must be resolved is how the revenue collected through such fees will be used. Emission fees could be used for subsidies to control emissions or alternatively could be used to finance the operation of control agencies or as general revenue for the government.

3.2.2 Direct Subsidies

Grants or low-interest loans can be made available by governmental authorities for the purpose of easing the burden of complying with control requirements or as an alternative for legislated control requirements. Unless the subsidy is so extensive as to result in a net benefit to the source of pollution, a subsidy by itself in the absence of a control requirement cannot reasonably be expected to result in widespread installation of pollution control equipment.

However, in combination with legislated requirements such subsidies can result in greater acceptance of the requirements by the controlled sources and also in greater co-operation with monitoring and enforcement activities.

In the USA, direct subsidies have not been used under the Clean Air Act to help meet the Act's objectives. The National Commission on Air Quality found that:

> Unlike the federal grant program for construction of municipal waste water treatment facilities, the Clean Air Act does not provide subsidies for capital expenditures needed to comply with the Act's requirements. Proposals for direct subsidies to sources have not been advanced. There are, however, indirect subsidies available under the Internal Revenue Code and under many state laws. [Preliminary Report, p. 4.1 - 67]

Amendments would therefore be necessary to the US Clean Air Act in order to make the provision of such direct subsidies possible. Indirect subsidies through the tax system will be discussed below.

In Canada, the Federal government through its spending power could make whatever grants it deemed desirable, as discussed in the section on constitutional law. However, if the political decision is made to subsidize sources of SO_2 and NO_x pollution in so far as they are required to install control technology it is recommended that an amendment be made to the Clean Air

to set out the procedure and criteria that would be followed for this purpose.

Provincial governments in Canada can also make direct subsidies for the purpose of pollution control. In Ontario, between April 1, 1970, and April 1, 1976, the Pollution Abatement Incentive Act provided that the Minister of the Environment could make grants for a limited number of specified purposes. The Minister was authorized to make grants to:

> any person engaged in the generation and production of electricity or in the manufacturing or processing of products, goods or merchandise in respect of equipment for pollution abatement that is used in relation to such generation, production, manufacturing or processing and that he has installed and made operational after this Act comes into force;
>
> any owner of a source of pollution, except a motor vehicle, in respect of equipment for pollution abatement that is used in relation thereto and that he has installed and made operational after this Act comes into force; and
>
> any person who is engaged, whether for profit or otherwise, in the abatement of pollution or the treatment or disposal of waste, in respect of equipment for pollution abatement or the treatment or the disposal of waste that is used in relation thereto and that he has installed and made operational after this Act comes into force.
> [The Pollution Abatement Incentive Act, RSO 1970, c. 352 as amended, Section 2 (b),(c) and (d)]

Such grants were limited in that Act to the amount of tax paid by any such person under the Retail Sales Tax Act in respect of any such control equipment. [Section 4]

This legislation was limited to five years at the time that it was made and therefore it has lapsed and is no longer in force. It represents however an example of the type of legislation that a provincial government could pass to encourage the installation of control equipment designed to reduce SO_2 or NO_x emissions if that decision was made at a political level.

5.3.2.3 Indirect Subsidies

The income tax systems of both Canada and the United States have been used and can be used to encourage domestic economic and social policies. By allowing deductions over and above the real cost of control equipment or by providing for accelerated write-offs of such equipment an indirect subsidy can be provided.

In the United States, the National Commission on Air Quality identified such indirect subsidies that exist under the Internal Revenue Code as follows:

> Three federal tax programs exist to reduce the pollution control costs to firms: rapid amortization; the investment tax credit; and normal deductions of business expenditures for pollution control activities.
>
> Section 169 of the Internal Revenue Code provides that eligible pollution control equipment can be amortized over a five-year period even though the actual useful life or normal depreciation period is longer. The present tax advantages of rapid amortization resulted from 1978 amendments to the Internal Revenue Code. Prior to 1978 firms had not used this provision to any significant extent because it was mutually exclusive with the provisions of the investment tax credit (this is a 10% credit against tax obligation for investments in plants and equipment). After the 1978 amendments to the Internal Revenue Code allowing both rapid amortization and investment tax credits, the use of rapid amortization has increased significantly. [Preliminary Report, p. 4.1 - 67-68]

There are often problems with attempting to influence social policy through provisions in income tax legislation. The National Commission on Air Quality identified one such example as follows:

> The internal revenue service rules defining what facilities are eligible for tax-exempt financing appear to favour smoke stack controls over process changes that may be inherently low polluting. For example, a scrubber that controls sulphur dioxide emissions from a smoke stack may be eligible for tax-exempt financing, but a fluidized bed combustion boiler that removes sulphur as part of the combustion process may not be eligible. [Preliminary Report, p. 4.1 - 68-69]

In Canada, the Income Tax Act provides for the amortization of the cost of qualifying water or air pollution equipment on a straightline basis over a two-year period. The taxpayer is allowed to write-off:

> Such amount as he may claim in respect of property of class 24 or class 27 in Schedule II that was acquired in a particular taxation year not exceeding the lesser of (i) 50% of the capital cost thereof to him, and (ii) the amount by which the capital cost thereof to him exceeds the aggregate of the amounts deducted in respect thereof in computing his income for previous taxation years, but the aggregate of amounts deductible under this paragraph for a taxation year in respect of property of class 24 or class 27, as the case may be, shall not exceed undepreciated capital cost to him as of the end of the taxation year (before making any deduction under this sub-section for the taxation year) of property of the class. [Regulation 1100 (1) (t)]

Class 24 refers to equipment for the purposes of water pollution control acquired after April 26, 1965 and before 1971.

Class 27 includes:

> Property that would otherwise be included in another class in this Schedule.
>
> (a) that has not been included by the taxpayer in any other class;
> (b) that had not been used for any purpose whatever before it was acquired by the taxpayer;
> (c) that was acquired by the taxpayer after March 12, 1970 primarily for the purpose of preventing, reducing or eliminating air pollution by
> (i) removing particulate, toxic or injurious materials from smoke or gas, or other air pollutant
> (ii) preventing the discharge of part or all of the smoke, gas or other air pollutant,
>
> that is discharged or that, if the property had not been acquired and used, would be discharged into the atmosphere as a result of
>
> (iii) operations carried on by the taxpayer at a site in Canada at which operations have been carried on by him from a time that is before 1974,
> (iv) the operation in Canada of a building or plant by the taxpayer, the construction of which was either commenced before 1974 or commenced under an agreement in writing entered into by him before 1974, or
> (v) the operation of transportation or other movable equipment that has been operated by the taxpayer in Canada (including any of the inland, coastal or boundary waters of Canada) from a time that is before 1974,
>
> or that was acquired by him after May 8, 1972, that would otherwise have been property referred to in this paragraph except that

(vi) it was acquired

(A) for the purpose of gaining or producing income from a business by a taxpayer whose business includes the preventing, reducing or eliminating of air pollution that is caused or that otherwise would be caused primarily by operations referred to in subparagraphs (iii), (iv) or (v) carried on by other taxpayers (not including persons referred to in section 149 of the Act), and

(B) to be used in a business referred to in clause (A) in the preventing, reducing or eliminating of air pollution in a manner referred to in this paragraph, or,

(vii) it was acquired

(A) for the purpose of gaining or producing income from a property by a corporation whose principal business is the purchasing of conditional sales contracts, accounts receivable, bills of sale, chattel mortgages, bills of exchange or other obligations representing part or all of the sale price of merchandise or services, the lending of money, or the leasing of property, or any combination thereof, and

(B) to be leased to a taxpayer (other than a person referred to in section 149 of the Act) to be used by him, in an operation referred to in subparagraphs (iii), (iv), (v) or (vi) in the preventing, reducing or eliminating of air pollution in a manner referred to in this paragraph; and

(d) that has, upon application by the taxpayer to the Minister of the Environment, been accepted by that Minister as property the primary use of which is to be the preventing, reducing or eliminating of air pollution in a manner referred to in paragraph (c).
[Regulation 1100, Schedule II]

To be eligible for this fast write-off, such air pollution control equipment would have to have been acquired by the taxpayer after March 12, 1970, and be for the purposes of controlling a source that has been operated by that taxpayer since before 1974. Therefore, only existing sources that have been operating since before 1974 and have not changed ownership since that time are eligible for this tax benefit. While it is anticipated that the majority of existing sources in Canada that are contributing to acid precipitation in Canada would fall within these limitations, there may be significant existing sources which commenced operation in 1974 or later or which have undergone a change in ownership since that time.

The Federal government should determine whether these limitations to this fast write-off for pollution control equipment are operating to exclude significant existing sources of SO_2 or NO_x pollution. If so, this definition of class 27 should be amended to allow any such sources to gain the benefit of it.

In addition, an analysis of the effectiveness of this type of program should be undertaken to determine whether in fact it is achieving the desired results. It may be that the costs associated with such an indirect economic incentive could be better applied more directly to achieve equal or better control of these emissions.

6.3.2.4 Incentives for the Timely Retirement of Existing Sources

Economic incentives of any of the above types could be used as an alternative to a legislative amendment to ensure that major modifications of existing facilities are required to comply with emission standards applicable to new sources. As already discussed, a differential between the standard applicable to existing sources and the standard applicable to new sources results in an economic advantage to artifically extending the useful lives of existing sources. It is recommended that a legislative amendment be made to ensure that major modifications designed to prolong the useful life of such existing sources be made to ensure that they are brought within the new source standards. As as alternative, this artificial economic

advantage could be eliminated by the careful application of economic incentives for the timely retirement of existing sources or alternatively an economic disencentive for extending the life of an existing facility beyond a certain point.

Such a program would require legislative amendment of some type in both Canada and the United States, either as part of existing legislation or as some new piece of legislation. It is expected that this approach would be difficult to design to ensure that it had the desired effect. It can perhaps be more usefully considered as a complement to a legislative requirement that existing sources modified beyond a certain point become subject to new source standards.

Ideally, all of this would be unnecessary if standards applicable to existing sources and to new sources were roughly identical. This would eliminate this artificial advantage.

6.3.3 Uniformly or Selectively Imposed Technology-Based Emission Standards

Emission standards must be based upon some standard of technology if they are to be achieved. The technology base that is chosen to define acceptable emission standards depends ultimately upon how strict these standards are required to be in order to effectively deal with the problem. This in itself is dependent upon the proportion of sources which will be required to comply with these standards. Uniform technology-based emission standards contemplate every source being controlled to some extent. Selective application of emission standards requires that the sources selected for control be more strictly controlled if the same overall reduction in total loadings is to be achieved.

Technology-based standards are normally based upon either "best available technology" or "best practical technology". The difference between these two standards obviously being a consideration of the economic costs of the technology associated with the chosen standard. Whatever the technological basis of the standard is chosen to be, it will be necessary to retroactively apply it to existing plants as well as to require it of new sources in order to effectively deal with existing acid precipitation.

This option would not absolutely require that any source install the best available or best practical technology as the case may be, however, emission standards would be set at the level that could be achieved by using that technology and sources would be free to meet those standards in any way they were able to. The exact technology itself is not imposed.

Examples of technology-based emission standards that are presently authorized by legislation include the New Source Performance Standards under the US Clean Air Act and the National Emission Standards under The Canadian Clean Air Act. Unfortunately, as has been previously discussed,these presently existing standards face severe limitations in their ability to deal with the overall acid precipitation problem. Nevertheless, this mechanism is potentially an extremely useful one and legislation designed to properly implement effective emission standards is likely to be a necessary component of any comprehensive control strategy.

The imposition of such standards can be combined with a subsidy program designed to share the burden of this pollution control more equally among the different sectors of society if that is determined to be the most appropriate political choice. The stricter the techology-base of the standard, and the more widely it is imposed, the stronger are the arguments for making subsidies available. If such emission standards are imposed uniformly on every source of these pollutants then monitoring and enforcement costs will be proportional to the total number of sources. To the extent that fewer sources are controlled more rigorously, monitoring and enforcement costs could be expected to decrease. Further, to the extent that a subsidy program accompanies the imposition of these emission standards private companies can be expected to co-operate more willingly and monitoring and enforcement costs could be expected to be somewhat lower. If some type of subsidy program is considered politically

expedient, careful consideration should be given to the structure of such a program. Enforcement and monitoring costs could be minimized by a program which allowed for sources to receive a rebate against the costs of their control technology at the end of each year to the extent that they could prove to the enforcing agency that they had reduced their emissions to the extent demanded by the standards. Such a program would place the onus of proof on the source rather than on the enforcement agency and presumably encourage compliance.

If a scheme comprehensively including emission standards and some kind of subsidy program was formulated it is anticipated that it could result in reductions of emissions in approximately the same time frame as the emission fees alternative outlined above. If a subsidy program was not included in the scheme there may well be greater resistance to the program by private sources and this resistance to avoid compliance could be expected to result in extentions in the time that would actually be required to see significant reductions in acid precipitation.

6.3.4 Uniformly or Selectively Imposed Technological Requirements

This option is similar to the one described above in Part 6.3.3, however, instead of specifying numerical emission standards that must be met the reductions in emissions could be obtained by specifying what control technology would have to be used by certain sources. For example, all coal-fired generating stations could be required to install scrubbers of a certain type, fluidized bed combustion boilers or other specific technology which was determined to result in the emission reductions desired. Alternatively, limitations could be imposed upon the sulphur content of the coal being burned by any particular source which would necessitate either low sulphur coal to be purchased or higher sulphur coal to be washed before burning. The particular type of technological requirement imposed on any category of sources would depend upon whether the problem is determined to necessitate "best available" or "best practical" technology.

Again, as above, such technological requirements could be imposed upon all sources or selectively upon a relatively few major sources. A small number of major sources forced to install the best available technology could result in the same absolute reduction in emissions as would a widespread requirement of a less stringent technological standard.

As above, the fewer number of sources that are controlled the easier the job of monitoring and enforcing the standards. Similarly, if fewer sources are effected it can be expected that compliance with the requirements will be achieved in a shorter period of time. This would be especially true if the technological requirements were combined with a subsidy program similar to the one outlined above for those sources which are singled out as requiring these stringent controls.

An example of this type of standard can be found in section 111 (h) of the US Clean Air Act. That section provides that in setting New Source Performance Standards, if the Administrator determines that it is not feasible to prescribe or enforce the regular numerical type of standard,

> he may instead promulgate a design, equipment, work practice, or operational standard, or combination thereof, which reflects the best technological system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated. In the event the Administrator promulgages a design or equipment standard under this section, he shall include as part of such standard such requirements as will assure the proper operation and maintenance of any such element of design or equipment. [Section 111 (h) (1)]

6.3.5 Regional Air Emission Ceilings and Spot Density Controls

This option is related to emission standards, however, it differs in one important respect. Instead of imposing emission limits on individual sources, either uniformly or selectively, it imposes total loading ceilings for certain pollutants on a regional basis . Regions which are identified as contributing significantly to acid precipitation in sensitive receptor areas can be controlled comprehensively by the use of this technique.

Individual sources within any restricted region would not themselves be subjected to emission limits except to the extent that the regional limit was exceeded. Regions would obviously have to be carefully defined and delineated to ensure that regional controls in fact resulted in the necessary reductions of SO_2 and NO_x emissions. It is suggested that natural "air-sheds" would be an appropriate way of delineating regions for such an approach.

This approach offers a great deal more flexibility than strict emission limits on every source as it allows for trade-offs between sources so long as the total regional limit is not infringed. This allows for those sources which can most easily and most inexpensively reduce their emissions to do so while sources which would have much greater difficulty reducing emissions would not necessarily have to. Exactly how the total regional limit would be allocated between sources would be a matter to be administered on a regional level in the same manner that states presently administer State Implementation Plans and provinces presently administer air pollution sources.

The main difference over the existing situation would be that the federal authority would have established the total limit within which the province or state or air-shed is required to operate. In addition, decisions are not made on an ad-hoc basis.

It is anticipated that such a scheme would be relatively easy to monitor and enforce. Each source would have been previously allocated its share of the total regional limit and actual emissions would simply have to be compared with this allocated share on whatever time basis is determined as appropriate. Such a limit could be imposed on a daily, weekly, monthly or yearly basis and the amount of monitoring that would be necessary would be directly proportional to this choice. In all likelihood, something in the range of monthly would be most appropriate. While daily records of emissions would have to be kept by all sources for the purposes of monitoring by the regional authority, this is no different from the records that most sources would keep at present to demonstrate compliance with existing pollution laws. In addition, as in the case with emission fees or emission limits, production records could serve to verify the accuracy of emission records.

If regional ceilings are set at a federal level and implemented at the regional level (either states or provinces or portions thereof) it can be expected that implementing this scheme would take a longer period of time than if the federal governments in both countries established and implemented the schemes independent of the regions. This is particularly true in the USA where experience has demonstrated that implementation of National Ambient Air Quality Standards through State Implementation Plans is an extremely time consuming process. Similarly, in Canada, provincial implementation of such a federal scheme could be anticipated to be resisted to some extent resulting in time delays.

Nevertheless, a scheme successfully integrating federal limits with regional implementation, monitoring and enforcement may well be the most realistic approach given political realities and the present distribution of monitoring and enforcement resources. Given the examples of cooperation between governments which continues to occur in the field of environmental protection, it is expected that any differences will be able to be resolved. The timely resolution of any such differences may in fact prove crucial to the protection of sensitive receptor areas. The alternative is for the Federal Government to take the necessary initiatives itself.

6.3.6 Least Emission Dispatching

This approach would have the effect of reducing total loadings of emissions by requiring a Utility to use those stations within its system that result in lowest emissions per quantity of power produced before being allowed to use more polluting stations. Utility companies normally have a number of different generating stations which they rely upon to supply their customers. Often these generating stations rely on different fuel sources: coal, oil, nuclear or hydro-electric. Depending upon the demand at any time for electric power, a Utility dispatches each generating station in turn, normally on the basis of which station is least expensive to operate per kilowatt hour of electricity generated. Under this approach, lowest emissions would replace lowest cost as the criterion for determining the order in which a Utility's generating stations are dispatched.

Alternatively, such a least emission dispatching criterion could be made to apply to only coal-fired generating stations. This would avoid a shift away from coal use to oil use which would have further consequences in relation to the US balance of trade and would instead encourage the use of those coal-fired plants which burn low sulphur coal or which have emission control equipment already installed.

