CONTROL ORDERS AND INDUSTRIAL POLLUTION ABATEMENT IN ONTARIO

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Executive Summary

Control orders are one of several tools available to the Ontario Ministry of the Environment for encouraging or requiring abatement of polluting discharges from industrial sources. The use of these orders in Ontario has been the subject of a variety of criticisms. Representatives of affected industries have argued that some orders reflect an unjustifiable determination to prevent pollution even where the costs of compliance may exceed reasonably anticipated environmental benefits. Environmentalists and affected citizens' groups, on the other hand, have claimed that control orders do not always require adequate abatement of worrisome contaminant discharges and that polluters have often failed to meet their compliance deadlines. Advocates of more stringent requirements have also expressed disapproval of the process by which control order contents are determined largely through private negotiation between the Ministry and the polluter.

This report reviews the use of control orders in Ontario in the context of the overall process by which environmental quality criteria are set, pollution problems identified, and appropriate tools for encouraging or requiring abatement chosen. The nature of the control order device and procedures for its application are examined in detail. Particular attention is paid to considerations and influences affecting determination of control order contents, and to the provisions for appeal and enforcement of control order requirements.

Problems with and criticisms of various aspects of the context and use of control orders are identified and discussed. These include the limitations of several current approaches to setting enforceable standards and non-legislated guidelines, the inadequacies in present means of identifying discharges that should be abated, the weaknesses of the Ministry's information base and negotiating position in discussions with polluters on control order contents, and the insufficiency of opportunities for effective public involvement in the relevant decision-making.

The major findings of the study are that the effectiveness, efficiency and fairness of industrial pollution abatement efforts in the province would be improved by three major changes:

. Current legislation should be amended to allow for abatement requirements concerning discharges that pose uncertain but possibly significant environmental risks as well as discharges that can be shown beyond a reasonable doubt to be environmentally deleterious.

. Additional amendments should be made to provide for explicit consideration of technical, financial and socio-economic factors in abatement decision-making.

. Legislative and policy changes should be made to ensure more open and participative deliberations on the setting of enforceable standards, guidelines, facility-specific abatement requirements and additional discharge reduction incentives.

More specific recommendations are provided concerning adoption of a revised approach to industrial pollution abatement with four major elements:

(i) enforceable standards, which would address uncertain as well as known pollution problems and which would have to be met without regard to technical, financial or socio-economic factors;

(ii) guideline criteria, which would be applied with flexibility through enforceable control orders;

(iii) control orders, which would allow time for compliance with standards and provide a vehicle for requiring maximum practical adherence to the guidelines; and

(iv) economic incentives to encourage voluntary abatement, including abatement beyond levels required by standards and guidelines.

The conclusions emphasize that reforms which recognize the need to address uncertain risks and abatement practicalities in the setting of general criteria and facility-specific requirements, will increase the importance of subjective elements in decision-making and make public participation in the setting of standards and guidelines, and in the negotiation and review of control orders, more crucial.

This suggests needs for greater efforts to encourage public awareness of the limits to current knowledge about contaminant effects and risks and public appreciation of the practicalities of pollution abatement.

A special study to identify the most desirable means of ensuring effective public involvement in environmental protection decision-making is also advocated.

Additional recommendations address the setting and use of standards and guidelines, the application and appeal of control orders, and the adoption of appropriate penalties and incentives.

INDUSTRIAL POLLUTION ABATEMENT AND THE USE OF ENVIRONMENTAL CONTROL ORDERS IN ONTARIO

1. Introduction

1.1 Industrial Pollution Abatement

During the 1960's and 1970's governments in most industrialized countries introduced new legislation intended to reduce pollution of the natural environment. The combination of factors that provided the impetus for this legislative action varied from jurisdiction to jurisdiction, but a central factor was the great post-war expansion of industrial production and the number, scale and diversity of environmentally threatening industrial activities.

Discovery that some of the new products (for example, persistent pesticides) had environmentally disastrous, unanticipated effects spurred research and publicity. This led to greater scientific and public awareness of the nature of ecological relationships and the hazards posed by human interventions. Citizens and legislators proved unwilling to accept environmental degradation as inevitable and tolerable. Among the major responses of governments were the new environmental laws.