This approach is attractive because it does not require further capital investment, it simply ensures that maximum use and benefit is obtained from equipment already in place. As more new sources are constructed in the U.S.A. which are subject to the New Source Performance Standards, a least emission dispatching program would ensure that the use of new sources is maximized and the use of existing sources is minimized.

This approach would not impose more stringent limits or more stringent technology upon existing sources, however, it would minimize the extent to which they are used. Increased operating costs would be offset by the fact that no new capital expenditures would be required by utilities, in order to achieve a reduction in total loadings of these emissions.

It could be anticipated that monitoring and enforcement of such a system would be relatively difficult. Presently, Utilities dispatch in the order which minimizes costs. If they are forced to dispatch their stations on another basis, there would be unlimited opportunities for profiting through non-compliance. Utility rates would have to be increased to reflect the increased operating costs associated with least emission dispatching and to the extent that a Utility could get away with dispatching its stations in the traditional way, windfall profits would result. Utilities cannot be expected to voluntarily co-operate with a system that will result in higher operating costs when non-compliance is both profitable and easy to achieve. Consequently, monitoring and enforcement on a constant basis would likely be necessary.

While this option may have some utility in certain circumstances, as a general strategy it would probably prove to be unworkable because of these enforcement problems. In addition, because of the fact that existing sources would be allowed to pollute as at present except where a Utility has a newer source with control equipment, reductions in total loadings would not be as great as if some form of control was imposed upon existing major sources through one of the other alternatives discussed.

6.3.7 Comprehensive Federally Supported Conservation Program

The less electrical power that is demanded by consumers the less electrical generating stations are required to operate and the lower are the emissions which result. Even in the absence of any other controls, conservation can result in significant decreased in the total loadings of the precursors of the acid precipitation problem. Any federal initiatives to encourage or require conservation measures by utilities and/or by consumers would likely have a marked impact in the total atmospheric loading of sulphates and nitrates and hence a reduction in acid precipitation downwind.

While the value of conservation efforts should not be underestimated it is unlikely that they alone can result in the reductions of emissions that appear to be required. Technological solutions such as scrubbers can result in reductions of up to 95%. In order to achieve this same reduction through conservation radical changes in our economy and lifestyles would have to occur.

Further, unless utilities are also required to dispatch their stations on a least emissions basis, any reduced demand may just result in a reduction in the use of the least polluting sources.

Therefore, while this alternative cannot achieve the necessary reductions alone, in combination with other alternatives it can contribute significantly to reductions in total loadings and such programs should be encouraged.

6.4 Common Law - A Note on its Possible Application in Controlling Acid Precipitation

6.4.1 Introduction

The "common law" is a concept known to Canadian and American lawyers and courts. The common law has been defined as a body of rules and principles which derive their authority from traditional usage and from judgments of of courts recognizing, affirming and enforcing these usages and customs, as distinguished from statutory law created by legislative bodies.

Historically, common law rights and remedies were developed to protect individuals against harm to their person or property. A person with an interest in land - whether as a land owner or as a tenant - may use the common law to prevent other persons from harming and interferring with his ordinary peace and enjoyment of that land. The harm or interference might take the form, for example, of unpleasant fumes, noise and vibrations, dust, sewage, odours, etc. The cause of action (the basis for civil litigation) called "nuisance" is the most relevant common law concept that might be utilized with regard to acid precipitation. In so far as a private person would sue to prevent harm to his property as a result of sulphur dioxide fumes or resulting fall-out harming his property the suit would be in "private nuisance". The person suing (the plaintiff) would be asserting that the polluter (the defendent) was interferring with his private rights to maintain his property free of such a nuisance.

Additionally, the common law developed the concept of "public nuisance". The concept of "public nuisance" was developed in so far as judges were of the view that there was a right common to the public that was being interferred with in some way and that the interference affected a sufficient number of persons to constitute it as a public nuisance. There is little doubt that there is a common law right to breath healthy air and to be free from interference with public health; or if a person breaches a statutory standard of conduct (e.g. a prohibition on emissions of harmful contaminants) the common law would find here too a public nuisance has been created.

Assuming that there is a person entitled to bring an action in the civil courts with regard to a private or public nuisance the courts are entitled to grant two remedies: damages and/or an injunction. Obviously, in so far as acid precipitation is concerned, it would be the relief by way of injunction that would be useful and which any plaintiff who sought to invoke the common law would hope to obtain.

An injunction is a court order which can take effect immediately or which can take effect after a period of weeks, months or years during which delay the polluter may have the opportunity to rectify the nuisance that it has be causing. If the nuisance is rectified within that delay then no injunction would take effect. If, however, the injunction does take effect and the polluter does not obey it, the polluter will be in contempt of court. Contempt of court is a very serious matter; the polluter if a human person can be imprisoned; if a corporation its assets can be attached and forfeited to the state.

While the above discussion would indicate that the common law concept of nuisance may indeed be a useful tool in controlling acid precipitation it is immediately obvious, unfortunately, that when the subject is analyzed more closely a number of considerable problems emerge.

6.4.2 Problems of Standing

"Standing" is a term used in the legal system with regard to the concept of who has the right to initiate legal proceedings. (Standing has already been discussed as a potential problem that must be overcome in so far as it is desired to allow private persons to obtain court orders asking that government officials carry out their statutory duties. (See Part 6.5.3 of this Report). With regard to the invocation of the common law concept of nuisance again the question of standing becomes an important one. In so far as any private owner of property can show that his property is being affected by pollution from outside his property that private property owner has a right to sue the polluter invoking the concept of private nuisance. No problem of standing arises. However, in so far as acid precipitation is not simply affecting one person but would affect hundreds or thousands of persons in a given geographic area and it would be virtually impossible for any one property owners to be expected to mount a private civil suit against a polluter

in a foreign country in order to attempt to obtain an injunction from the Ontario courts against the foreign polluter (assuming such an injunction could be enforced in the foreign country) the concept of suing in "public nuisance" becomes advantageous. That is so because in so far as a "public nuisance" can be shown to result from one or more sources of pollution the Attorney General of a province, for example, is entitled to bring a civil action on behalf of all those persons who are potentially affected by the pollution without having to demonstrate that any private property rights are being affected by that pollution. The Attorney General is entitled to sue in public nuisance to protect public rights. That public right would be the right to breath healthy air and to not have the air and water of the province polluted by sources of SO_2 and NO_x. (See below the U.S. case of Georgia v. Tennessee Copper Co. for an example of an American public nuisance action regarding acid precipitation)

It is of considerable advantage to have a suit brought in public nuisance. Where there is evidence the defendent's conduct amounts to a public nuisance and thus interferes with the rights of the public, the Attorney General may intervene and seek an injunction even though there is no evidence of actual injury to the public. All that need be proved is a public nuisance which tends to and has a potential to injure the public and the injunction should be granted. [Attorney General vs. Shrewsbury (Kingsland) Bridge Company (1882) 21 Ch. Div. 752 at 755; Attorney General vs. Cochermouth Local Branch (1874) 18 E.Q. 172 at 178.] In one case a local board of a town had brought an action in nuisance as regards pollution from an upstream source. It was unable at trial to bring forth sufficient scientific evidence of the nuisance and lost. Subsequently, the Attorney General brought an action in public nuisance and received an injunction on the basis that some illegal act had been committed and without requiring the same proof that the private individual needed to bring forward. [W.Estey,"Public Nuisance & Standing to Sue"(1972) 10 Osgoode Hall Law Journal, 563 at 578, footnote 72]

It can been seen from the above discussion that the ability to sue in public nuisance has some considerable advantage over suing in private nuisance. Yet no private individual has the right to bring an action in public nuisance unless he can obtain the consent of the Attorney General. The consent of the Attorney General is completely within his discretion. No court will review or intervene with regard to the grant or refusal of such consent. Of course the Attorney General himself can bring an action in public nuisance, but again whether or not he does so is completely within his unfettered

discretion. Thus, a very potentially effective tool of the common law cannot even be invoked unless the Attorney General of a particular jurisdiction either wishes to bring an action in public nuisance himself or agrees to give his consent to private individuals so to do.

This problem of standing has been the subject of rather critical comment in recent years. That is so because there is no logical reason as to why the concept of "public nuisance" cannot be invoked as a cause of action by private persons when, in the criminal court system, any persons is entitled to bring a prosecution for breach of statute, whether it is for breach of the Criminal Code , breach of the Ontario Environmental Protection Act or the Federal Clean Air Act, and have an accused person put on trial wherein that person may be fined a considerable amount of money or even be sent to jail. The whole concept of "standing" needs to be re-examined in the context of utilizing common law remedies with regard to acid precipitation.

6.4.3 Proof Problems: Access to Information and Protecting Government Employees from Discrimination

As discussed elsewhere in this Report a court cannot act unless there is sufficient evidence brought before it. In the common law context the burden of bringing that proof to the courtroom is upon the plaintiff. Unless the plaintiff is able to satisfy the court that "upon the balance of probabilities" the defendant's activities are causing the problem alleged the plaintiff will be without a remedy.

Given the problems of proving actual cause-and-effect relationship as regards acid precipitation as discussed in Part 1.0 of this Report, it would be difficult for any private person to fulfill the "standard of proof" referred to above -i.e.show that the defendant's activity on the balance of probabilities has harmed the private plaintiff's property or person without

government agencies making such information available to the public. Accordingly, in so far as the common law may be looked to as a tool for controlling acid precipitation access to information with regard to pollution must be made considerably easier to obtain than it is at the present time within federal Canadian and provincial jurisdictions generally speaking. (This is not necessarily the case in Quebec because of the right to information recently provided in the Quebec Environment Quality Act which provides that

> Every person has the right to obtain from the Environmental Protection Branch copy of any available information concerning the quantity, quality or concentration of contaminants emitted, issued, discharged or deposited by a source of contamination [Section 118 d].)

A further problem not addressed in any Canadian legislation is the vulnerability of civil servants who would co-operate with private persons who wish to either enforce statutory requirements which government departments have ignored or who wish to bring civil actions in nuisance and obtain government information and government witnesses for that purpose. Under the US Clean Air Act such "non-discrimination" provisions are articulated in great detail in section 322. Clear protection is given to civil servants who initiate enforcement actions themselves or who assist private persons in doing so. That issue, as aforesaid, is not at all addressed in Canadian or provincial legislation and must be addressed in order to realistically gain full information and co-operation from government officials in so far as private persons are to assist in bringing forward pressures through private litigation to control sources of acid precipitation.

6.4.4 Costs of Civil Litigation

There are tremendous costs involved in civil litigation. For an ordinary citizen to bring a civil action involving some expert testimony to obtain damages or an injunction in Ontario courts would cost at least $25,000.00. That cost is to pay the plaintiff's own lawyer and witnesses and to obtain transcripts of examinations for discovery, go through motions prior to trial, etc. (The same costs would be involved in a private citizen seeking an injunction against a polluter or order for mandamus compelling public officials to obey the law.) Additionally, any plaintiff in the civil court system in Ontario (or other provinces in Canada as well as in the Federal Court of

Canada) must be prepared, in the event they do not win, to additionally pay certain costs to the defendant. In Ontario such costs that an unsuccessful plaintiff would have to pay can be approximated at two-thirds of his own costs in putting on his own case. In other words, should a plaintiff in Ontario bring an action and lose, not only would it cost him $25,000.00 but it would cost him additionally an additional $16,666.00 (approximately) to pay the defendant's costs. Of course, should the plaintiff win, approximately two-thirds of his own legal fees and experts fees would be paid by the defendant. But the risk of civil litigation must be understood.

Should the trial last not five or six days (as was estimated in the above example) but three or four weeks, as is not at all unanticipated in a complex matter which involves expert witnesses on both sides, the costs to the plaintiff of mounting his own case could easily be $50,000.00 to $75,000.00 with concomitant liability for costs payable to the defendant should the plaintiff lose.

In the United States, in many state jurisdictions, there is no liability for "costs" to be paid to the defendant in the event that the plaintiff is successful. Each party bears his own costs. That in some respects would make private litigation easier to contemplate in Canada and that concept should be examined more closely.

Additionally, in order to encourage private enforcement in the United States of the Clean Air Act and other environmental legislation, Congress has authorized the courts to award costs to the plaintiff for bringing an enforcement action. Thus, it appears in the United States not only is the potential plaintiff not liable for the defendant's costs but in fact the plaintiff can be expected to recover his basic legal fees and disbursements (at least if he is successful). These provisions taken together certainly would encourage private civil actions as well as private enforcement actions with regard to statutory provisions. This whole question of providing public funding regarding legal fees and costs must be given more careful scrutiny in so far as it is desired to make both the common law and the statutory environmental regimes truly useful tools with regard to controlling acid precipitation.

6.4.5 Problems of Statutory Authority

One of the critical issues that will emerge in regard to invoking common law causes of action such as nuisance as regard sources of pollution in both Canada and the United States is whether or not such sources have a total defence to such suits because their emissions are within limits set by regulatory agencies in their respective jurisdictions. This defence is based on the concept of "statutory authority" and centres on the thesis that if the legislature has directly or inevitably approved the operation of certain sources of pollution then such sources should be immune from civil action. Judges of course do not like this defence and have sought to restrict it. Nevertheless, it will become a major issue and in so far as it is anticipated that the common law may provide any useful tool for controlling acid precipitation. The extent to which this defence can be utilized and the extent to which legislation is needed to restrict the invocation of that defence should be carefully studied.

6.4.6 Conflict of Laws

Assuming that there exists in both Canadian and American jurisdictions (both at the federal level and at state/provincial level) a common law cause of action in nuisance that can be invoked and that there are plaintiffs standing in the wings just waiting to launch such actions with regard to sources of acid precipitation a major issue that must be faced is whether or not Canadian plaintiffs can sue in Canadian courts to obtain an injunction to be enforced in the United States, and the corollary, that is whether American plaintiffs can sue in American courts and have their judgments for an injunction enforced in Canada.

This issue is generally discussed under the topic of "Conflicts of Law" . It is major technical area and cannot be addressed in any meaningful way in a short discussion. Suffice it to say that there may be considerable difficulties for Canadian courts exercising jurisdiction over extra-territorial claims. Those private international law rules may prevent those persons affected by pollution from Ontario from suing those responsible

unless the damage also takes place within Ontario. The conclusion of one writer knowledgeable in this area is that Canadian law is clearly deficient in this area and would require reform to permit the extention of equal access and remedy to non-residents affected by pollution. [R.S.G. Chester, Report of the Liaison Committee with the National Conference of Commissioners on Uniform State Laws Concerning the Proposed Regime of Equal Access and Remedies in Cases of Transfrontier Pollution", (1980) 62nd Proceedings of Uniform Law Conference of Canada, 103]

The Uniform Law Conference is studying this whole issue of equal access to the courts of other countries and enforcement of remedies as between Canadian and American courts with the object of determining whether it is possible and desirable to have a "Uniform Trans-Boundary Pollution Act" enabling common law actions to be brought in a procedurally expedient manner. It is recommended that close attention be paid to their recommendations in this area.

6.4.7 Other Potential Issues Regarding the Common Law

The above topics are not the only ones that must be carefully canvassed in order to determine whether or not the common law could be a useful tool with regard to controlling acid precipitation. However, they do present major issues. Others that would likely emerge are: (1) whether Ontario Hydro power plants are immune from injunctions (whether the injunction is sought either under Ontario or American law) in so far as Ontario law prohibits injunctions from issuing against the provincial government or provincial crown entities; and (2) the differences in defences available to nuisance actions in Canada and the United States. For example, in Canadian jurisdictions if a nuisance exists the courts do not normally give any regard whatsoever to the importance of the defendant's activity in the community (for example that it is the only generator of electricity in a given geographical area) in deciding whether or not the injunction should issue. In the United States, nuisance law does, in some jurisdictions, give importance to the undertaking of the defendant for the overall community. This disparity between defences would be another issue that should be canvassed in an overall study of the potential of the common law.

6.4.8 Conclusions With Regard to Using the Common Law

A thorough study of the usefulness of the common law would demonstrate that over the last hundreds of years plaintiffs have been successful in stopping the operation of polluting sources that were disrupting both private and public property. If some of the major procedural and substantive issues indicated above can be eliminated or put aside in terms of the acid precipitation problem then the common law could well be a useful tool as an adjunct to legislation and government regulatory schemes in dealing with the problem.

In canvassing the utility of the common law it should not be forgotten that in 1907 the United States Supreme Court, upon the complaint of the State of Georgia, issued an injunction with regard to acid precipitation causing damage in that state as a result of the activities of the Tennessee Copper Company operating in an adjacent state.

In the case in question (Georgia vs. Tennessee Copper Company (1906) 206 U.S. 230) the United States Supreme Court unanimously determined to issue an injunction as a result of the allegations of the State of Georgia that in consequence of the copper company discharging obnoxious gas from their works in Tennessee over the State of Georgia a wholesale destruction of forests, orchards and crops occurred in that state and that other injuries were done and threatened in five counties of the state.

Mr. Justice Holmes, writing the opinion of the court, stated, inter alia, the following:

> The state owns very little of the territory alleged to be affected, and the damage to it capable of estimate in money, possibly, at least is small. This is a suit by a state for an injury to it in its capacity as quasi-sovereign. In that capacity the state has an interest independent of and behind the titles of its citizens, in all the air and earth within its domain. It has the last word as to whether its mountains shall be stripped of their forests and its inhabitants shall breath pure air. [p. 237].

Thus far Mr. Justice Holmes has stated a position that is no different as regards provincial governments in Canada. The provinces are deemed to be the owners of the air and, in the final result, the soil and resources of Ontario. The legislature of each province is supreme and accordingly each has the "last word" as to whether and how its resources shall be used.

Mr. Justice Holmes continued as follows:

> It is a fair and reasonable demand on the part of a sovereign that the air over its territory should not be polluted on a great scale by sulphurous acid gas, that the forests on its mountains, be they better or worse, in whatever domestic destruction they have suffered, should not be further destroyed or threatened by the act of persons beyond its control, that the crops and orchards on its hills should not be endangered from the same source. ...
>
> The proof requires but a few words. It is not denied that the defendants generate in their works near the Georgia line large quantities of sulphur dioxide which becomes sulphurous acid by its mixture with the air. It hardly is denied and cannot be denied with success that this gas often is carried by the wind great distances and over great tracts of Georgia land. On the evidence the pollution of the air and the magnitude of that pollution are not open to dispute. Without any attempt to go into details immaterial to the suit, it is proper to add that we are satisfied by a preponderance of evidence that the sulphurous fumes cause and threaten damage on so considerable a scale to the forests and vegetable life, if not to health, within the plaintiff's state as to make out a case within the requirements of Missouri vs. Illinois [a case which decided that one state can sue another in the U.S. Supreme Court]. [pgs. 238-239].

In coming to the conclusion that an injunction should issue, it is of interest and perhaps of extreme relevance to note that the pollution that was now most aggravating the State of Georgia was, according to that state, "the tall chimneys in present use" used by the defendant which "caused the poisonous gases to be carried to greater distances than ever before". The court concluded that "there is no alternative to issuing an injunction, after allowing a reasonable time to the defendants to complete the structures that they now are building and the efforts that they are making to stop the fumes".

It is obvious from this type of precedent-setting litigation that the common law does have a role to play with regard to acid precipitation. A specific study, as indicated, addressing the procedural and evidentiary problems indicated above, should be instituted as soon as possible.

6.5 General Legislative Reforms Needed to Facilitate Enforcement of Environmental Legislation Designed to Deal with Acid Precipitation

6.5.1 Introduction

Acid precipitation is not the only environmental problem of consequence in the 1980's in North America. Hazardous waste, conservation and preservation from pollution of ground water resources and regulation of toxic substances are some of many priority issues on the agenda of environmental agencies in Canada and the United States.

Aside from having various program priorities, other factors, such as budgetary restraints, political directives and the like can result in low priority being given to the development of necessary regulations to deal with acid precipitation as well as necessary action to enforce such measures.

One method of assuring that priority attention is given by regulatory authorities to developing necessary regulations to control acid precipitation and of attempting to ensure that such new regulatory measures are enforced is to provide in amended legislation for legal duties assuring such new standards are adopted and assuring such standards are enforced.

Specifically, we recommend that all legislation to be relied upon to control and prevent acid precipitation contain the following standard provisions:

1) A duty on the administrator to require the installation of best practical technology on present and new sources within a limited period of time;

2) A duty upon the administrator to take enforcement action to require the installation and use of such equipment;

3) A provision allowing any person (including a group, association, municipality, state/province and Federal and foreign governments to obtain a mandatory court order (in the nature of mandamus) requiring the administrator to perform his duties; the breach of such mandatory court order would be contempt of court;

4) A provision allowing any person to obtain from a civil court an injunction to restrain any particular source from commencing to operate without the installation of the requisite best practical technology or from continuing to operate contrary to limits and deadlines for installation of best practical technology.

Such provisions would allow an injunction to issue against both privately owned sources and against government sources; such injunctions could be sought by any of the persons described in the previous section without any such person having to demonstrate personal harm being caused to them by the breach of the law and without such persons having to be liable for more than $500.00 in court costs.;

5) A provision providing public funding for persons meeting certain criteria in order to allow them to launch the contemplated court action and provision made for access to information necessary to allow enforcement of such laws.

6) Reforms to rules of evidence and appropriate wording restricting the application of the defence of "reasonable care" in Canadian regulatory environmental offences.

6.5.2 Existing Precedents for Imposing a Duty on Official to take Action

Although many persons may assert that Canadian legislative practice never requires government officials to be under a duty to take specific action, such an assertion would be far from being an accurate one. If, to quote a Canadian Federal Court Judge, in fact, governmental officials never have a duty to do anything, legislation "becomes useless".

At the provincial level, for over 100 years the Ontario Public Health Act has required that local Medical Officers of Health and local Boards of Health take action to abate nuisances in their areas when information is given to those persons by householders in the area. The present Ontario Public Health Act has the following provisions:

> It is the duty of the local board to superintend and ensure the carrying out of this Act and the regulations and any by-law of the municipality pertaining to public health, and to execute, do and provide all such acts, matters and things as are necessary for that purpose [The Public Health Act, R.S.O. 1970, c.377, s.27].
>
> Where information is given in writing to the local board by a resident householder of the existence of a nuisance or unsanitary conditions in the municipality, the local board shall forthwith cause a complaint to be investigated and all necessary steps to be taken as provided by this Act or by the regulations to abate or remedy the same.[s.28]
>
> Wherever the local board or Medical Officer of Health is satisfied of the existence of a nuisance, the Medical Officer of Health shall serve a notice on the person by whose act, default or sufferance the nuisance arises or continues, or, if such person cannot be found, on the owner or occupier of the premises on which the nuisance exists or from which it arises, requiring him to abate it within a time to be specified in the notice and to execute such works and do such things as may be necessary for that purpose [s.92(1)].

> Where the person causing the nuisance cannot be found and it is clear that the nuisance does not arise or continue by the act or default of the owner or occupier of the premises and it is therefore improper that the owner or occupier should be required to abate it, the local board shall abate the nuisance at the expense of the municipality [s.92(1)]

Under a statutory by-law provided by the Public Health Act that is in force in every municipality in Ontario until altered by the municipal council (and which only can be changed with the permission of the provincial Minister of Health), whenever a notice signed by one or more inhabitant householders of the municipality is received by the local board or Medical Officer of Health stating that the condition of any building in the municipality is filthy as to be dangerous to the public health or that upon any premises there is an accumulation of filth, stagnant water or other matter, or things kept so as to be dangerous or injurious to the public health, the Public Health Inspector "shall enter such building or premises for the purpose of examining the same, and if necessary he shall order the removal of such matter or thing" [Schedule B to the Public Health Act, s.6].

It was pursuant to the above provisions that the Toronto Board of Health in the early part of the 1970's felt impelled to take abatement action against secondary lead smelters in the city of Toronto which were alleged to be emitting and depositing lead in adjacent residential neighbourhoods which impaired the health of persons residing there.

In Quebec, the Environment Quality Act provides a duty on the Director of the Environmental Protection Service to ensure that new sources of potential contaminants of the Quebec environment are approved in a manner that assures that the emission, deposit etc. of contaminants into the environment will be in accordance with the act and regulations and impowers the Director to require any alteration in the plan or project submitted for that purpose. Further, the Director appears to be under a duty to consider how emissions or deposits from any new source are "likely to affect the life, health, safety, welfare or comfort of human beings, or to cause damage or to otherwise impair the quality of the soil, vegetation, wildlife or property" [s.20, E.Q.A.] and also under a duty to ascertain that emissions will not infringe any persons rights "to a healthy environment" and to "the protection of living species", provided by section 19a. [see Part 4.2 of this report for further discussion of the Quebec legislation].

There are also duties, although not perhaps as specific as the above examples, in Federal legislation. Although we have made no study of Federal legislation for this purpose, two examples come to mind. We are certain there are many others.

Under the National Harbours Board Act [R.S.C.1970 c.N-8] various harbour boards are given the ability to make by-laws governing the harbour over which they have jurisdiction. Once a by-law is made and approved by the Governor in Council and is published in the Canada Gazette it has the same force and effect as if enacted under the National Harbours Board Act itself.

In a recent decision of the Federal Court of Canada Mr. Justice Collier decided that the National Harbours Board had a duty to enforce its by-laws with regard to illegally moored vessels and houseboats in a cove of Vancouver Harbour. In the case in question (District of North Vancouver vs. National Harbours Board et al, Vancouver B.C. July 27, 1978) the residents of the area and the District Municipality of North Vancouver asked for an order for mandamus directing the National Harbours Board to carry out its statutory duty under the National Harbours Board Act and by-laws. Mr. Justice Collier determined that there was a duty on the board and issued a writ for mandamus compelling them to enforce the Act. In this case the applicants had complained over a long period of time to the National Harbours Board about vessels and houseboats illegally moored in a cove in their area. The applicants considered the crafts to be a hazard but the Board did not and as such the Board did nothing in answer to the complaints. The Judge however found that the hazard presented by mooring of the crafts, the placement of the moorings and anchor lines, abandoned moorings and the unlighted conditions of the lines at night were all hazards, nuisances and annoyances. He found that the Board had a non-discretionary public duty to administer, manage and control the harbour in accordance with the Act and by-laws. While the National Harbours Board had a discretion as to how it carried out its duty, nevertheless the enforcement of the Act and by-laws was a mandatory public duty since the Board cannot properly perform that duty unless it takes steps, where there are contraventions, to enforce the Act and by-laws. To quote Mr. Justice Collier

> In my view, the Board has a public duty to administer, manage and control Vancouver Harbour in accordance with section 7 of the Act and by-law A-1. It does not have a discretion as to whether it will, or will not, perform that duty. It must perform it, otherwise the legislation and its scheme become useless. ...the enforcement of the statute and the by-laws is just as much part of its public duty, as is the function of administering, managing and controlling. It cannot properly perform the latter obligations unless it takes steps, where there have been breaches, to enforce the statute and by-laws.

> The Board, in respect of the houseboats, refuses to act until municipalities have agreed on designated areas in the harbour where those vessels will be acceptable. The Board could, by that method of consultation, evade forever its functions under By-Law A-1. It is the Board not municipalities, and the Board only, which can permit vessels to moor or anchor in the harbour. The Board alone has the power to determine exactly where that may be done. The Board has no statutory right to delegate those matters to other bodies or committees. ...here, a great deal of time has passed. No effective action of any kind has been taken. The delay here has, to my mind, been unreasonable.
>
> The duty of enforcement is, in the true legal sense, on the Board. It has the overall function of administering the statute. ...the applicants have established a clear legal right to the enforcement of the duty, a non-discretionary duty on the part of the Board, the demand for performance of it, and what amounts, in law, to a refusal. A writ of mandamus will issue... [7 M.P.L.R. 151, at 160-163].

Similarly, under the Federal Aeronautics Act [R.S.C.1970 c.A-3] the Minister of Transport has the duty, under section 3a of the Act, "(a) to supervise all matters connected with aeronautics". While that duty is obviously vague, it nevertheless has allowed the Federal Court of Canada to determine that having made regulations with regard to the height at which planes must fly above residential property, the Federal Department of Transport cannot ignore violations of such regulation and must be prepared to demonstrate that it has investigated complaints about such breaches and is taking reasonable action to ensure they do not continue insofar as the department ascertains that such breaches are, in its opinion, occurring. [see Harcourt vs. Jamieson et al, C.E.L.N., Volume II, No. 6, p.149]

In the United States, Federal environmental legislation passed in the 1970's and continuing into the 1980's contains numerous examples of the legislature imposing upon administrators charged with supervising such Acts, duties to, e.g., promulgate regulations and standards with regard to various aspects of the legislation, revise such standards and regulations as new evidence becomes available, and enforce such regulations. [see Part 5.0 in this report for such duties as contained in the Clean Air Act.] Similar duties are found, for example, in the U.S. Resource Conservation and Recovery Act of 1978. Under that Act regulations were required to be promulgated by the E.P.A. within a given number of years dealing with hazardous waste. When no such regulations were promulgated by the required date various environmental organizations in the United States launched suits asking that the E.P.A. Administrator be held in contempt of court for failing to comply with the legislation. Such court actions forced the E.P.A.

Administrator to devote considerable attention to the regulation-writing process and forced them to justify to a judge why there may have been reasonable explanations for their lack of compliance with the legislation. Many observers have commented that this type of a duty,allowing judicial scrutiny of non-compliance with mandated duties,has allowed appropriate counterpressures to be put on to environmental agencies that are otherwise overburdened with a plethora of priorities so as to ensure that necessary action mandated by the legislature is taken within the time required or within in any event a reasonable time.

6.5.3 Existing Precedents for Allowing Private Persons to Enforce Environmental Law Requirements

There has always been a right in Canada, originating in English common law, for any person who has reasonable and probable grounds to believe that an offence has occurred contrary to either Federal or provincial legislation, to initiate a prosecution to ensure that any such offender is tried and fined or imprisoned if convicted. It is not necessary for such provisions to be found in Federal or provincial law for this remedy to be available. It is part of the common law. Unless a statute specifically takes away the right then it exists. The Federal Criminal Code specifically endorses this concept by, inter alia, defining a "prosecutor" as meaning "the Attorney General or, where the Attorney General does not intervene, ... the person who institutes proceedings to which this Act applies and includes counsel acting on behalf of either of them" [The Criminal Code, s.2].

Both the Federal Fisheries Act and the Federal Migratory Birds Convention Act, discussed elsewhere in this report, specifically encourage so called "private prosecutions" by directing that in the case of a successful prosecution for breach of these Acts, the complainant or the informant receive one-half of any fine exacted from the accused. [See Parts 3.5 and 3.6]

The same common law principles described above apply to the breach of any provincial legislation or regulations made thereunder. Any person who has reasonable and probable grounds to believe that an offence has occurred may prosecute. Under the Ontario Provincial Offences Act, 1979, [S.O.1979 c.4] a "prosecutor" is defined in similar terms to the definition under the Criminal Code and includes the Attorney General, or, where the Attorney General does not intervene, "the person who issues a certificate or lays an information and includes counsel or agent acting on behalf of either of them" [s.1(1)(h)].

Both at the Federal level of jurisdiction and at the provincial level, not only is there a tradition of allowing private persons to enforce legislation by way of obtaining convictions, there is also the potential of obtaining a remedy of a court-issued restraining order (having the effect of a civil court injunction).

At the Federal level, the Federal Fisheries Act allows a judge convicting an accused to make an order requiring that the accused not engage in similar activities which lead to breach of the Act or to take positive action to avoid committing a similar offence. [see Part 3.5 of this report] Thus a private person who brought a charge against someone for breaching the Federal Fisheries Act could not only expect, in the event of a conviction, to receive half the fine but could also seek a restraining order. However the judge has the total discretion as to whether or not such a restraining order will be issued. A problem with this device is that in order for conviction to be entered under the Federal Fisheries Act the prosecutor must prove the offence beyond a reasonable doubt. Until such evidence exists no prosecution can succeed and no restraining order is possible.

Under the Canada Clean Air Act a similar restraining order is possible. Section 35 provides that where a person is convicted of an offence under that Act the court may, in addition to any punishment it may impose, order that person to refrain from any further violation of the provisions of the Act or regulation for the violition of which he has been convicted or to cease to carry on any activity specified in the order the carrying on of which, in the opinion of the court, will or is likely to result in any further violation thereof.

Again, the standard of proof required for conviction under the Clean Air Act in the criminal court is "beyond a reasonable doubt". This standard of proof is so high that it may prove an insuperable difficulty with regard to problems of acid precipitation without amendments to the Act. Even assuming that a conviction is registered there is complete discretion on the convicting judge to issue or to refuse to issue a restraining order.

Nevertheless the above provisions do provide ample precedents for the concept of a restraining order being obtained by private persons.

Accordingly, consideration should be given to legislative amendments to provide the opportunity for a restraining order to be issued upon the application of any person for the purpose of stopping or preventing sources of SO_2 or NO_x from emitting these pollutants in an illegal fashion. This would eliminate the necessity of meeting the criminal standard of proof--a civil standard would be sufficient. In addition, any such legislative amendment should provide positive guidelines to judges as to when such restraining orders ought to be issued to ensure that the legislative intent is not weakened by judicial reluctance.

At the provincial level, in Ontario, the Municipal Act, the Planning Act and the Environmental Protection Act all provide for ratepayers in a given municipality to bring a civil action in the Supreme Court of Ontario to obtain an injunction to restrain the breach of municipal by-laws made under those Acts. While those citizens would have the right, as any person under the common law, to file an information before a Justice of the Peace and prosecute in the provincial court for an offence contrary to such by-laws and have the offender fined, often the penalty provided for breach of the by-law is so low as to be meaningless. Accordingly the issuance of an injunction is desirable as breach thereof would be contempt of court. These Acts all provide that any ratepayer may launch an action to obtain such an injunction.

In Quebec, as indicated in our discussion of the Quebec Environment Quality Act, a private person is entitled to ask a Judge of the Superior Court for an injunction restraining any act or operation which interferes or might interfere with the exercise of the rights given by that Act to every person to a healthy environment and to its protection and to the protection of the living species inhabiting it.

In the United States under the Federal Clean Air Act citizen suits are expressly provided for as a means of ensuring the enforcement of the Act's requirements in the absence of the Environmental Protection Agency or states determining to take such action themselves. The extensive provisions for such citizen suits and encouragements for such suits to be launched are provided in section 304 of the Federal U.S. Clean Air Act.

Such suits have been launched with some regularity over the last few years. An example of the use of these citizen suit provisions is found in Appendix B to this report. In the complaint attached as Appendix B, the Sierra Club, a non-profit national conservation organization with over 180,000 members, alleged that the Southern Indiana Gas and Electric Company and the Alcoa Generating Corporation, both located in Indiana, were violating applicable SO_2 and particulate matter emission restrictions contained in the relevant Indiana State Implementation Plan approved under the Clean Air Act. Under the U.S. Clean Air Act,where private persons wish to enforce the Clean Air Act,they must give notice to the E.P.A., to the State and to the Executives of the companies which are alleged to be in breach of the requirements. In their action, the Sierra Club alleged that neither the E.P.A. Administrator nor the State of Indiana commenced or was diligently prosecuting any action in a court of the U.S. or of a state to require compliance by the defendants with the standards and limitations sought to be enforced by the Sierra Club.

Accordingly the Sierra Club asked the U.S. District Court to find that the defendants were in violation of applicable air pollution regulations and to require those defendants to formulate and to submit to the court within 60 days of judgment a plan for bringing those plants into compliance with air pollution regulations as expeditiously as possible "which plans shall (a) specify in detail how compliance will be achieved: (b) set forth a compliance schedule, and (c) demonstrate that it would not be possible to accelerate said schedule".

The plaintiffs also asked for an opportunity to rebut the defendants' plans and to submit alternative plans and for an order that the defendants implement that plan which "will most effectively and expeditiously end the violations". [Appendix B, p.8]

Finally the Sierra Club asked, as is contemplated under the U.S. Clean Air Act, for the defendants to pay all their costs of this action including reasonable attorney and expert witness fees.

This is one example of how, with appropriate legislation, private citizens and concerned environmental organizations can be expected to assist with the enforcement of environmental laws when government agencies have neither the resources or political inclination to take legally required abatement and enforcement actions.

6.5.4 Public Funding and Access to Information

The rationale for these reforms is discussed in Part 6.4.3 & 6.4.4 dealing with Common Law reforms. The effectiveness of statutory regulatory provisions for the control of acid precipitation is equally dependent upon these reforms.