Industrial processes and products were not then, and are not today, directly or indirectly responsible for all, or in all the places the most serious, environmental problems addressed by the new legislation. Nor, even from a strictly environmental point of view, has industrial expansion

been an entirely negative development. There have been and continue to be important non-industrial sources of serious environmental degradation, and the technological advances of modern industry have often provided means of reducing longstanding environmental problems.

Still, much of the environmental legislation passed in the last two decades was intended to confront existing and potential environmental problems arising from resource extraction and treatment, primary and secondary manufacturing, product transportation and application, waste disposal and other activities more or less directly related to industrial production. Moreover, the successes and failures in the application of this legislation have frequently served to clarify the complex problems - including not only environmental and technical difficulties but also scientific, economic and political uncertainties and conflicts - which all environmental policy and law must face. There is, consequently, some justification for a study that focusses exclusively on the application of environmental legislation requiring abatement of pollution from industrial sources.

1.2 Control Orders

For a host of reasons, environmental legislation and policies which affect the determination and enforcement of pollution abatement requirements have evolved differently in different jurisdictions. There are even inconsistencies within jurisdictions. Many options are available. Reduction of polluting discharges can be encouraged or forced through closure of offending facilities, demand reduction, incentives for reuse and recycling, negotiated abatement agreements, control orders,

prosecutions, marketable and non-marketable pollution licences, abatement delay penalties, tax incentives, technical assistance, grants and loans, industry self-policing and public takeovers. Environmental quality criteria upon which abatement efforts are based can be set out in legislated standards or unlegislated objectives, applicable universally or on a site-specific basis. Abatement requirements can be based on point of impingement or point of emission calculations, influenced by concerns about environmental effects generally or only about effects on humans. Or they may be determined by the nature of best available or best practicable abatement technology. Finally, the adoption and implementation of any of these may be affected by the presence or absence of public involvement, the complexity and controversiality of available data, the extent of regulator expertise, industry ability to pay, socio-economic concerns, the vulnerability of one-company towns, regulator capture by regulatees, media bias and power and, of course, Murphy's Law.

In Ontario, the provincial government relies most heavily on the use of control orders for requiring abatement of polluting discharges from existing industrial sources. For the purpose of this study, the term "control orders" will, unless otherwise stated, refer to "requirements and directions" issued under the Ontario Water Resources Act (OWRA)[1] as well as to "control orders" issued under the Environmental Protection Act, 1971 (EPA).[2] Control orders under the EPA are used in cases of unacceptable emissions into the air or in cases where there are polluting discharges into both air and water. Requirements and directions under the OWRA are generally used where the required abatement action relates

only to polluting effluents into water.[3] Control orders and requirements and directions are similar in general content and intent; they are subject to virtually identical notice, consultation and appeal provisions; and they are treated together as a single element in Ontario Ministry of the Environment (MOE) policy concerning its Pollution Abatement Program.[4] Both are documents issued to persons (generally, corporate entities) responsible for unacceptable pollutant discharges, requiring certain actions to be undertaken and completed or maintained in effective operation by specified dates. The actions required are intended to constitute or at least contribute to a satisfactory pollution abatement program. They may include studies, installation and operation of specific (kinds of) facilities and equipment, adoption of particular procedures or sufficient but unspecified efforts to achieve compliance with provincial standards or guidelines that describe maximum permissible or desirable concentrations of individual pollutants.

Control orders are not automatically applied where discharges from industrial sources may or do pose environmental hazards. A number of considerations, including non-environmental concerns, enter into decision-making about the desirability and necessity of abatement action. Also, control orders are not the only devices available to provincial authorities for encouraging or forcing abatement efforts, although they are arguably the most important of the devices currently used under the MOE Pollution Abatement Program in relation to existing industrial discharges.

The following review and analysis of the use of control orders in Ontario is intended to cover all the major aspects of the decision-making

process directly related to identification of discharges requiring abatement, the choice of control orders as the appropriate tool for requiring abatement, the drafting and imposition of specific orders, and ensuring compliance with control order requirements.

1.3 Basis for Analysis

Several of the people contacted in relation to this study because of their involvement or expressed interest in the use of control orders in Ontario have emphasized that this device and its application ought to be judged primarily in comparison with the available alternatives. It is not difficult, they suggest, to criticize and to identify deficiencies in current practices. The crucial question, however, is not whether the present use of control orders measures up to some absolute standard, but whether application of any other option(s) would have less imperfect results.