6.5.5 Abolition of Regulatory Enforcement Obstacles

It is obvious from the extensive comments made in Part 1 and elsewhere in this Report that the current regulatory systems in both Canada and the United States present severe obstacles to both governmental agencies and private citizens who wish to have effective action taken in an expeditious matter with regard to current and new sources of acid precipitation. The following changes are needed:

6.5.5.1 Revisions to Provide for Specific Emission Limits

In most regulatory systems it is now necessary for the agency wishing to initiate abatement action to be able to prove a cause-and-effect relationship in so far as emissions from the source in question must be shown to be violating some applicable emission standard. Under Ontario and Quebec legislation it is currently possible, however, for the provincial cabinet, without regard to being able to demonstrate to a court a cause-and-effect relationship, to simply set, by executive order, specific emission limits on particular sources. It is doubtful whether such specific emission limits could be challenged by the

source, except perhaps on the grounds that prior notice should have been given to that source and an opportunity given for that source to make representations prior to such limits being set. However, even that potential common law duty of fairness may be removed by the legislature through appropriate statutory provisions. The Canada Clean Air Act also attempts to make provisions for specific emission limits to be set on particular sources but, as discussed in Part 3.1, the present wording of the Clean Air Act prevents such limits being set as regards sources of acid precipitation. Statutory reform to the Clean Air Act is required, as indicated elsewhere.

In the United States, while section 111 (d) of the Clean Air Act contemplates the making of emission standards for any existing source, nevertheless, as discussed in Part 5.2.2 above, the provisions of this section, like the Canada Clean Air Act, are worded in an inappropriate manner so as to prevent their application to reduce emissions from specific sources by specific amounts of pollutants, at least as regards the precursor pollutants of acid precipitation.

From the above it can be concluded that revisions are needed to the U.S. and Canadian Clean Air Act to provide appropriate wording allowing for the prescription of specific emission standards on specific sources of acid precipitation so as to avoid the evidentiary problems referred to earlier. The wording of the Ontario and Quebec Environmental Acts might serve as a partial precedent in this regard although both Acts are so worded as to allow the prescription of such specific emission standards totally at the discretion of the administrating agency and without regard to the impacts of continued pollution and public concerns.

6.5.5.2 Changes Required in Rules of Evidence

Assuming that there are specific limits on specific sources of emissions prescribed by law, and assuming that one method of ensuring that such limits are obeyed is that a system of potential fines is in place, it is necessary to evaluate the rules of evidence that will be applicable in order to obtain a court ruling that such limits have been breached.

In Canada such court rulings are taken in the criminal courts (in Ontario, the Provincial Court). Such courts apply a criminal law standard of proof which demands that the prosecutor show that the accused is guilty "beyond a reasonable doubt". There is no apparent logic in applying this criminal law standard to such offences as they are indeed "public welfare" offences and the accused, if convicted, while perhaps subject to a substantial fine, will not likely, if ever, face the prospect of a jail term (and certainly if a corporation cannot face a jail term). Indeed, the Ontario Court of Appeal has held that the prosecution of a person for breaches of provincial law really amounts to a civil proceeding. Yet, due to historic circumstances, the criminal court standard of proof has continued to be applied. This anomaly should be removed by appropriate legislation and the standard of proof should be that of all civil proceedings, that is proof of the offence is required "on the balance of probabilities".

6.5.5.3 Elimination from Canadian Law of The Defence of "Reasonable Care"

Another concern that has only recently emerged related to enforcement of all regulatory offences in Canada is the new defence of "reasonable care" established by the Supreme Court of Canada in the 1978 decision R. vs. Sault Ste. Marie [supra].

The Supreme Court in the Sault Ste. Marie case interpreted prohibitions against polluting water found in the Ontario Water Resources Act as constituting offences of "strict liability" for which the defence of "reasonable care" was available. It can be readily predicted that all pollution offences contained in provincial and federal statutes and regulations will be found to also amount to "strict liability" offences, except if the legislature uses clear wording to the contrary.

The significance of the defence of "reasonable care" is that as interpreted by most judges to date it would allow an accused to escape a conviction upon a showing that the accused took minimal measures to avoid committing the offence. Most judges have given considerable scope to this defence of "reasonable care" and acquited many persons and corporations charged with environmental

offences under circumstances in which, prior to this defence being available, such accused persons would have been convicted. The defence therefore is a grave problem for the successful enforcement of Canadian regulatory prohibitions.

While a wholesale revision of regulatory offences generally cannot be proposed without a detailed rationale being put forward, nevertheless it is urged that Federal and provincial governments give the subject further study with the objective of limiting or removing the availability of this defence in environmental regulatory offences, especially in so far as the Canada Clean Air Act and provincial environmental legislation must be amended in the near future to allow proper controls on acid precipitation to be put in place. A recent decision of the Ontario District Court (County Court) [The Queen v. Denison Mines Ltd., Oct. 20, 1980] which elaborates on and gives effect to this defence is found as Appendix "C". In this case the Ontario Ministry of the Environment imposed an abatement requirement on Denison Mines Ltd., to have the effluent from uranium tailings ponds achieve an acceptable "pH". The Ministry was unsuccessful when it prosecuted the company for failing to achieve this requirement. The decision in this case portends that the defence of "reasonable care" could allow, e.g., Inco Ltd. or Ontario Hydro to escape conviction for not complying with the recently issued "abatement regulations" if such requirements are admitted by the MOE, upon a prosecution of these companies, to have been set on an unrealistic basis. The result could be that all "emission limits" imposed by regulation could generally prove unenforceable if the source can show there was an aura of unreality about them. This defence must accordingly be curtailed if not eliminated if future abatement orders or indeed any environmental prohibitions are to be relied upon to control acid precipitation.

7.0 SUMMARY OF RECOMMENDATIONS

7.1 Introduction

This summary of the recommendations made in this report is designed so that the reader can readily identify the key objectives that must be addressed by any regulatory scheme designed to alleviate the acid precipitation problem. These recommendations are presented in the order in which they appear in the report and are identified according to the section in which they are found. In this way, the reader can make reference to the main body of the text for further explanation of the rationale for this recommendation.

The recommendations set out below are of the following types:

1) recommendations for general policy objectives that the Canadian federal government should formulate in order that the rationales for the subsequent federal initiatives in this area are apparent to the public, to provincial governments and to the United States Federal government;
2) recommendations involved in making use of existing Canadian federal legislation to the extent that it can be useful for dealing with the problem;
3) recommendations for necessary amendments to Canadian federal legislation to make it more useful for this purpose;
4) recommendations involving necessary reforms to provincial legislation in Canada to ensure its present use and to improve the reliability of provincial controls that the Federal government should require if continued reliance is to be placed upon the provinces as a part of the necessary regulatory scheme to control acid precipitation;
5) recommendations involving diplomatic interventions that the Canadian government should make in the U.S.A. to ensure that existing legislation in that country is applied to the fullest extent possible;
6) recommendations involving diplomatic and legal interventions that the Canadian government should make in the U.S.A. to ensure that existing legislation is not weakened by the present Administration by relaxations of State Implementation Plans or by Congressional amendments;

7) recommendations involving Canadian diplomatic and legal interventions in the U.S.A. to ensure that present U.S. legislation is made more effective by revising State Implementation Plans to impose stricter standards and by encouraging Congressional amendments to the Clean Air Act to make it more effective for controlling existing sources of the precursors of acid precipitation.

7.2 Recommendations

1) That the Canadian Federal government articulate as a general policy objective that it is necessary to control loadings of SO_2 and NO_x into the atmosphere in both Canada and the United States in order to control the acid precipitation problem in this country. (Part 6.1)

2) That because of the problems of legally proving the cause/effect relationship between emissions of SO_2 and NO_x and the adverse effects on the environment in any particular instance, due to the complexities associated with the long-range transport of these pollutants, that the Canadian Federal government abandon the traditional approach to pollution control in favour of a more direct mechanism which would eliminate the necessity of proving this cause/effect relationship on a case-by-case basis. (Part 6.1)

3) That the Canadian government seek to ensure that the New Source Performance Standards that presently apply to new U.S. stationary sources of SO_2 and NO_x are preserved in the Clean Air Act as at present and that these standards themselves become progressively stricter as technological improvements warrant. (Part 6.2.1)

4) That new stationary sources in Canada should be required to comply with standards equivalent to those applicable to new U.S. sources: that is "best practical technology". (Part 6.2.2)

5) That amendments to the Canadian Clean Air Act be made to remove definitional problems and unnecessary constitutional constraints on the use of that Act to achieve recommendation number 4. (Part 6.2.2)

6) That amendments to the Environmental Contaminants Act be made to make that Act applicable to power plant emissions and to make monitoring and enforcement of any standards formulated under that Act more effective and efficient. (Part 6.2.2)

7) That standards be formulated by the Canadian government under the Environmental Contaminants Act for SO_2 and NO_X emissions to set the stage for the application of that Act to sources of these contaminants. (6.2.2)

8) That Canada seek to ensure that standards presently in the U.S. Clean Air Act with respect to NO_X emissions from new and existing mobile sources and regulations presently requiring the future use of failsafe control technology do not become weakened but become progressively more stringent as technological improvements warrant. (Part 6.2.3)

9) That Canada seek to ensure that adequate monitoring and enforcement of the standards referred to in recommendation number 8 occur by encouraging the more widespread use of comprehensive and mandatory inspection and maintenance programs throughout the U.S.A. (Part 6.2.3 and 6.2.7)

10) That new Canadian mobile sources of NO_X emissions be subject to the same maximum standards as are such sources in the U.S.A.: that is, "best practical technology". (Part 6.2.4)

11) That the Canadian Clean Air Act be amended in order that it can be used to achieve recommendation number 10. The use of this Act would allow for stricter emission standards for NO_X to be made than could presently be justified under the Motor Vehicle Safety Act because of constitutional and definitional limitations in that Act. Such amendments to the Clean Air Act for this purpose should impose a duty on the administrator of this Act to make such regulations according to the standard of best practical technology by a definite date. (Part 6.2.4)

12) That the Federal government amend the Canadian Clean Air Act to allow it to be used to ensure that adequate monitoring and enforcement of this new standard for NO_x emissions occurs through the nationwide use of comprehensive and mandatory inspection and maintenance programs. (Part 6.2.4 and 6.2.8)

13) That as an alternative to recommendation 12, the Federal Government should ensure that all Canadian provinces bring in emission standards for NO_x that are based on best practical technology and that they adopt mandatory inspection and maintenance programs to ensure compliance with such standards. (Part 6.2.4 and 6.2.8)

14) That the Canadian Federal government formulate as a general policy objective the position that abatement of emissions from existing stationary sources of SO_2 and NO_x is essential if a reduction of the total loadings of these pollutants is to be achieved and if a reduction in acid precipitation is to be achieved within the next twenty-five years. (Part 6.2.5)

15) That the Canadian Federal government should intervene in SIP revision proceedings in the United States to prevent present State Implementation Plans from being relaxed pursuant to petitions presently being made on behalf of fossil fuel fired power plants throughout the Ohio Valley area. (Part 6.2.5)

16) That the Canadian Federal government should take legal initiatives to attempt to have certain State Implementation Plans revised pursuant to section 126 of the U.S. Clean Air Act to make them more stringent based on section 115 of the U.S. Clean Air Act and the findings of fact made by the former Administrator of the EPA. (Part 6.2.5)

17) That the Canadian Federal government should make diplomatic efforts to ensure that Congress amends the United States Clean Air Act to allow for specific emission reductions to be imposed upon existing stationary sources of these pollutants in the United States. (Part 6.2.5)

18) That the Canadian Federal government should make diplomatic efforts to seek to have Congress amend the U.S. Clean Air Act to bring a greater number of existing sources which undergo major modifications under the control of New Source Performance Standards. (Part 6.2.5)

19) That the Canadian Federal government should make diplomatic efforts to seek to have Congress amend the U.S. Clean Air Act to make New Source Performance Standards applicable to existing power plants that convert to coal use pursuant to the Energy Supply and Environmental Co-ordination Act of 1974 or any other oil "back out" laws. (Part 6.2.5)

20) That if provincial control of stationary sources of SO_2 and NO_x is to be continued to be relied upon, that the Federal Government in Canada should indicate to provincial governments that control processes under present legislation relevant to the regulation of these sources should be reformed and formalized to minimize the potential for existing controls to be weakened or arbitrarily withdrawn. (Part 6.2.6)

21) That, if standards for existing sources are not as stringent as standards for new sources, that legislative amendments be made requiring that existing sources that undergo major modifications must be treated as new sources. (Part 6.2.6)

22) That while the common law could potentially be useful as a complement to a legislative regulatory scheme, numerous procedural and evidentiary problems need to be remedied by legislation in order for it to be effective. A specific study addressing these problems is considered necessary before any detailed recommendations can be formulated in regard to these problems. The Canadian Federal government should undertake such a study as soon as possible to ensure that all useful approaches are taken. (Part 6.4)

23) That numerous general reforms to facilitate the enforcement of Canadian federal and provincial environmental legislation be incorporated in any new or amended legislation designed to alleviate the acid precipitation problem in order to make the Canadian regulatory system as accessible and free from arbitrary discretion as the U.S. system. In particular, we recommend that all Canadian federal and provincial legislation contain certain standard provisions:

(i) A duty on the administrator to require the installation of best practical technology on present and new sources within a limited period of time;

(ii) A duty upon the administrator to take enforcement action to require the installation and use of such equipment;

(iii) A provision allowing any person (including a group, association, municipality, state/province and federal and foreign governments to obtain a mandatory court order (in the nature of mandamus) requiring the administrator to perform his duties; the breach of such mandatory court order would be contempt of court;

(iv) A provision allowing any person to obtain from a civil court an injunction to restrain any particular source from commencing to operate without the installation of the requisite best practical technology or from continuing to operate contrary to limits and deadlines for installation of best practical technology;

(v) A provision providing public funding for persons meeting certain criteria in order to allow them to launch the contemplated court actions; provision for access to information necessary to allow enforcement of such laws; and protection of government officials who give out information or who initiate or who testify in enforcement proceedings;

(vi) Provisions reforming the rules of evidence and restricting the application of the defence of "reasonable care" in Canadian regulatory environmental offences. (Part 6.5.1)

APPENDIX "A"

CANADA - ONTARIO ACCORD
FOR THE
PROTECTION AND ENHANCEMENT OF
ENVIRONMENTAL QUALITY

THIS ACCORD is entered into on behalf of the Government of Canada (hereinafter called "Canada") by the Honourable Jeanne Sauvé, Minister of the Environment, and on behalf of the Government of Ontario (hereinafter called the "Province") by the Honourable George Kerr, Minister of the Environment.

WHEREAS management of the quality of the natural environment involves maintaining or enhancing the ability of the biosphere to produce a wide variety of resources and conditions useful to man; and

WHEREAS an understanding of the biophysical relationships of ecosystems is fundamental to successful attainment of environmental quality objectives; and

WHEREAS institutional systems established to govern man's activities including his impacts on the natural environment, are superimposed upon natural systems; and

WHEREAS both Canada and the provinces have jurisdictions and responsibilities in the field of environmental quality, including pollution prevention, control and abatement;

THEREFORE, the Governments of Canada and Ontario,

RECOGNIZING that programs aimed at achieving environmental objectives should be planned and undertaken in such a way as to ensure comprehensiveness and eliminate duplication;

AGREE to adhere to the principles and practices stated below in the development and maintenance of complementary programs with each government acting within its jurisdiction;

AGREE to develop new coordinating mechanisms and new complementary programs so that they are in harmony with

existing cooperative or complementary arrangements in related fields flowing either from legislation or administrative practice; and

AGREE to the following principles and practices relating to the protection and enhancement of environmental quality:

General

1. This Accord applies to federal-provincial relationships involved in the protection and enhancement of environmental quality. This would generally encompass environmental assessment, design, protection, enhancement and related research.

2. The objectives of the Accord are:

   (a) to provide a more effective overall effort in the protection and enhancement of environmental quality through better coordination of the activities of Canada and the Province; and

   b) to provide a broad framework within which specific agreements can be designed to cope with particular problems.

3. This Accord will be in force for a five-year period with provision for revision and/or renewal by mutual agreement if desired by either party at any time.

4. Canada and the Province agree to develop subsidiary agreements dealing with particular environmental concerns of mutual interest.

Interpretation

5. In this Accord,

   "data" means data which describe the state or condition of the environment at the time collected and against which any change in that state or condition can be measured.

   "federal facilities" means works or installations, owned or managed, operated or controlled by Federal Ministries, Departments and Agencies.

   "guidelines" means recommended good practices to assist in achieving uniformity.

   "objectives" means levels of environmental quality to be attained in either the short-term or long-term.

"regulations" means any rule, order, ordinance, direction, by-law, resolution or other instrument,

(a) issued, made or established in the exercise of a legislative power conferred by or under any statute, or

(b) for the contravention of which a penalty, fine, imprisonment or any other measure is prescribed by or under any statute.

"scientific criteria" means the objective quantitative assessment of risks to the receptor due to a particular pollutant in the environment together with the fundamental principles and scientific knowledge on which the assessment is based.

"standards" means legally prescribed limits of pollution.

Ambient Environmental Quality Criteria and Objectives

6. Canada agrees, after consultation with the Province and all other provinces, to determine and promulgate scientific criteria for air and water quality based upon the best available scientific information.

7. Canada agrees, after consultation with the Province and all other provinces, to establish broad national ambient quality objectives for air and water based upon nationally agreed scientific criteria.

8. Canada and the Province agree to identify specific geographic areas of joint interest and to establish specific ambient quality objectives or requirements for such areas based upon agreed scientific criteria. Existing agreements would not be affected by such undertakings.

National Baseline Pollution Control Requirements and Guidelines for Industry

9. Canada, after consultation with the Province and all other provinces, agrees to develop national baseline effluent and emission requirements and guidelines for specific industrial groups and specific pollutants. Specific groups or classifications of industries will be agreed upon from time to time for the purpose of establishing priorities.

Environmental Effects

10. Canada and the Province agree to have consult freely on possible environmental effects of proposed major developments or redevelopment projects. Canada and the Province undertake to provide each other with data and other general information necessary for an environmental assessment and review.

Pollution Control Implementation

11. Canada and the Province undertake to carry out pollution control programs for facilities under their respective control to meet agreed objectives and federal and provincial requirements.

12. The Province agrees to establish and enforce requirements at least as stringent as the agreed national baseline requirements. Such requirements would be applied at start-up for all new installations or for installations undergoing major plant modifications. In all other cases the national baseline requirements would be applied as a minimum as rapidly as possible to meet agreed objectives and time schedules.

13. Canada and the Province agree to appoint officers designated by either government to facilitate inspection for compliance with national effluent and emission requirements. Appropriate arrangements for either federal or provincial inspection of federal facilities would be determined by specific agreements.

14. Canada agrees to take enforcement action:

    (a) at federal facilities unless otherwise agreed to under Clause 13 above;

    (b) at the request of the Province; or

    (c) where the Province cannot, or for some reason fails to fulfill its obligations under this Accord, with respect to matters of federal jurisdiction administered by the Province.

15. Canada undertakes to accelerate promulgation of regulations for the safe and sanitary control of wastes from commercial vessels. Canada and the Province agree to cooperate in the control of wastes from commercial vessels at harbour facilities.

Monitoring and Surveillance

16. Canada and the Province agree to cooperate in monitoring the quality of air and water in areas of joint interest, to carry out surveys and to interpret trends in ambient quality in relation to agreed objectives.

17. The Province will undertake surveillance of the characteristics of effluents and emissions, including their influence on ambient quality and their compliance with agreed effluent and emission standards and ambient quality objectives.

18. Canada and the Province, in concert with other provinces, agree to harmonize monitoring and surveillance methods and analysis systems to ensure comparable results.

19. Canada and the Province, in concert with other provinces, agree to exchange all data freely and to develop procedures relating to the publication of data having due regard for confidentiality or security as may be required.

Special Agreements for Accelerated Action

20. Canada and the Province, in concert with other provinces as appropriate, agree to identify environmental problems in areas of mutual concern and to enter into implementation agreements to accelerate preventative actions and the clean-up of specific areas.

21. Canada agrees to assist in the implementation of these accelerated programs by assigning appropriate priorities in available financial assistance programs.

Contingency Plans

22. Canada and the Province, in concert with other provinces, municipal governments, agencies and industries as appropriate, agree to develop and to implement integrated contingency plans for environmental emergencies.

Research, Technical Advice and Training

23. Canada and the Province agree to cooperate jointly or in association with other governments, individuals, universities or industry on research and pollution control technology development programs in support of this Accord.

24. Canada and the Province agree to seek and make available to each other the advice of their technical experts in support of this Accord.

25. Canada agrees, where possible and appropriate, to provide supporting resources for technical training programs which the Province may request and undertake to develop. The type of training programs required would be the subject of discussions between the two governments.

Cost-Sharing

26. Where by specific agreement, Canada and the Province undertake joint programs of data gathering, assessment, research and design, cost-sharing will generally be negotiated on a 50/50 basis except where special circumstances indicate other proportions. Canada and the Province agree to adopt procedures for the audit and liquidation of claims for reimbursement with respect to these shared programs.

Other

27. A Canada - Ontario Committee will oversee the implementation of the Accord, consult on environmental matters and recommend on needs for specific agreements under the Accord.

IN WITNESS WHEREOF the Honourable Jeanne Sauvé, Minister of the Environment, has hereunto set her hand on behalf of Canada, and the Honourable George Kerr, Minister of the Environment, has hereunto set his hand on behalf of the Province of Ontario, this 22nd day of May, 1975.

Signed on behalf of Canada, by the Honourable Jeanne Sauvé, Minister of the Environment

IN THE PRESENCE OF

Signed on behalf of the Province of Ontario by the Honourable George Kerr, Minister of the Environment

IN THE PRESENCE OF

APPENDIX "B"

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF INDIANA
EVANSVILLE DIVISION

SIERRA CLUB,	)
	)
Plaintiff,	)
	)
v.	)
	)
SOUTHERN INDIANA GAS AND ELECTRIC COMPANY; ALCOA GENERATING CORPORATION,	)
	)
Defendants.	)

COMPLAINT

1.

This action arises under the Clean Air Act of 1970, as amended, 42 U.S.C. Chapter 85. This Court has jurisdiction of this action pursuant to Section 304 of the Clean Air Act, 42 U.S.C. § 7604.

2.

Plaintiff Sierra Club is a non-profit corporation organized in 1892 under the laws of the State of California with its principal place of business in San Francisco, California, and other offices located throughout the country. The Sierra Club is a national conservation organization with over 180,000 members, dedicated to protecting natural resources, including the air. Members of the Sierra Club reside in Indiana, and breathe the air polluted by the facility which is the subject of this action, namely the Warrick Generating

Station. The Sierra Club is a person within the meaning of Section 302(e) of the Clean Air Act, 42 U.S.C. § 7602(e).

3.

Defendant Southern Indiana Gas and Electric Company, an Indiana corporation, is operator and part owner of the Warrick Generating Station.

4.

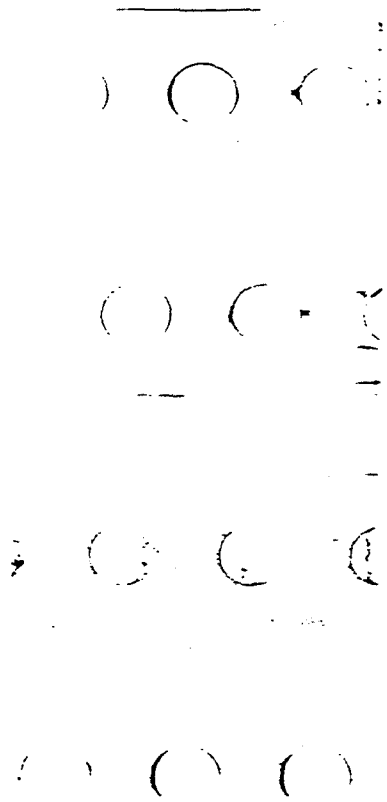
Defendant Alcoa Generating Corporation, an Indiana corporation, is part owner of the Warrick Generating Station.

5.

Pursuant to Section 109 of the Clean Air Act, 42 U.S.C. § 7409, the Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for certain air pollutants, including sulphur dioxide and particulate matter, the attainment of such standards being necessary to protect the public health and welfare.

6.

After the promulgation by EPA of said air quality standards, the State of Indiana ("Indiana") submitted to EPA, pursuant to Section 107(a) of the



Clean Air Act, 42 U.S.C. § 7407(a), an implementation plan (the "Indiana Plan") specifying the manner in which Indiana would achieve and maintain said air quality standards.

7.

EPA approved the Indiana Plan on May 31, 1972, with the exception of certain provisions found by EPA to be inconsistent with the requirements of the Clean Air Act. By said approval the Indiana Plan was incorporated by reference into Part 52 of Title 40 of the Code of Federal Regulations, and became federal law. 40 C.F.R. § 52.02(d).

8.

From time to time subsequent to May 31, 1972, Indiana submitted to EPA various amendments to the Indiana Plan, designed to correct the deficiencies in the Plan noted by EPA or to alter the Plan for State policy reasons.

9.

Some of said amendments were approved by EPA, and thereby were incorporated by reference into 40 C.F.R. Part 52 and became federal law.

10.

The current, federally enforceable Indiana Plan consists of such portions of the Plan as

were approved by EPA on May 31, 1972, modified by such amendments as were subsequently approved by EPA.

11.

The current, federally enforceable provision of the Indiana Plan regulating sulphur dioxide emissions from fuel-burning operations in Warrick County consists of certain language initially promulgated in Indiana Air Pollution Control Regulation APC-13, and subsequently approved by EPA at 37 Federal Register 10863-65 (May 31, 1972) and 38 Federal Register 12698-99 (May 14, 1973). By EPA's approval said language was incorporated by reference into 40 C.F.R. Part 52. (A copy of the approved provision is appended to this Complaint as Exhibit A.)

12.

The current, federally enforceable provision of the Indiana Plan regulating particulate matter emissions from the combustion of fuel for indirect heating in Warrick County consists of certain language originally promulgated in Indiana Air Pollution Control Regulation APC-4R, and subsequently approved by EPA at 37 Federal Register 15084 (July 27, 1972). By EPA's approval said language was incorporated by reference into 40 C.F.R. Part 52. (A copy of the approved provision is appended to this Complaint as Exhibit B.)

13.

The current, federally enforceable provision of the Indiana Plan regulating visible emissions in Indiana consists of certain language originally promulgated in Indiana Air Pollution Control Regulation APC-3 and approved by EPA at 40 Federal Register 50033 (October 28, 1975). By EPA's approval said language was incorporated by reference into 40 C.F.R. Part 52. (A copy of the approved provision is appended to this Complaint as Exhibit C.)

14.

Southern Indiana Gas and Electric Company and Alcoa Generating Corporation are presently operating and will continue to operate fuel-burning equipment in Warrick County, Indiana, namely the Warrick Generating Station at Newburgh. Said equipment is more specifically identified by steam turbine generating capacity as follows:

Unit 1	144,000 kw
Unit 2	144,000 kw
Unit 3	144,000 kw
Unit 4	300,000 kw

15.

The operation of each of Units 1 through 4 of the Warrick Generating Station results and will

continue to result in the emission of sulphur dioxide in excess of the express standards and limitations for fuel-burning operations in Warrick County contained in 40 C.F.R. Part 52.

16.

The operation of each of Units 1 through 4 of the Warrick Generating Station, which involves the combustion of fuel for indirect heating within the meaning of APC 4R, results and will continue to result in the emission of particulate matter in excess of the express standards and limitations for such combustion in Warrick County contained in 40 C.F.R. Part 52.

17.

The operation of each of Units 1 through 4 of the Warrick Generating Station results and will continue to result in visible emissions of an opacity in excess of the express standards and limitations for Indiana contained in 40 C.F.R. Part 52.

18.

In accordance with Section 304 of the Clean Air Act, as amended, 42 U.S.C. § 7604, and EPA regulations set forth at 40 C.F.R. Part 54, plaintiff gave notice of the violations alleged in Paragraphs 15 through 17 of this Complaint to

(1) the Administrator of EPA, (2) the Technical Secretary of the Indiana Air Pollution Control Board, (3) the Chairman of the Board, President and Chief Executive Officer of Southern Indiana Gas and Electric Company, and (4) the Vice President for Environment and Energy Resources of the Aluminum Company of America, of which Alcoa Generating Corporation is a subsidiary. Said notice was given by certified mail no less than sixty (60) days prior to the filing of this action.

19.

Neither the Administrator of EPA nor the State of Indiana has commenced or is diligently prosecuting any action in a court of the United States or a State to require compliance by defendants with the standards and limitations sought to be enforced in this action.

WHEREFORE, plaintiff respectfully prays that this Court:

(1) Adjudge and decree that the defendants by their operation of the Warrick Generating Station are, and without judicial redress will continue to be, in violation of applicable air pollution regulations as alleged in Paragraphs 15 through 17 of this Complaint:

(2) Require the defendants to formulate and submit to this Court within sixty (60) days of the entry of judgment a plan for bringing the Warrick Generating Station into compliance with said air pollution regulations as expeditiously as possible, which plan shall

(a) specify in detail how compliance will be achieved,

(b) set forth a compliance schedule, and

(c) demonstrate that it would not be possible to accelerate said schedule;

(3) Upon submission by defendants of a plan meeting the requirements set forth in Paragraph (2) of this Prayer for Relief, and after opportunity for the plaintiff to rebut the defendants' plan and to submit alternative plans, order the defendants to implement that plan which will most effectively and expeditiously end the violations referred to in Paragraphs 15 through 17 of this Complaint;

(4) Require the defendants to pay all the costs of this action, including reasonable attorney and expert witness fees, pursuant to Section 304(d) of the Clean Air Act, 42 U.S.C. § 7604(d); and

(5) Grant such further relief as this Court deems just and equitable.

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Howard I. Fox

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REGULATION APC 13†

Maximum Allowable Sulfur Dioxide Emissions

Sulfur dioxide emissions from all stationary sources exceeding 10 pounds per hour without controls shall be controlled to meet rules set forth below to attain the desired air quality standards and to maintain air quality consistent with the law where it is better than the standards. The sulfur dioxide emissions for new equipment of more than 250 million Btu per hour heat input shall comply with the Federal Emission Standards. The sulfur dioxide emission from new equipment with a Btu input of 250 million Btu per hour or less and from existing equipment shall be limited to the smaller value as determined by Sections 2 and 3 below, except as provided in Section 4.

Sec. 1. All new exhaust gas stacks or chimneys emitting sulfur dioxide shall be the taller of 50 feet in height or 2½ times the height of the tallest existing building within 500 feet of the stack, provided such height shall not be in violation of other governmental regulations. The Board shall apply this rule in the case of existing stacks when there is a problem of fumigation which adversely affects health or property due to downwash from the stack.

Sec.2. Hourly ground level concentrations of sulfur dioxide emitted from such stacks or chimneys shall not exceed 200 micrograms per cubic meter by the formula:

$$C_{max} = \frac{40\ S_p\ P^{0.75}\ n^{0.25}}{a\ h_s}$$ for process operations and

†The emission limitations in this regulation apply only to Jefferson, LaPorte, Porter, Vigo and Warrick Counties.

$$C_{max} = \frac{90\ S_f\ Q_m^{0.75}\ n^{0.25}}{a\ h_s}$$ for fuel combustion operations.

Factors in these formulas are defined as follows:

(a) C_{max} = maximum ground level concentration with respect to distance and at the "critical" wind speed for level terrain, in micrograms per cubic meter, resulting from the point source. This value shall not exceed 200. Lower values may be selected where terrain and other conditions dictate.

(b) S_f = pounds of sulfur dioxide emitted per million Btu of heat input value of the fuel.

(c) S_p = pounds of sulfur dioxide emitted per ton of process weight input.

(d) Q_m = total equipment capacity rating, fuel heat input in millions of Btu per hour.

(e) p = total equipment capacity process weight input, tons per hour.

(f) n = number of stacks or chimneys in fuel burning or process operations.

(g) a = plume rise factor. The value 0.67 shall be used for all process equipment ratings and fuel-burning equipment capacity ratings of less than 1,000 million Btu heat input. No value greater than 0.8 for larger fuel-burning equipment capacities shall be used.

(h) h_s = stack height in feet. If a number of stacks with varying heights for different equipment capacity ratings exist, an average stack height to represent "n" stacks shall be calculated by dividing the sum of the height of each stack multiplied by its equipment capacity rating by the total plant capacity rating.

Sec. 3. Maximum total sulfur dioxide emissions from (1) fuel-burning operations shall be limited to that expressed by the formula $E_m = 17.0\ Q_m^{-0.33}$, where E_m equals maximum allowable sulfur dioxide in the stack gases in pounds per million Btu of heat input value of the fuel. Stack emissions shall not exceed 6.0 pounds of sulfur dioxide per million Btu input. Low-sulfur fuel may be used in lieu of control equipment, or the simultaneous use of different fuels for averaging emissions may be used to comply with this equation; and (2) process operations shall be limited to that expressed by the formula: $E_p = 19.5\ P^{0.67}$, where E_p = maximum allowable emissions in pounds per hour, and P = total equipment capacity, process weight, tons per hour.

Sec. 4. Existing sources of sulfur dioxide emissions in air quality control regions designated as Priority I and II and existing sources with a heat input of more than 250 million Btu/hr in Priority IA Regions shall comply with Sections 2 and 3 of this regulation. An "Air Quality Control Region" is defined in the November 25, 1971, Federal Register, 36 CFR 22421 through 22448, (Part 81), and Priority I, IA, and II Regions are classified in the May 31, 1972, Federal Register, 37 CFR 10863 through 10865 (Subpart P). The control that will be required for fuel-burning equipment shall not exceed that needed to reduce emissions to 1.2 pounds of sulfur dioxide per million Btu of heat input per hour. When the control of sulfur dioxide emissions at the time of design exceeds the state of the art for compliance, then the best available treatment at the time shall be applied to secure maximum reduction of the emissions.

Sec. 5. Where air quality values in an area still exceed those expressed in Regulation APC 14, the Board shall require more stringent controls in these areas than those covered by this regulation.

Sec. 6. Fuel-burning equipment and incinerators used singly or jointly by occupants of residential dwellings containing four or fewer apartments shall be exempt from these rules and limits.

Sec. 7. All new emission sources or new air pollution control equipment shall comply with this Regulation. Existing emission sources shall adhere to the following schedule:

(a) In the following Indiana Counties: Boone, Hamilton, Hancock, Hendricks, Johnson, Lake, Marion, Morgan, Porter and Shelby, sources that elect to reduce emissions of sulfur dioxide by shifting fuels shall:

Submit letter of intent by - January 1, 1973
Start construction by - May 1, 1973
Complete construction and start up by - July 1, 1973
Submit performance results by - October 1, 1973

(b) Sources in all other Indiana Counties that elect to reduce emissions of sulfur dioxide by shifting fuels shall:

Submit letter of intent by - April 1, 1973
Start construction by - September 1, 1973
Complete construction and start up by - January 1, 1974
Submit performance results by - April 1, 1974

c) All Indiana sources that elect to comply by installing control equipment shall:

Submit plans and specifications by - July 1, 1973
Start construction by - January 1, 1974
Complete construction and start up by - January 1, 1975
Submit performance results by - April 1, 1975

.5) REGULATION APC 4-R†

Combustion for Indirect Heating

Sec. 1. That in all areas of the State of Indiana except the Indiana portion (Lake and Porter Counties) of the Metropolitan Chicago Interstate Air Quality Control Region and in the Metropolitan Indianapolis Intrastate Air Quality Control Region, the emission of particulate matter from the combustion of fuel for indirect heating shall be limited by the ASME Standard No. APS-1, second edition, November, 1968, "Recommended Guide for the Control of Dust Emission-Combustion for Indirect Heat Exchangers."

(a) The maximum allowable emission shall be calculated using equation (15) in the ASME Standard with a maximum downwind ground level concentration of 50 micrograms per cubic meter for a 30-minute to 60-minute time period. Figure 2 as modified may be used to estimate allowable emissions and is included herewith.

Equation (15) is expressed as follows:

$$C_{max} = \frac{76.5\ Pt_f Q_m^{0.75} n^{0.25}}{a h_s}$$

C_{max} = maximum ground level concentration with respect to distance from the point source at the "critical" wind speed for level terrain. This shall not exceed 50 micrograms per cubic meter.

Pt_f = pounds of particulate matter emitted per million Btu heat input.