But even the comparative approach requires some basis for judgments about greater and lesser imperfections. In this study, analysis both of the weaknesses of current practices and of the comparative merits of alternative approaches will be based on three major considerations. These are the economic consideration of efficiency, the environmental consideration of effectiveness, and the political considerations of democracy and fairplay.

Efficiency is best served by industrial pollution abatement efforts that address the most serious problems first, that achieve the greatest possible reduction of environmental damages and risks with the financial and professional resources available, and that always provide or protect

environmental benefits (for example, reductions of damages and risks) which are at least as valuable as benefits from other potential uses of the same resources. Economists have found it convenient to view efficiency as requiring that the first dollar spent on industrial pollution abatement must address the most severe (that is, the most "costly," in the broad sense of the term) environmental problems, and that the last dollar must result in environmental improvements, or a combination of environmental and other benefits, which are worth at least a dollar. In economic language, the marginal cost of abatement (including fiscal, regulatory and enforcement costs to government as well as capital and operating costs to industry) should be equal to the marginal benefit to be gained.[5] There are, unfortunately, many barriers to measuring efficiency so defined. The environmental risks and damages attributable to single emission sources can seldom, if ever, be completely and accurately described, let alone translated agreeably into monetary values. Nevertheless the principle stands.[6]

Effectiveness is best served by an industrial pollution abatement program (or set of programs) which ensures that adequately stringent environmental quality and emission abatement objectives are set and achieved with a minimum of delay and compromise. Just how stringent these objectives need to be to provide for "adequate" environmental protection is not obvious from available scientific knowledge, or from efficiency calculations. Some additional component of judgment is required. A dictatorial approach, which may be initially rapid and uncompromising, may not necessarily prove more effective if poor judgments are made concerning

the adequacy of objectives or if insensitive implementation measures breed resistance and avoidable non-cooperation. The significance of the judgment component and the need for sensitivity to the interests of those affected points to the importance of the third consideration.

Democracy and fairplay are best served by adoption of decision-making practices that not only allow for competing interests to have their views considered, but generally maximize opportunities for knowledgable and effective participation (especially by the affected public and the industries involved) in the establishment of environmental protection requirements and in the design and implementation of strategies for meeting these requirements, with the caveat that some restrictive measures may be needed to prevent abuses (for example, the transfer of commercially valuable proprietary information to corporate competitors, or the initiation of participatory procedures merely to force implementation delays). Fair and participative decision-making, which is arguably valuable in any matter that has significant implications for social well-being, is particularly important in the area of environmental protection because many decisions must inevitably rest as much on value preferences and attitudes to unknown or poorly defined risks as on recognized scientific, technical and economic facts.

The requirements of efficiency, effectiveness and democracy and fairplay may conflict. This fact poses an essentially political problem. Insofar as the conclusions and recommendations of this study reflect assumptions about the preferred means of resolving such conflicts, they are statements of individual opinion, challengable as such.

Notes

1. See the Ontario Water Resources Act (henceforth OWRA) R.S.O. 1980, c. 361, s. 32, 51, 61.

2. See the Environmental Protection Act (henceforth EPA), R.S.O. 1980, c. 141, s. 6, 113-116.

3. This is not always the case. There have been some control orders dealing with discharges into water issued under the EPA. The 23 May 1978 control order issued to E. B. Eddy Forest Products Ltd. concerning the company's Ottawa facilities dealt only with water pollution problems. See Appendix I.

4. See the Ontario Ministry of the Environment, Policy Manual (March 1981), p. 05-02-02.

5. From the standpoint of efficiency, costs of abatement include government agencies' costs of designing and implementing abatement programs as well as industry capital and operating costs.

6. There is a large body of literature on abatement efficiency questions. Useful introductions and discussions are provided in James B. Stephenson, editor, The Practical Application of Economic Incentives to the Control of Pollution: The Case of British Columbia (Vancouver: University of British Columbia Press, 1977), especially Irving K. Fox, "The Assessment of Pollution Control Policy Mechanisms: Some Basic Concepts"; and Donald N. Dewees, Evaluation of Policies for Regulating Environmental Pollution, Economic Council of Canada, Regulation Reference Working Paper No. 4 (Ottawa, 1981).