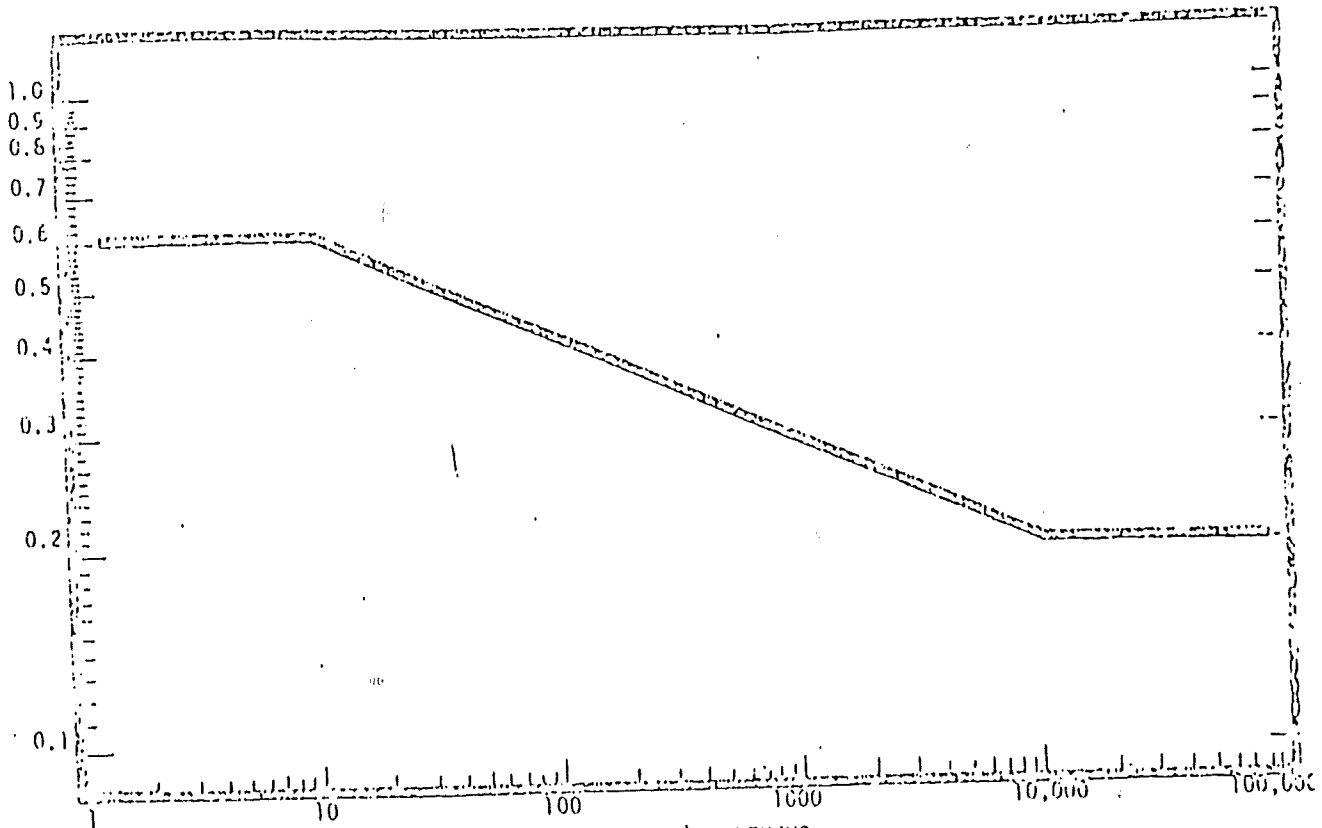
Q_m = total plant operating capacity rating in million Btu heat input per hour.

n = number of stacks in fuel burning operation.

a = plume rise factor. The value 0.67 shall be used for fuel burning equipment ratings of less than 1,000 million Btu heat input. No value greater than 0.8 for larger equipment ratings shall be used.

h_s = stack height in feet. If a number of stacks of different heights exist, the average stack height to represent "n" stacks shall be calculated by weighing each stack height with its particulate matter emission rate.

†Regulation APC 4.R is disapproved for the maintenance of secondary standards for particulate matter in the Metropolitan Indianapolis Region.



Q_{in} INPUT-MILLION BTU/HR.

PARTICULATE EMISSION LIMITS

FIGURE 1

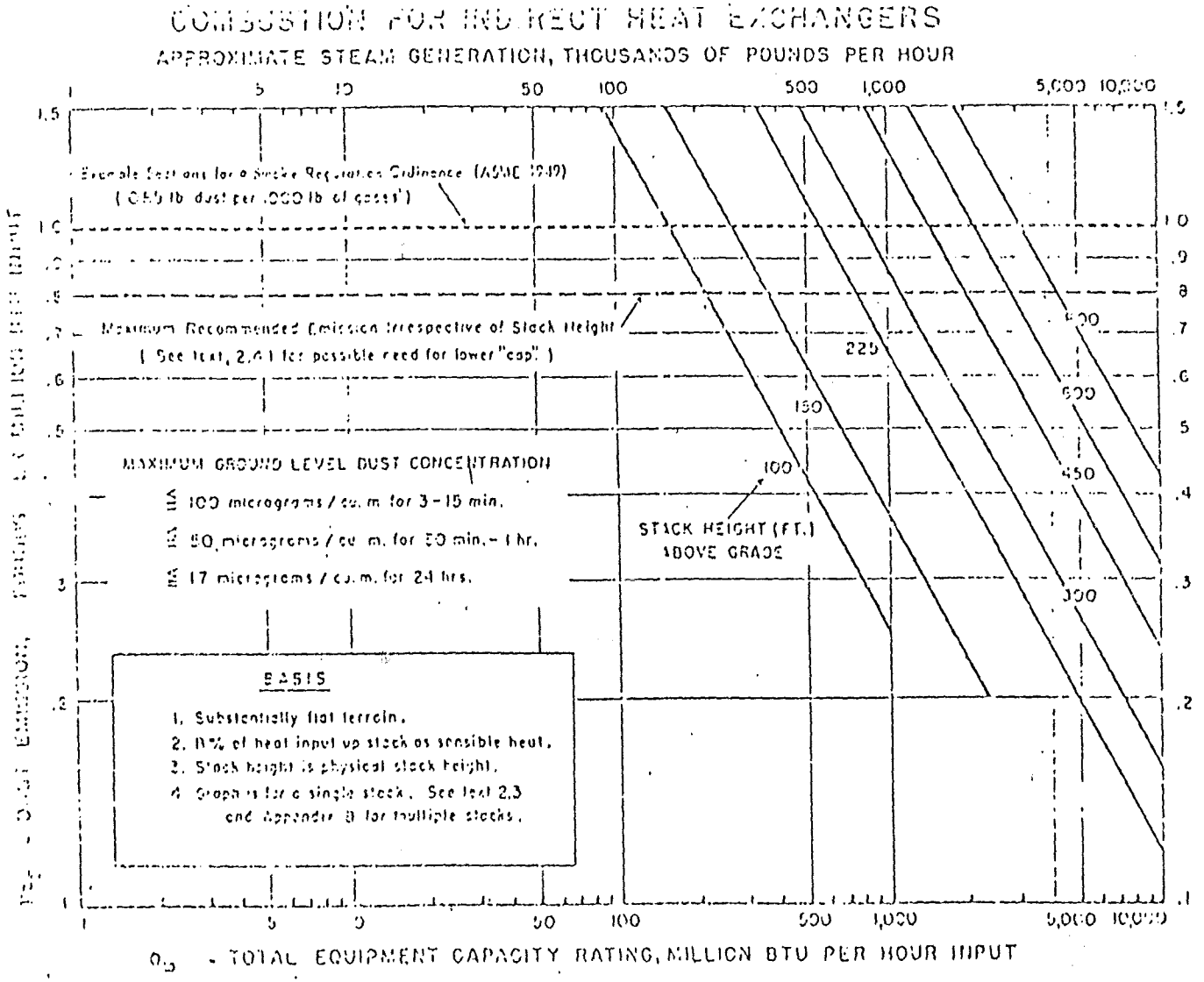

COMBUSTION FOR INDIRECT HEAT EXCHANGERS
APPROXIMATE STEAM GENERATION, THOUSANDS OF POUNDS PER HOUR
1
5
10
50
100
500
1,000
5,000
10,000
Example Sections for a Smoke Regulation Ordinance (ASME 1949)
(0.5 lb dust per 1,000 lb of gases)
Maximum Recommended Emission Irrespective of Stack Height
(See text, 2.4) for possible need for lower "cap".)
MAXIMUM GROUND LEVEL DUST CONCENTRATION
≦ 100 micrograms / cu. m. for 3 - 15 min.
≦ 50 micrograms / cu. m. for 30 min. - 1 hr.
≦ 17 micrograms / cu. m. for 24 hrs.
STACK HEIGHT (FT.) ABOVE GRADE
100
150
225
300
450
600
900
BASIS
1. Substantially flat terrain.
2. 80% of heat input up stack as sensible heat.
3. Stack height is physical stack height.
4. Graph is for a single stack. See text 2.3 and Appendix B for multiple stacks.
Q_D - TOTAL EQUIPMENT CAPACITY RATING, MILLION BTU PER HOUR INPUT

FIGURE 2

(b) Particulate matter (Pt_f) from all existing fuel combustion operations for indirect heating shall in no case be greater than 0.8 pounds per million Btu heat input.

(c) Particulate matter (Pt_f) for all new combustion operations for indirect heat installations 250 million Btu heat input per hour or less shall in no case be greater than 0.6 pounds per million Btu heat input.

Sec. 2. In the Indiana portion (Lake and Porter Counties) of the Metropolitan Chicago Interstate Air Quality Control Region and in the Metropolitan Indianapolis Intrastate Air Quality Control Region, the emission of particulate matter from the combustion of fuel for indirect heating shall be limited to that expressed by:

$$Pt_f = 0.87\ Q_m^{-0.16} \quad \text{where}$$

Pt_f and Q_m are defined in Section 1. For values of Q_m less than 10, Pt_f shall not exceed 0.2. Figure 1 may be used to estimate allowable emissions and is included herewith.

Sec. 3. This section has application in all areas of the State. Emissions of particulate matter from the combustion of fuel in new stationary installations for indirect heating in excess of 250 million Btu per hour heat input shall be limited to a maximum of 0.10 pounds per million Btu heat input as required and specified in the Federal Environmental Protection Agency's "Standards for Performance of New Stationary Sources," Federal Register, December 23, 1971, Volume 36, Number 247, Part II. This Federal Standard is adopted by reference as a part of this Regulation APC 4-R.

Sec. 4. Regulation APC 4, promulgated December 6, 1968, is hereby repealed.

REGULATION APC 3

Visible Emissions and Malfunctions

Sec. 1. Limitation. No person shall operate any equipment so as to produce, cause, suffer, or allow smoke or other visible emissions in excess of 40 percent opacity (Ringelmann No. 2) except as allowed in Sec. 2 and Sec. 4. Opacity values shall not be considered valid, unless observed and determined by a qualified person. Visible emissions shall exclude uncombined water.

EXHIBIT C

Sec. 2. Temporary Exceptions from Compliance

(a) Fire Starting. When building a new fire in a boiler, smoke no darker than 60 percent opacity may be emitted for a period not to exceed ten minutes on one occasion in any 24-hour period.

(b) Boilers. When cleaning a fire in a boiler or blowing tubes, smoke which is not darker than 60 percent opacity may be emitted for periods not exceeding five minutes in any 60-minute period. Such emissions shall not be permitted on more than six occasions during any 24-hour period.

(c) Other. That the time and opacity limitations set forth in Sec. 1, Sec. 2(a) and Sec. 2(b) may be exceeded for reasonable brief periods of time by the specific terms of time and opacity limitations set forth in an operation permit required under APC 19. The exception may be granted if:

(i) The exception is requested, and

(ii) it is shown that no alternative control method is available, and

(iii) it is not possible for the applicant to comply with Sec. 1, Sec. 2(a) and Sec. 2(b).
Further, that said agency is then authorized to issue an operation permit with said permit setting forth, in detail, the specific terms of the time and opacity limitations granted.†

(2.0) Sec. 3. Violation of Other Regulations.

(a) Single Stacks. A violation of Sec. 1 of this Regulation shall constitute prima-facie evidence of a violation of any applicable particulate emission control regulation of of the Board, but may be refuted by a stack emission test conducted in accordance with the Board's Source Sampling Policy, or other evidence acceptable to the Board. No violation shall have occurred if it can be shown the emmissions are exempt under Section 2 of this Regulation or due to a malfunction providing the requirements of Section 4 are adhered to.

†EPA is not bound by exemptions granted by the state under Section 2(c); exemptions are considered on a case by case basis for impact on attainment and maintenance of the standards. See 40 FR 50033, Oct. 23, 1975.

(b) Multiple Stacks. For facilities with multiple stacks, each stack must comply separately with the opacity limitations of Sec. 1, except as allowed in Sec. 2, even though the multiple stacks, as a group, are in compliance with the limitations of the Board's applicable particulate emission control regulations.

.0) Sec. 4 Malfunctions.

(a) Malfunction. For the purpose of this regulation shall mean any sudden, unforeseen, or unavoidable failure of air pollution control equipment, or combustion or process equipment to operate in a normal manner and in compliance with all applicable regulations of the Board.

(b) Reporting. When a malfunction of any combustion or process operation or air pollution control equipment lasts more than one hour, the Technical Secretary shall be notified by telephone, or telegraph, as soon as practicable, but in no event later than four daytime business hours after the beginning of said occurrence. Information of the scope and expected duration of the malfunction shall be provided. A record shall be kept of all malfunctions, including start ups, or other events which result in violations of Sec. 1 and Sec. 2, and such record shall be made available to the Board upon request.

(c) Maintenance. Source operators are responsible for operating and maintaining all equipment and processes in compliance with all applicable regulations of the Board. The Board recognizes that malfunctions may occur for many and varied reasons. Curtailment of operations shall be required, except as covered in Sec. 4(d), if the source is not in compliance at least 90 percent of the operating time over the most recent 12-month period. Where the record shows repeated malfunctions exceeding 5 percent of the normal operational time attributed to improper maintenance of faulty equipment, the Board may require that the maintenance program be improved or that the defective or faulty equipment be replaced. To eliminate long term malfunction periods resulting from delays in obtaining replacement parts, an adequate stock of replacement parts shall be maintained.

(d) Malfunction Emission Reduction Program. Malfunctions of air pollution control equipment, and combustion and processes equipment may result in increased emissions such that the air quality standards may be violated or that health hazards may occur. It is recognized that a variety of steps, including complete shut down of the equipment involved, can be taken to reduce the amount of emissions to a reasonable value. Any source that has an emission rate in excess of 2,000 pounds per hour of any pollutant following a malfunction, or because of the health hazard created by a lesser emission rate than that specified, shall submit a malfunction emission reduction. Such a malfunction emission reduction program shall be submitted to the Board within 60 days after promulgation of this regulation for its approval. Documentation shall include, but not be limited to, the normal operating emission rate, the malfunction emission rate, and the program proposed to reduce emissions to a reasonable emission rate. The program shall be based on the best practical estimates of type and number of malfunctions experienced during the past 12 months of normal operation, and the scope and duration of such malfunctions.

(10.0) Sec. 5. Federal New Source Performance Standards. In addition to the requirements set forth herein, all new sources for which federal standards have been promulgated shall comply with the applicable portions of the Federal New Source Performance Standards 40 CFR Part 60.

APPENDIX "C"

IN THE DISTRICT COURT OF THE DISTRICT OF ALGOMA

B E T W E E N:

HER MAJESTY THE QUEEN ex rel.
JAMES G. FRY

Appellant
(Informant)

- and -

DENISON MINES LIMITED

Respondent
(Defendant)

Appearances:

John Martin, Esq., for the Appellant

P.D. McCutcheon, Esq., for the Respondent

REASONS FOR JUDGMENT

His Honour Judge I.A. Vannini:

This is an appeal from the acquittal on each of 22 charges in one information for an offence under s. 69(2) of the Ontario Water Resources Act.

Because all of the charges are similar except in respect of the date of the commission thereof I need only reproduce the first charge.

By it the respondent was charged that *"on or about the 19th day of July in the year 1978, at the Town of Elliot Lake in the District of Algoma unlawfully did fail to comply with Section 10 of a Requirement and Direction dated December 8, 1977, issued under The Ontario Water Resources Act, pertaining to property known as the Stanrock property and providing that the accused corporation*

provide an effluent with acceptable pH as measured at the point of discharge from the small lake located immediately downstream of a lake known as Moose Lake in that the effluent did not have acceptable pH at the aforementioned point of discharge,.....".

The Requirement and Direction in question required the respondent to:

> *"Continue to operate the Moose Lake effluent treatment system and by June 30, 1978, provide an effluent with acceptable pH[a]:,....., as measured at the point of discharge from the small lake located immediately downstream of Moose Lake."*

Relying on Regina v. The City of Sault Ste. Marie (1978) 40 C.C.C. (2d) 353 (S.C.C.), the learned trial judge correctly held that s. 69(2) created an offence of strict liability and then accurately paraphrased that part of the Judgment of Dickson, J. in the Sault Ste. Marie case at p. 374:

> *".....the doing of the prohibited act prima facie imports the offence, leaving it open to the accused to avoid liability by proving that he took all reasonable care. This involves consideration of what a reasonable man would have done in the circumstances. The defence will be available if the accused reasonably believed in a mistaken set of facts which, if true, would render the act or omission innocent, or if he took all reasonable steps to avoid the particular event."*

And accurately paraphrased that part of his Judgment on p. 373:

> *"In this doctrine it is not up to the prosecution to prove negligence. Instead, it is open to the defendant to prove that all due care has been taken. This burden falls upon the defendant as he is the only one who will generally have the means of proof.*

This would not seem unfair as the alternative is absolute liability which denies an accused any defence whatsoever. While the prosecution must prove beyond a reasonable doubt that the defendant committed the prohibited act, the defendant must only establish on the balance of probabilities that he has a defence of reasonable care."

With respect to the evidence he accepted all of the evidence of the witnesses for the prosecution and the defence and found the testimony of each to be *"clear, concise, direct, technical and showed tremendous ability and concern in their respective fields of knowledge".*

With reference to the only evidence called in defence, he said:

"While I accept all the evidence, I am most impressed by the intensity of Mr. Robert Weber, a metallurgist for Denison Mines Limited, who explained all the steps taken by him, in the capacity of environmental control commencing in March, 1977, in dealing with the Moose Lake problem, and continuing after the Ministry of the Environment had given a Direction to Denison Mines Limited. This Direction was to the effect that the PH reading in the water discharged from Orient Lake must have an acceptable reading of between 6.5 and 9.5, by June 30th, 1978."

And, lastly:

"I find it to be a fact that when the date of June 30th, 1978, was originally set out, neither the Ministry of the Environment nor Denison Mines Limited had full realization of the complication that lay ahead, with particular emphasis on the iron tailing content and instability of the man-made pond known as Moose Lake. As such, I find the defence has successfully rebutted the prima facie case for the prosecution."

The appellant contends that the trial judge erred in relying on the evidence of Robert Weber in order to establish the defence of due diligence and that he being the only witness called on behalf of the respondent *"there was no evidence before the learned trial judge that the defendant company itself took all reasonable steps or exercised due diligence in order to comply with the Requirement and Direction issued to it"*; and, further that he erred in deciding that the defence had successfully rebutted the prima facie case of the prosecution.

In respect of the first contention the appellant relies on the concluding portion of the Judgment of Dickson, J., in the Sault Ste. Marie case at p. 377-378:

> *"The due diligence which must be established is that of the accused alone. Where an employer is charged in respect of an act committed by an employee acting in the course of employment, the question will be whether the act took place without the accused's direction or approval, thus negating wilful involvement of the accused, and whether the accused exercised all reasonable care by establishing a proper system to prevent commission of the offence and by taking reasonable steps to ensure the effective operation of the system. The availability of the defence to a corporation will depend on whether such due diligence was taken by those who are the directing mind and will of the corporation, whose acts are therefore in law the acts of the corporation itself. For a useful discussion of this matter in the context of a statutory defence of due diligence see Tesco Supermarkets Ltd. v. Nattrass, (1972) A.C. 153."*

Of the directing mind and will of a corporation in the context of a statutory defence of due diligence, Reid, L.J., observed at p. 170 of the Tesco case:

"I must start by considering the nature of the personality which by a fiction the law attributes to a corporation. A living person has a mind which can have knowledge or intention or be negligent and he has hands to carry out his intentions. A corporation has none of these: it must act through living persons, though not always one or the same person. Then the person who acts is not speaking or acting for the company. He is acting as the company and his mind which directs his acts is the mind of the company. There is no question of the company being vicariously liable. He is not acting as a servant, representative, agent or delegate. He is an embodiment of the company or, one could say, he hears and speaks through the persona of the company, within his appropriate sphere, and his mind is the mind of the company. If it is a guilty mind then that guilt is the guilt of the company. It must be a question of law whether, once the facts have been ascertained, a person in doing particular things is to be regarded as the company or merely as the company's servant or agent. In that case any liability of the company can only be a statutory or vicarious liability."

And at p. 171:

"Reference is frequently made to the judgment of Denning L.J. in H. L. Bolton (Engineering) Co. Ltd. v. T.J. Graham & Sons Ltd. (1957) 1 Q.B. 159. He said, at p. 172:

> *"A company may in many ways be likened to a human body. It has a brain and nerve centre which controls what it does. It also has hands which hold the tools and act in accordance with directions from the centre. Some of the people in the company are mere servants and agents who are nothing more than hands to do the work and cannot be said to represent the mind or will. Others are directors and managers who represent the directing mind and will of the company, and control what it does. The state of mind of these managers is the state of mind of the company and is treated by the law as such."*

In that case the directors of the company only met once a year: they left the management of the business to others, and it was the intention of those

managers which was imputed to the company. I think that was right. There have been attempts to apply Lord Denning's words to all servants of a company whose work is brain work, or who exercise some managerial discretion under the direction of superior officers of the company. I do not think that Lord Denning intended to refer to them. He only referred to those who "represent the directing mind and will of the company, and control what it does."

I think that is right for this reason. Normally, the board of directors, the managing director and perhaps other superior officers of a company carry out the functions of management and speak and act as the company. Their subordinates do not. They carry out orders from above and it can make no difference that they are given some measure of discretion. But the board of directors may delegate some part of their functions of management giving to their delegate full discretion to act independently of instructions from them. I see no difficulty in holding that they have thereby put such a delegate in their place so that within the scope of the delegation he can act as the company. It may not always be easy to draw the line but there are cases in which the line must be drawn. Lennard's case (1915) A.C. 705 was one of them."

At pp. 186-7 Dilhorne, L.J. had this to say:

"That an employer, whether a company or an individual, may reasonably appoint someone to secure that the obligations imposed by the Act are observed cannot be doubted. Only by doing so can an employer who owns and runs a number of shops or a big store hope to secure that the Act is complied with, but the appointment by him of someone to discharge the duties imposed by the Act in no way relieves him from having to show that he has taken all reasonable precautions and had exercised all due diligence if he seeks to establish the statutory defence.

He cannot excuse himself if the person appointed fails to do what he is supposed to do unless he can show that he himself has taken such precautions and exercised such diligence. Whether or not he has done so is a question of fact and while it may be that the appointment of a competent person amounts in the circumstances of a particular case to the

taking of all reasonable precautions, if he does nothing after making the appointment to see that proper steps are in fact being taken to comply with the Act, it cannot be said that he has exercised all due diligence.

I do not think that the Act is so narrowly drawn that to rely on the defence under section 24 an employer must show that the alter ego has observed due diligence. That is not, in my opinion, what the Act provides. He has to show that he used due diligence, and it does not suffice for him to show that others did so."

Of the delegation of one's duty to exercise due diligence, Diplock, L.J. noted at p. 203:

"To exercise due diligence to prevent something being done is to take all reasonable steps to prevent it. It may be a reasonable step for an employer to instruct a superior servant to supervise the activities of inferior servants whose physical acts may in the absence of supervision result in that being done which it is sought to prevent. This is not to delegate the employer's duty to exercise all due diligence; it is to perform it. To treat the duty of an employer to to exercise due diligence as unperformed unless due diligence was also exercised by all his servants to whom he had reasonably given all proper instructions and upon whom he could reasonably rely to carry them out, would be to render the defence of due diligence nugatory and so thwart the clear intention of Parliament in providing it."

Weber testified that he was employed by the respondent as a metallurgist in charge of environmental control. Although not a professional engineer he had close to 20 years of experience in that field. Of what Weber did in his attempts to achieve the acceptable level in the effluent from the continued operation of the Moose Lake effluent treatment system, Dr. Donald Gorber, an environmental consultant, who was called by the appellant in reply, gave evidence of certain factors that interfered with the attainment

of the objective in the effluent from Moose Lake which was *"almost as a research type project where there are phenomenon happening"* and he outlined the course of treatment for obtaining the objective which Weber in fact employed and, in one instance, exceeded the Ministry's own theoretical calculation. And of the efforts made by the respondent to achieve the required objective, he was of the opinion that it made a *"very reasonable effort"* and that in hindsight probably more could have been done.

Mel Conroy of the Ministry of the Environment and Chief of Water Resources Assessment for the Northeast Region was also called in reply by the prosecution. He was involved in the preparation of the Requirement and Direction and was quick to admit that the Ministry was naive in believing that the Requirement could be achieved by a straightforward neutralization programme such as Weber put into effect and that the lake did not react thereto as was expected.

Of Weber's programme he said that *"to a point, they did what could reasonably be expected but that when by the spring or summer of 1978 it was clear that it was not a normal situation, not an expected situation, (that) it was unusual. I think that at that point again in retrospect, that they should have brought in somebody with expertise, such as Dr. Gerber, to look phenomenologically into the situation, to see what they had done that was wrong, or what they should do, in order to meet that Requirement in Direction."*

He observed that looking at it in retrospect he would have been initially worried back in 1977 when the original requirements didn't work and then certainly during the winter of that period that he *"would have started to be pretty frustrated"* that he *"was making very little gain and that certainly perhaps in June of, 1978,"* he *"would have made some kind of solicitation for an extention of some kind, because I'd made some attempt to meet it and it failed"*. He too admitted, in effect, as did Dr. Gorber, that the Ministry miscalculated and that the problem was much bigger than it appeared to them to be; that an error in judgment had been made on both sides and that he felt the problem *"would go quicker than it did as Mr. Weber thought"*.

On this evidence the learned trial judge appears to have found as a question of law that the directing mind and will of the respondent company delegated the responsibility for complying with the Direction and Requirement of the Ministry to Mr. Weber with full direction to act independently of instructions from such directing mind and will thereby putting Weber in its place so that within the scope of the delegation he could act as the company.

On this evidence, also, he found that both Weber and the Ministry reasonably believed in a mistaken set of facts and that in respect of such facts, if true, Weber took all reasonable steps to comly with the Direction and Requirement.

The trial judge having chosen to accept all of the evidence for the prosecution and for the defence and having made

findings of fact and law which are supported by the evidence and it not being made to appear that he made some palpable and overriding error which effected his assessment of the evidence, this Court cannot substitute its findings and its assessment of the balance of probabilities on the evidence for the findings of the trial judge; Stein v. The Ship "Kathy K." (1976) 62 D.L.R. (3d) 1 (S.C.C.).

Accordingly, the appeals are dismissed with no order as to costs.

DATED AT SAULT STE. MARIE, ONTARIO this 16th day of October, 1980

J U D G E

United States
Environmental Protection
Agency

Press Office (A-184)
Washington DC 20460

- 300 -

EPA Environmental News

"Appendix D"

Ryan (202) 755-0344

EPA ADMINISTRATOR BELIEVES CANADIAN ACID RAIN PROBLEM MAY WARRANT ACTION IN U.S.

U.S. Environmental Protection Agency Administrator Douglas M. Costle announced today that based on an International Joint Commission report and recent action by the Canadian government, EPA may be justified in requiring certain American States to cut air pollution contributing to the Canadian acid rain problem.

Section 115 of the Congressional Clean Air Act requires EPA to make any American State reduce air pollution that is endangering public health or welfare in a foreign country. Two principal conditions must be met, however, before EPA can take such action: (1) The EPA Administrator must conclude, based on a report from a "duly constituted" international agency, that U.S. pollution is endangering a foreign country or he must have received a request to initiate action by the U.S. Secretary of State; and (2) the Administrator must determine that the foreign country provides the U.S. with the same rights regarding international air pollution control as are provided by Section 115— in other words, the foreign country must have the legal ability to cut any pollution from its own sources that causes problems in the U.S.

Costle believes that, regarding U.S-Canadian trans-boundary pollution, both these conditions have been met: "I have concluded from the October 1980 Seventh Annual Report on Great Lakes Water Quality of the International Joint Commission that acid rain results in significant harm in both the U.S. and Canada, and that sources in both countries contribute to the problem through the long-range transport of air pollution," Costle said.

(more)

The IJC Report itself states that "virtually all of eastern Canada and portions of the northeastern United States experience rains with acidity equal to or exceeding that which can adversely affect susceptible ecosystems. All parts of the Great Lakes watershed are now receiving precipitation containing 5 to 40 times more acid than would occur in the absence of atmospheric emissions. Many inland lake ecosystems in the most susceptible parts of the (Great Lakes) Basin may be irreversibly harmed within 10-15 years."

The IJC recommends in the Report that the U.S. and Canada "undertake further actions to reduce atmospheric emissions of the oxides of sulfur and nitrogen from existing as well as new sources."

Commenting on the IJC Report, Costle said that it "confirms my previously stated positions over the past year that acid rain presents a genuine threat to our environmental well-being both in the U.S. and Canada.

What we know or suspect about acid deposition indicates that the problem is genuine and serious:

- acid deposition can and has destroyed lake and stream ecosystems, killing fish and other water life;

- many lakes in Canada and the United States are already acidified and their fish populations are shrinking or are extinct;

- some soils are being damaged over time due to leaching of minerals and nutrients;

- the water and soils over extensive areas in North America are susceptible to acidification;

- stone buildings, monuments, and other building materials are eroded more rapidly by acid deposition;

- some important crops may be damaged by acid deposition and others may be injured by acidified soils;

- growth of forests may be reduced over time;

- over the long term some drinking water supplies may be contaminated by toxic metals leached from the soil as a result of acid deposition."

(more)

Regarding the other condition necessary for using Section 115, Costle pointed out that on December 17, 1980 the Canadian Parliament passed legislation authorizing that country's federal government to cut pollution from sources contributing to problems in another country. On December 24, 1980 the U.S. State Dept. asked EPA to determine whether the Canadian legislation gives the U.S. the same rights as Section 115 gives to Canada.

"I have concluded," Costle said, "that the Canadian legislation does provide that country with ample authority to give the U.S. equal rights. This is not a permanently binding determination, however: Under Section 115 EPA must also determine that Canada is exercising or interpreting this authority in a manner that gives equal rights to the U.S. This implementation aspect of the determination is necessarily a dynamic one which will continue to be influenced by Canadian action now and in the future.

"In summary, my conclusions are adequate to warrant the initiation of Section 115. Under this provision, formal notification is given to a Governor that his State must identify and propose pollution control measures to address the international problem, and provide opportunity for public hearing on these plans. I have instructed my staff to examine this issue and recommend which States should be notified."

"EPA must make extraordinary efforts to cooperate with affected States in this process. For various reasons, the acid rain problem is clearly a regional one which crosses numerous State boundaries; also, since there are no established numerical standards to judge the adequacy if acid rain reduction measures, EPA and the States will have to work closely on developing target levels for emission reduction."

Costle also pointed out that on August 5, 1980, the U.S. and Canada signed a Memorandum of Intent that committed both countries to begin negotiations by June 1981 on a transboundary air pollution agreement. These negotiations will provide a forum for agreeing on U.S. actions under Section 115 and Canadian actions under its legislation.

Acid rain results when sulfur dioxide and nitrogen oxides, primarily from electric power plants, smelters and automobiles, are chemically changed into acid in the atmosphere. These sulfuric and nitric acids are sometimes carried hundreds of miles from the source of the pollution before being brought to earth in rain or snow. This long

distance transport can create national and international regulatory problems, since air pollution standards of one State or country can have an indirect impact on the natural resources of another.

The International Joint Commission is a U.S.-Canadian body set up by international treaty to deal with problems affecting the Great Lakes Basin and the St. Lawrence River.

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United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, D.C. 20510

December 23, 1980

Mr. Douglas M. Costle
Administrator
Environmental Protection Agency
Washington, D.C. 20460

Dear Doug:

I have just learned that the Canadian Parliament has enacted legislation which provides essentially the same rights to the United States as this country provides to Canada under Section 115 of the Clean Air Act. In my view, this legislation satisfies the requirement of Section 115(c) that a foreign country provide reciprocal rights to this country as a prerequisite to action by the Administrator of EPA under Section 115. I believe that this legislation, in conjunction with findings made in the reports noted below, oblige you to take action under Section 115 to remedy the problem of acid precipitation emitted in the United States which is affecting Canada.

The reports I refer to are those you have received from the International Joint Commission on Great Lakes Water Quality, from the Great Lakes Water Quality Board of the International Joint Commission and from the United States-Canada Research Consultation Group on Long-Range Transboundary Air Pollution (RCG). I believe both the IJC and the RCG are duly constituted international agencies, as contemplated by Section 115(a). In July 1979, the Annual Report of the Great Lakes Water Quality Board recommended that the Governments of Canada and the United States undertake actions to reduce atmospheric emissions of sulfur and nitrogen oxides from existing and new sources, in order to reduce the effects of acid precipitations. Similarly, in October 1980, the IJC's Annual Report recommended that both Governments:

1) consult in a timely manner on appropriate actions to substantially reduce atmospheric emissions of sulfur and nitrogen oxides from existing and new sources and 2) ensure that adequate, comprehensive research programs are underway to provide information on the causes, effects on the ecosystem, and measures for the control of long range transport of airborne pollutants, with special attention in the near future to acid rain. The

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 13 1981

THE ADMINISTRATOR

Honorable George Mitchell
United States Senate
Washington, D.C. 20510

Dear Senator Mitchell:

Thank you for your letter of December 23, 1980 regarding Section 115 of the Clean Air Act. As you are aware, this Section of the law requires EPA, if certain conditions are met, to call on States to revise their implementation plans where necessary to prevent or eliminate endangerment to public health or welfare in a foreign country stemming from air pollutants emitted in the United States.

Two recent actions require me to consider whether EPA should identify appropriate States for notification under this Section. First, in October 1980, the International Joint Commission submitted its Seventh Annual Report on Great Lakes Water Quality. That report contains a section describing damages due to transboundary air pollution and a recommendation that the Governments of the United States and Canada act to reduce certain air pollutants. Second, on December 17, 1980, the Canadian Parliament approved legislation providing the Canadian federal government with powers to abate transboundary air pollution. On December 24, 1980, the U.S. Department of State issued a public statement committing the United States to evaluate whether this Canadian legislation provides essentially the same rights as are provided by Section 115 of the Clean Air Act. The Clean Air Act requires the Administrator of EPA to make this determination.

There are two principal conditions which must be met before EPA can notify a State under Section 115 that a plan revision is required. First, the Administrator on receipt of reports, surveys, or studies from a duly constituted international agency must conclude that U.S. emissions are causing or contributing to endangerment in a foreign country, or must have received a request from the Secretary of State to notify a State. Second, before the provisions of Section 115 can be applied with respect to a foreign country, the Administrator must determine that the country provides the United States with essentially the same rights regarding international air pollution control as are provided by Section 115.

Your letter calls attention to certain reports which discuss problems of transboundary air pollution between the United States and Canada. As you are aware, the major focus of U.S. - Canadian concerns in the past two years respecting transboundary air quality has been on the question of the adverse impacts of acid deposition.

As my public statements over the past year have indicated, EPA has concluded that acid deposition, often referred to as acid rain, presents a genuine threat to our environmental well-being both in the U.S. and Canada. What we know or suspect about acid deposition indicates that the problem is genuine and serious:

- acid deposition can and has destroyed lake and stream ecosystems, killing fish and other water life;
- many lakes in Canada and the United States are already acidified and their fish populations are shrinking or are extinct;
- some soils are being damaged over time due to leaching of minerals and nutrients;
- the water and soils over extensive areas in North America are susceptible to acidification;
- stone buildings, monuments, and other building materials are eroded more rapidly by acid deposition;
- some important crops may be damaged by acid deposition and others may be injured by acidified soils;
- growth of forests may be reduced over time;
- over the long term some drinking water supplies may be contaminated by toxic metals leached from the soil as a result of acid deposition.

These kinds of impacts are within the range of impacts covered by Section 115. As you know, that Section is broadly drafted to encompass all forms of air pollution-related endangerment to public health or welfare and is not limited to interference with U.S. air quality standards or significant deterioration programs as is Section 126 of the Clean Air Act.