2. Control Orders and Environmental Quality Criteria

The purpose of the control orders under consideration here is to require and force sufficient abatement of offending discharges to meet provincial requirements. Exactly what these requirements are, and what constitutes an offence against them, is not always clear. Section 6 of the EPA introduces the control order as a legitimate tool in the following situation:

> When the report of a provincial officer, filed as provided by section 126, contains a finding that a contaminant added to, emitted or discharged into any part of the natural environment by any person or from any source of contaminant exceeds the maximum permissible amount, concentration or level prescribed by the regulations, contravenes section 13 or is a contaminant the use of which is prohibited by the regulation, the Director may issue a control order directed to the person responsible therefor.[1,2]

The general prohibition clauses of the EPA and the OWRA suggest a legislative intention to eliminate, rather than merely to reduce, environmental contamination and degradation. Section 13 (1) of the EPA states:

> 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.

Similarly, the OWRA states (in section 14) that

> . . . the quality of water shall be deemed to be impaired if, notwithstanding that the quality of the water is not or may not become impaired, the material deposited or discharged or caused or permitted to be deposited or discharged or any derivative of such material causes or may cause injury to any person, animal, bird or other living thing as a result of the use of consumption of any plant, fish or other living matter or thing in the water or in the soil in contact with the water.

and (in section 16 (1)) that

> Every municipality or person that discharges or deposits or causes or permits the discharge or deposit of any material of any kind into 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 . . .

Although certain exceptions are allowed,[3] neither of these acts mentions inconvenience, or technical or economic difficulties as bases for compromising environmental protection requirements. The environment is to be protected. And the prohibition covers not only discharges that do cause impairment of the environment, but also those that "may" impair or are "likely to" cause impairment.[4] "May" is open to broader interpretation than "likely to," but in both cases the prosecution must prove beyond a reasonable doubt that the discharge(s) "had the ability to" impair "in the circumstances that existed" at the time of the alleged offence.[5,6]

In addition to the general prohibitions, the EPA and the OWRA allow for regulations to be enacted, prescribing, for example, "maximum permissible amounts, concentrations or levels of any contaminant or combination of contaminants and any class of either of them" (EPA, s. 136 (1)(c).[7,8]

Regulations have been made concerning air contaminants. A schedule attached to Regulation 308 under the EPA[9] sets out maximum half-hour

average point of impingement concentrations[10] for approximately one hundred air contaminants. In addition, for some of these contaminants, maximum "desirable" concentrations measured over various longer periods of time (1 hour to 1 year) are described in the Ambient Air Quality Criteria set out in Regulation 872/74 under the EPA. However, not all air contaminants are covered in these regulations and under neither the EPA nor the OWRA are there regulations setting maximum concentrations for water pollutants.

Where no regulations have been enacted, the general prohibitions provide the legal basis for evaluating the need for abatement requirements, including control orders. However, considerable discretion for interpretation and action is granted by the legislation to the "Directors" who may issue control orders.[11] In practice, the Directors rely also on non-legislated objectives and guidelines set out in MOE policy documents.[12]

Because no water pollution regulations have been enacted, policy interpretations of the general prohibitions are especially important in the evaluation of abatement requirements where effluents into water are involved. But even where air contaminants proscribed by regulation are involved, the limited focus of the regulations (for example atmospheric measurement at nearby points of impingement relative to specific point sources, usually discharge stacks) often means that decisions about whether, and to what extent abatement efforts are needed must be based at least in part on consideration of how, in light of any applicable policies, the general prohibitions are to be interpreted in specific circumstances.

2.1 Water: General Prohibitions and Non-legislated Guidelines

No environmental quality criteria relating to water have been incorporated in regulations as legally enforceable standards. Therefore, in cases of industrial discharges into water the legal bases for decisions about whether or not specific effluents should be subject to abatement requirements are the general prohibitions in the EPA and the OWRA. Interpretation of these prohibitions is assisted by reference to the non-legislated guidelines developed and adopted officially by MOE but not made into law.

These guidelines, collected and set out in the document, Water Management: Goals, Policies, Objectives and Implementation Procedures of the Ministry of the Environment (November 1978), are intended to provide a comprehensive but flexible approach to the application of EPA and OWRA provisions concerning water. It is also evident that they are intended to recognize certain factors not mentioned in the legislation. In some cases this involves clarification of ambiguities and inclusion of important considerations about which the Acts are silent; in other cases the guidelines appear, however justifiably, to be in conflict with the legislative intent.

In relation to the abatement of polluting discharges from industrial sources, the central elements of the Water Management guidelines are the Provincial Water Quality Objectives and the implementation policies concerning efforts to attain these objectives.