The relative contribution of U.S. and Canadian emission sources to acid deposition problems in the U.S. and Canada varies widely from location to location. The stress to our ecosystems created by acid deposition is a function of the total atmospheric loadings of sulfur and nitrogen compounds. Surveys conducted over the past several years establish that there is a significant flow of these pollutants across the U.S. - Canadian border in both directions. Thus, we can say with some certainty that emission sources

in the U.S. contribute significantly to the atmospheric loadings over some sensitive areas in Canada and that emission sources in Canada contribute significantly to the loadings over some sensitive areas in the United States.

Given our understanding of the impacts of acid deposition and of the joint contribution of U.S. and Canadian sources to the problem, I believe that the Section 115 authority could appropriately be used to develop solutions, provided that either the Secretary of State requests action or that any relevant reports of international agencies state the existence of the problem and that Canadian law and practice provide the U.S. with essentially the same rights respecting emission sources located in Canada.

The International Joint Commission which is a duly constituted international agency under Section 115, has recently transmitted a report which addresses the issue of acid deposition. My review of the October 1980 Seventh Annual Report on Great Lakes Water Quality of the International Joint Commission (IJC) leads me to conclude that the IJC has found acid deposition results in significant harm in both the U.S. and Canada and that emission sources in both the U.S. and Canada contribute to the problem through the long-range transport of air pollution. The IJC Report states that "[a]cidic precipitation is one widely known and serious example of a problem associated with the long-range transport of airborne pollutants." (Report at 49). The Report states that "[v]irtually all of eastern Canada and portions of the northeastern United States experience rains with acidity equal to or exceeding that which can adversely affect susceptible ecosystems. All parts of the Great Lakes watershed are now receiving precipitation containing 5 to 40 times more acid than would occur in the absence of atmospheric emissions. Many inland lake ecosystems in the most susceptible parts of the Basin may be irreversibly harmed within 10-15 years." (Report at 50). The Report also notes that "[a] substantial portion of the Great Lakes drainage basin is potentially susceptible to acidic precipitation, based on its bedrock geology. The Sudbury, Muskoka and Haliburton areas of Ontario and the Adirondacks of northern New York are among the most heavily impacted areas in the world because their geology offers little buffering capacity to their inland lakes. Some lakes in the Haliburton-Muskoka area have lost 40-75 percent of their acid neutralizing ability in a decade or less. These areas are now being subjected to precipitation which is twice as acidic as that which caused losses of major fish stocks in thousands of Scandinavian lakes." (Report at 50).

The Report points out "the massive and diffuse nature of the [emission] sources throughout eastern North America" (Report at 54) and notes that acid deposition often occurs "many hundreds of miles from the source." (Report at 50).

Finally, the IJC recommends in the Report that the Governments of the United States and Canada, "undertake further actions to reduce atmospheric emissions of the oxides of sulfur and nitrogen from existing as well as new sources." (Report at 5).

I have concluded that this report confirms my previously stated position that acid deposition is causing significant environmental problems on both sides of the U.S. - Canadian border due to emissions from U.S. and Canadian sources.

The question of whether Canada "has given the United States essentially the same rights" with respect to emission sources in Canada as is provided by Section 115 requires consideration of recently enacted Canadian legislation.

On December 17, 1980, the Canadian Parliament approved legislation which provides the Canadian federal government with authority to adopt emission standards for sources which contribute to air pollution related problems in another country. Specifically, Section 21.1(1) of the legislation provides that where the Minister of Environment has reason to believe that an air contaminant emitted by a Canadian source or sources creates or contributes to air pollution that may reasonably be expected to constitute a significant danger to the health, safety, or welfare of persons in another country, the Minister shall recommend to the Governor in Council (the highest federal executive authority) specific emission standards for the source or sources, in relation to the air contaminant, either alone or in combination with one or more other air contaminants, as he considers appropriate to eliminate or significantly reduce the danger. Under Section 21.1(2), if the Minister proposes a recommendation, the notice of the proposal is to be published in the Canadian Gazette. A reasonable opportunity to make representations to the Minister concerning the proposal is to be offered to persons in Canada who would be affected by the prescription of specific emission standards, and to the endangered country.

For sources other than "federal" sources, Section 21.1(3) in effect requires that before making a final recommendation the Minister must consult with the appropriate province and provide the province with an opportunity to eliminate or significantly reduce the danger to the other country.

Section 21.2(1) authorizes the Governor in Council to prescribe specific emission standards recommended by the Minister if the Governor in Council concludes that the foreign country considered in making the recommendation under Section 21.1(1) has provided for "essentially the same kind of benefits in favor of Canada with respect to abatement or control of air pollution as is provided in favor of the country" by the Canadian Clean Air Act. In order to prescribe a specific emission standard with respect to non-federal sources, the Governor in Council must conclude that reasonable efforts by the Minister to procure reduction or elimination of the danger by the provincial government, have been unsuccessful.

As with most legislation, it is possible that the Canadian legislation could in the future be interpreted or implemented in a way that the United States would conclude that it was not being given essentially the

same rights as are provided under Section 115. Thus, it is not possible to make a permanently binding determination that Canada has given the United States essentially the same rights based simply on a review of Canadian authorizing legislation. EPA first determines that Canadian legislation gives ample authority to the Government of Canada to provide essentially the same rights to the United States. Second, EPA must determine that the Government of Canada is exercising or interpreting that authority in a manner that provides essentially the same rights to the United States. This second aspect of EPA's determination is necessarily a dynamic one which will continue to be influenced by Canadian action now and in the future.

In my view, the amendments to the Canadian Clean Air Act do give adequate authority to the Government of Canada to provide essentially the same rights to the United States as Section 115 provides to Canada. Both Section 115 and Sections 21.1 and 21.2 authorize a federal official to make a finding or recommendation concerning endangerment to health or welfare of a foreign country due to any air pollutant emitted domestically, and to prescribe specific emission limits to eliminate, significantly reduce, or prevent the endangerment. The Canadian legislation refers to "significant danger to the health, safety or welfare of persons," thus my conclusion assumes this phrase will be interpreted to have essentially the same coverage as the Section 115 phrase "endanger public health or welfare." Both statutes allow the State or province, as appropriate, to take actions to remedy air pollution affecting a foreign country. If the State or provincial government fails to develop an adequate remedy the federal government is authorized to establish emission limitations. Each statute also requires that the federal government provide opportunities for public hearing on any proposed action and participation in the hearing by an affected foreign government.

The principal difference in the two statutes is the detailed procedural and substantive requirements applicable to the State plan revision process under the U.S. Clean Air Act as opposed to the more general requirement in the Canadian legislation for provincial consultation and reasonable efforts to secure action by the provincial government. In my judgment, that difference does not significantly restrict the ability of the Government of Canada to provide essentially the same rights to the United States. The Canadian requirement for federal consultation and efforts to procure provincial action fills the same role as the State plan revision process in the U.S. system. Consequently, I have concluded that, despite the differing process at the State and provincial levels, the Canadian legislation does provide the Government of Canada with ample authority to give essentially the same rights to the United States as are provided by Section 115.

I should observe that the provisions of the Canadian legislation do appear to provide the Minister of Environment with some discretion regarding the scope of the remedy he must recommend, as well as the adequacy of any remedies undertaken by the provincial government. Similarly, the

Governor Council is apparently provided with discretion regarding final prescription of specific emission standards as is the case for all regulations issued under the Canadian Clean Air Act. For these reasons, my determination that the Canadian legislation provides essentially the same rights as Section 115 could be changed should the U.S. conclude that future Canadian actions interpreting or implementing their legislation were not giving essentially the same rights to the U.S.

As you know, Section 115 is activated by giving formal notification to the Governor of a specific State. EPA has not yet determined which State or States will require notification under Section 115. I have instructed my staff to examine this issue and to develop recommendations regarding the States which should receive formal notification. Notification to a State under the Clean Air Act is only the first of several steps in the plan revision process. After receiving a plan revision notification, the State must identify and propose control measures to address the problem and provide opportunity for public hearing prior to adoption and submittal to EPA.

Several factors will require that EPA make extraordinary efforts to consult and cooperate with affected States in this process. The acid deposition problem is clearly a regional one which crosses numerous State boundaries. The affected States will need to discuss the problem with one another and EPA will need to assist them in this effort. Second, since there are no established numerical standards by which to assess the adequacy of acid deposition mitigation measures, EPA and the affected States will have to work closely on developing target levels for State and regional emission reductions.

In summary, I believe the IJC Report confirms that acid deposition is endangering public welfare in the U.S. and Canada and that U.S. and Canadian sources contribute to the problem not only in the country where they are located but also in the neighboring country. Regarding the requirement of reciprocol rights, I believe the new Canadian legislation provides the Government of Canada with ample authority to give the United States essentially the same rights as Section 115. While this conclusion is adequate to warrant the initiation of a Section 115 based plan revision process in appropriate States, I must emphasize that during such a process and at the time of any final action, the Administrator must continue to be able to find that Canada is giving the United States essentially the same rights based on an evaluation of Canada's interpretation and implementation of its legislation.

I appreciate your interest in this very important subject. EPA will continue to keep your office informed of its actions on this matter.

Sincerely yours,

Douglas M. Costle

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 13 1981

THE ADMINISTRATOR

Honorable Edmund S. Muskie
Secretary of State
Washington, D.C. 20242

Dear Mr. Secretary:

As you know, on December 17, 1980, the Canadian Parliament approved legislation providing the Canadian federal government with authority to abate emissions from Canadian sources which contribute to transboundary air pollution. On December 24, 1980, the Department of State announced that the United States would evaluate the Canadian legislation to determine whether it provides essentially the same rights as Section 115 of the U.S. Clean Air Act.

As required by the Clean Air Act, I have completed my review of the Canadian legislation. After consultation with the Department of State, I have concluded that the Canadian legislation provides the Government of Canada with authority to give the United States essentially the same rights as Section 115 of the Clean Air Act gives to Canada. In addition to this initial determination based on the language of the Canadian legislation, the Administrator must be able to determine that the Government of Canada is exercising or interpreting that authority in a manner that provides essentially the same rights to the United States. This second aspect of EPA's determination is necessarily a dynamic one which will continue to be influenced by Canadian action now and in the future.

Section 21.1(1) of the Canadian legislation provides that where the Minister of Environment has reason to believe that an air contaminant emitted by a Canadian source or sources creates or contributes to air pollution that may reasonably be expected to constitute a significant danger to the health, safety, or welfare of persons in another country, the Minister shall recommend to the Governor in Council (the highest federal executive authority) specific emission standards for the source or sources, in relation to the air contaminant, either alone or in combination with one or more other air contaminants, as he considers appropriate to eliminate or significantly reduce the danger. Under

Section 21.1(2), if the Minister proposes a recommendation, the notice of the proposal is to be published in the Canadian Gazette. A reasonable opportunity to make representations to the Minister concerning the proposal is to be offered to persons in Canada who would be affected by the prescription of specific emission standards, and to the endangered country.

For sources other than "federal" sources, Section 21.1(3) in effect requires that before making a final recommendation the Minister must consult with the appropriate province and provide the province with an opportunity to eliminate or significantly reduce the danger to the other country.

Section 21.2(1) authorizes the Governor in Council to prescribe specific emission standards recommended by the Minister if the Governor in Council concludes that the foreign country considered in making the recommendation under Section 21.1(1) has provided for "essentially the same kind of benefits in favor of Canada with respect to abatement or control of air pollution as is provided in favor of the country" by the Canadian Clean Air Act. In order to prescribe a specific emission standard with respect to non-federal sources, the Governor in Council must conclude that reasonable efforts by the Minister to procure reduction or elimination of the danger by the provincial government, have been unsuccessful.

As with most legislation, it is possible that the Canadian legislation could in the future be interpreted or implemented in a way that the United States would conclude that it was not being given essentially the same rights as are provided under Section 115. Thus, it is not possible to make a permanently binding determination that Canada has given the United States essentially the same rights based simply on a review of Canadian authorizing legislation. EPA first determines that Canadian legislation gives ample authority to the Government of Canada to provide essentially the same rights to the United States. Second, EPA must determine that the Government of Canada is exercising or interpreting that authority in a manner that provides essentially the same rights to the United States. This second aspect of EPA's determination is necessarily a dynamic one which will continue to be influenced by Canadian action now and in the future.

In my view, the amendments to the Canadian Clean Air Act do give adequate authority to the Government of Canada to provide essentially the same rights to the United States as Section 115 provides to Canada. Both Section 115 and Sections 21.1 and 21.2 authorize a federal official to make a finding or recommendation concerning endangerment to health or welfare of a foreign country due to any air pollutant emitted domestically, and to prescribe specific emission limits to eliminate, significantly reduce, or prevent the endangerment. The Canadian legislation refers to "significant danger to the health, safety or welfare of persons," thus my conclusion assumes this phrase will be interpreted to have essentially

the same coverage as the Section 115 phrase "endanger public health or welfare." Both statutes allow the State or province, as appropriate, to take actions to remedy air pollution affecting a foreign country. If the State or provincial government fails to develop an adequate remedy the federal government is authorized to establish emission limitations. Each statute also requires that the federal government provide opportunities for public hearing on any proposed action and participation in the hearing by an affected foreign government.

The principal difference in the two statutes is the detailed procedural and substantive requirements applicable to the State plan revision process under the U.S. Clean Air Act as opposed to the more general requirement in the Canadian legislation for provincial consultation and reasonable efforts to secure action by the provincial government. In my judgment, that difference does not significantly restrict the ability of the Government of Canada to provide essentially the same rights to the United States. The Canadian requirement for federal consultation and efforts to procure provincial action fills the same role as the State plan revision process in the U.S. system. Consequently, I have concluded that, despite the differing process at the State and provincial levels, the Canadian legislation does provide the Government of Canada with ample authority to give essentially the same rights to the United States as are provided by Section 115.

I should observe that the provisions of the Canadian legislation do appear to provide the Minister of Environment with some discretion regarding the scope of the remedy he must recommend, as well as the adequacy of any remedies undertaken by the provincial government. Similarly, the Governor Council is apparently provided with discretion regarding final prescription of specific emission standards as is the case for all regulations issued under the Canadian Clean Air Act. For these reasons, my determination that the Canadian legislation provides essentially the same rights as Section 115 could be changed should the U.S. conclude that future Canadian actions interpreting or implementing their legislation were not giving essentially the same rights to the U.S.

In connection with my review of the recent Canadian legislation, I have also examined the Seventh Annual Report on Great Lakes Water Quality issued on October 1980 by the International Joint Commission (IJC). I have concluded that the IJC Report confirms that acid deposition is endangering public welfare in the U.S. and Canada and that U.S. and Canadian sources contribute to the problem not only in the country where they are located but also in the neighboring country. I am enclosing a letter which I have sent to

Senator George Mitchell on this subject which discusses the IJC Report in greater detail and the implications of these conclusions with respect to any future actions by EPA pursuant to Section 115 of the Clean Air Act.

Sincerely yours,

Douglas M. Costle

Enclosure

"APPENDIX E"

ADDENDUM TO FINAL REPORT

Introduction

On December 16th, 1980 the House of Commons passed Bill C-51 - An Act to Amend the Clean Air Act. Part 3.1.2 of this Report describes these amendments and outlines what they were intended to achieve. This Addendum critically discusses these amendments with respect to their utility for dealing with the acid precipitation problem.

Specific Emission Standards Under S.21.1

Bill C-51 added section 21.1 to the Clean Air Act. This new section of the Clean Air Act is unfortunately of no real utility with regard to acid precipitation for several reasons. First, there is no duty on the Cabinet to make any specific emission standard recommended by the Minister.

Second, the Minister has no duty to make a recommendation to the Cabinet as to the prescription of a specific emission standard unless the Minister first finds that an "air contaminant" is "emitted" into the ambient air and that it has certain impacts.

Since sulphates and nitrates are not "emitted" the Minister cannot use this section to establish specific emission standards for sulphates and nitrates.

Further, assuming the Minister chooses to base his action on the emissions of SO_2 and NO_x he must have reason to believe that emissions in Canada from (1) a specific identifiable source or from specific sources of a particular class are (2) creating or contributing to the creation of "air pollution" that (3) may reasonably be expected to constitute a "significant" "danger" to the health, safety or welfare of persons in a country other than Canada.

In order for the Minister to be able to legally use this section to impose limitations on SO_2 and NO_x he must be in a position of proving that one particular source or several specific sources are having this specific effect set out in the United States. In this regard the Minister must prove that the SO_2 or NO_x from the particular source or sources are affecting not the physical environment, not water, not air, not fish etc. but are affecting persons in the United States.

The less stringent concept of defining air pollution as a condition that interferes with normal enjoyment of life or property or that endangers the health of animal life or that causes damage to plant life or property (as it is defined in Section 2 (1) (b) of the Act) has been replaced in Section 21.1 with the almost impossible burden of the Minister having to prove that specific emissions may reasonably be expected to constitute "a significant danger" to (the health, safety or welfare of) persons!

None of the studies to date indicate that this type of cause and effect relationship can be shown to exist in terms of the judicial rules of proof that now are observed in Canadian and US judicial forums.

Further, because of the definition of "air pollution" in the Act, other problems arise.

As indicated above, SO_2 and even sulphates in the ambient air and NO_x and even nitrates in the ambient air have not been proved to endanger the health of persons. It is the deposition of these materials that cause the presently provable problems for the environment. But per se there is no sufficient proof of the mere presence of these materials "in the ambient air" constituting or reasonably being expected to constitute "a significant danger" to health, safety or welfare of persons.

Accordingly it would seem there will have to be revisions to The Clean Air Act in order to make it an effective tool to deal with sources of acid precipitation.

The phrase "public health or welfare" can quite clearly be interpreted widely enough to include damage to the natural environment that does not necessarily affect the health, safety or welfare of any human being. The phrase "health, safety or welfare of persons" could well be interpreted more restrictively to only include environmental damage that has a significant danger to human beings. The effects of acid precipitation that are most thoroughly documented are not effects that could reasonably be argued to be directly endangering human beings. Direct connections between acid precipitation and human health have not yet been documented in a thorough manner. While the "welfare" of persons may be indirectly affected by the destruction of certain man-made or natural amenities there may be numerous instances where environmental damage, especially in remote areas, would not be considered to be a "significant danger" to either the health, safety or welfare of any person or persons.

It would have been prudent to more closely follow the wording of S. 115 of the U.S. Clean Air Act to ensure that a reciprocal situation was created, however, it is not anticipated that this will present a significant obstacle so long as there is good faith by both countries together with a joint political commitment to achieve a solution.