2.1.1 The Provincial Water Quality Objectives

The guidelines document provides a set of individual criteria for a large number of conditions, contaminants and kinds of contaminants in various categories (inorganics and other parameters, heavy metals, pesticides, industrial organics, and considerations related to swimming and bathing use of water). It also lists five "Substances with Zero Tolerance Limits" (mercury, DDT, PCB, PBB, Mirex) and describes over 40 "Substances (and families of substances) with Unidentified Tolerance Limits" that are thought to be hazardous but are not covered in the Provincial Water Quality Objectives because of insufficient reliable scientific data. As well, the document provides specific use criteria for drinking water quality and for certain agricultural purposes.[13]

The provincial Water Quality Objectives are not legally enforceable standards. Officials of the Ministry's Water Resources Branch have reported that while "(s)erious consideration was given to the idea of promulgating legal, province-wide or individual river basin standards of water quality" (motivated at least in part by "the unofficial views of U.S. agencies that Ontario should implement water quality standards or some other approach with more force than guidelines and criteria"), this approach was rejected,

> mainly because:
> - enforcement of receiving water standards can be extremely difficult because of the problems in proving what source(s) caused the violation and because monitoring receiving water quality for enforcement purposes would require funding and manpower well beyond the resources available to the Ministry;
> - water quality would tend to be degraded to the minimum permissible levels as waste dischargers seek to get by with the least possible treatment;

> - development of different standards for individual basins requires detailed and costly surveys.[14]

It has also been argued that the guidelines approach permits flexibility in implementation that is needed because of the great variation in the assimilation capacities and other demands for the use of waterbodies into which pollutants are discharged. According to an MOE official,

> Rigid regulations, tailored to correct the worst problem of a large community discharging into a small stream would not be relevant, for example, to a small community discharging into Lake Superior.[15]

Decisions concerning the setting and revision of water quality objectives are made through consensus among members of an interdepartmental committee of experts.[16] Data and conclusions from other agencies are commonly used and current objectives "are based mainly on a review of the recommendations of the International Joint Commission and of the U.S. Environmental Protection Agency."[17] Individual committee members may also consult with other experts and interested parties including those from potentially affected industries. However, there are no formal opportunities or procedures for industry or public involvement in the decision-making.[18] A separate report containing the rationale for each objective is published by the Ministry and is available to all interested parties.

While the water quality objectives are generally intended to indicate maximum allowable amounts and concentration levels which, if not exceeded, will provide for conditions "satisfactory for aquatic life and recreation,"[19] attainment of the objectives for each condition or contaminant does not necessarily ensure satisfactory water quality. This is

in part because of the inadequacy of current scientific knowledge, especially concerning the effects of new and uncommon substances, the longer term effects of low level chronic exposures to contaminants, and the cumulative and synergistic effects of various combinations of contaminants in the context of other stresses. The Water Management guideline document admits that the setting of numerical objectives for individual contaminants on the basis of effects on healthy and stress-free organisms of short-term exposure (for example, 96 hours) to concentrations of single contaminants ignores the possibility of damages resulting from combinations of factors which may reasonably be expected where general water quality is in question:

> The Objectives do not account for additive effects of more than one chemical nor for additional environmental stress arising from temperature and predations factors. Consequently, water with a quality at or near the Objectives for several parameters may not protect aquatic life because of synergistic effects.[20]

Moreover, Provincial Water Quality Objectives are set only for contaminants about which "satisfactory" scientific data are available. (As implied above, a "satisfactory" data base is not necessarily a complete one, particularly with regard to long term, low dose, additive and synergistic effects.) There is, in addition, an unknown but certainly large number of substances, which may in some quantities and concentrations reach the water environment, about which scientific data are too scarce or too contradictory to provide an acceptable basis for criteria setting. In the words of the guideline document,

> About two million chemical compounds are known and each year thousands more are developed by the chemical industry, many of which are introduced commercially. Very little is known about

> the possible health and environmental effects of most of these compounds . . .
>
> . . . Adequate knowledge concerning the degree of safety or hazard of many chemicals . . . may take years or even decades to develop.[21]

The Ministry's response to this problem has been to list the poorly assessed substances of primary concern as "Substances with Undefined Tolerance Limits" along with comments summarizing available toxicological information, and to adopt a policy determination to evaluate release of such substances on a case-by-case basis.[22]

In effect, the Ministry has taken lack of scientific knowledge about the extent of hazards posed by individual substances to be grounds for caution, but not grounds for prohibition of discharge (or use) until adequate information reveals tolerance levels (if any).[23] Only five substances, which are known to bio-accumulate and are relatively well known hazards, have been listed as "Substances with Zero Tolerance Levels," release of which "should be completely eliminated."[24] Others, including substances for which effects data are extremely meagre, are permitted in discharges, albeit with limitations, caution and case-by-case evaluations. Permission to discharge such substances is not based on confidence about their non-injuriousness at the allowed concentrations (since the scientific basis for such confidence is more or less absent).[25] Instead it reflects the limitations imposed by laws that require proof, beyond a reasonable doubt, that a discharged substance has the ability to impair the environment.[26] It also rests on a perception that where no firm evidence of environmental or health hazard is available, the overriding value or importance of the substances, or the enterprises with which they are associated, should be recognized.[27] Thus the criteria-setting process, especially in

relation to substances for which toxicological data are incomplete, is only in part environmental "effects-based." It is also based on the application of concerns about resource limitations, technological practicalities and socio-economic impact.

2.1.2 Policies for Implementation of Water Quality Criteria

The policies for implementation of the abatement requirements implied by the water quality criteria (the Provincial Water Quality Objectives and the tables of Substances with Zero or Undefined Tolerance Limits), outlined in the Water Management guidelines document, reflect even more clearly the assumption that the general prohibitions of the OWRA and the EPA against environmental impairment must be tempered with recognition of "practical" - including technical, financial and socio-economic - considerations.

The general anti-pollution prohibition in the OWRA (s. 32(1)) simply makes it an offence to discharge anything into a body of water that "causes or may cause injury to any person, animal, bird or other living thing" which consumes or uses anything in, or in contact with that water. The Act does not say that "practical" considerations, such as expense, technical infeasibility or even impossibility, may present a legitimate basis for avoiding the full weight of the prohibition.[28] The EPA also lacks reference to any mitigating considerations.[29]

Such concerns do, however, play an important role in the Ministry's guidelines for implementation of water quality objectives and other criteria. For surface water quality management purposes, the general policy is that the Provincial Water Quality Objectives are not to be exceeded.

In fact, water quality superior to that set by the Objectives is to be maintained where it is practical to do so. But discharges that degrade water beyond these levels are not necessarily required to be stopped or abated. The applicable policy guideline (Policy 2) provides:

> Water quality which presently does not meet the Provincial Water Quality Objectives shall not be degraded further and all practical measures shall be taken to upgrade the water quality to the Objectives. (emphasis added)[30]

The meaning of "practical" in relation to abatement of polluting discharges is clarified as follows:

> . . . in exceptional circumstances, it may not be technically feasible, physically possible or socially desirable to achieve this condition in all water bodies in the Province.
>
> Accordingly, in exceptional cases, where it is clearly demonstrated that all reasonable and practical measures to attain the Provincial Water Quality Objectives have been undertaken but where:
>
> . . .
>
> (3) to attain or maintain the Provincial Water Quality Objectives would result in substantial and widespread adverse economic and social impact; or
> (4) suitable treatment techniques are not available; then deviations from Policy 2 may be allowed . . .[31]

The guidelines also allow for continued discharge of contaminants into waterbodies which have a calculated "dilution, dispersion or assimilation capacity" for receiving such contaminants, and recognizing the expense and other practical difficulties raised by abatement requirements, the guideline document holds that "(e)fficient use of this capacity is a key to optimizing water pollution control programs."[32]

In addition, the guidelines state that because it is "not practical to treat all effluents so they meet the Objective concentrations," mixing zones for "dilution and modification" of waste effluents may be accepted.

A "mixing zone" is defined as "an area of water contiguous to a point source where the water quality does not comply with Provincial Water Quality Objectives and in which there will be some damage or loss to the aquatic environment."[33]

Thus MOE policy concerning surface water quality clearly allows for non-environmental factors to enter into decision-making about whether or not in specific circumstances, abatement of actually or possibly polluting discharges is to be considered necessary. MOE policy also allows for these factors to be considered in determining the speed and extent of required abatement.[34] The relative importance of these non-environmental factors inevitably varies from case to case, depending on, for example, existing water quality (the nature and extent of contamination from other point and non-point sources) and "assimilation capacity"; availability, applicability and cost of appropriate abatement technology; financial strength of the company responsible for the discharge(s); and the possibility of employment losses and other related socio-economic effects. It is also reasonable to anticipate, although this is not mentioned in the guideline document, that political factors including expressed public concern and industry influence may also be of some importance especially in controversial cases.

Proper evaluation of each of the relevant environmental and non-environmental factors in any given case is likely to present a formidable challenge. General environmental effects data on the substances involved are almost certain to be incomplete and those available may often be more or less controversial. Calculations of dilution or assimilation capacity and of the extent and severity of existing and potential contaminant

effects in individual cases may require costly and complex studies that rely on simplifying assumptions, models and assessment techniques[35] which suffer from the same limitations as the toxicological data. Thorough evaluation of technical possibilities may often demand expert knowledge about current technology and specific applicability that is available only from the offending industry. Similarly, accurate evaluation of potential socio-economic effects may be extremely difficult due to the complex variety of factors involved, the limited availability of relevant data, and the weaknesses of predictive techniques.[36]

As a result, decisions about whether and to what extent abatement is necessary in a given case are clearly neither simple nor in every case based only on facts. The information base is necessarily incomplete and, in part because of resource constraints faced by the Ministry, considerably less complete than it might be if more funds were available for studies and expert assistance. At best, then, decisions about abatement requirements are based on more or less educated guesses concerning directly relevant environmental, technological and economic considerations. As such they are subject to a variety of broadly political and ideological influences (including the personal and group inclinations of Ministry personnel, public pressures arising from individual and community concerns that may be based largely on media-supplied information, and the attitudes and political sophistication of industry representatives).

In general, non-legislated objectives recognize a number of environmental and non-environmental considerations that are seldom amenable to precise factual evaluation. Reliance on these objectives means that the actual requirements imposed are determined on a case-by-case basis by

by government officials. For existing pollution sources, control orders are the chief vehicles for imposing abatement requirements. In these cases, then, control order decision-making, which frequently involves government-industry negotiation, is the de facto means of determining what, as well as how and when, objectives are to be met.

The flexibilities inherent in this approach are generally in the direction of allowing somewhat greater water quality degradation than the Provincial Water Quality Objectives would suggest is strictly compatible with the "no known effects" philosophy. The province is, however, also committed by the Canada-Ontario Accord and by its own policy to enforce requirements set out in federal effluent regulations and guidelines which have been established on the basis of the best practicable technology approach.[37] Because the best practicable technology may in some instances provide more complete abatement than would be required on a no-known-effects basis, this latter commitment will in those instances mean that the effective effluent requirements written into control orders will be more demanding than ones set solely on the basis of provincial no-known-effects objectives.[38]

2.2 Air: Ambient Criteria, Legislated Standards and Guidelines

Reliance on the general prohibitions is less in the case of air pollution control because legally enforceable standards have been established for approximately one hundred air contaminants. These standards, set out in Ontario Regulation 308 under the EPA, describe maximum allowable half-hour average concentrations at "points of impingement" calculated in relation to identifiable point sources of pollutant emissions (discharge

stacks). The half-hour average point of impingement standards are intended to ensure that air quality will meet the general "desirable ambient air quality criteria" set out in Ontario Regulation 872/74. Unlike the standards, these criteria (which describe maximum ambient concentrations of individual contaminants averaged[39] over various periods from one hour to one year, but usually 24 hours and/or 30 days) are not directly enforceable.

The Ministry also employs three classes of non-enforceable point of impingement objectives: tentative standards, which represent maximum concentration levels accepted by MOE but not yet approved by Cabinet or published in the Ontario Gazette as standards by regulation; guidelines, which are considered by the Ministry to describe reasonable maximum levels but for which the substantiating data are not (yet) sufficient to support standard setting; and provisional guidelines, which are used temporarily to cover contaminants that are of urgent concern but for which very few data are immediately available.[40] These non-regulated objectives can be legally imposed by, for example, being incorporated in control orders, but their appropriateness is open to challenge in any appeal of such orders.[41]

Because of the relative weakness of the documentation supporting the guidelines and their openness to challenge in appeal proceedings, imposition of guidelines-based requirements on a case by case basis is more subject to negotiation and compromise than imposition of requirements based on standards. The nature and extent of compromise depends on specific case circumstances. No general equivalent to the Water Management guidelines document has been prepared to guide implementation of

the air quality guidelines.

As in the case of water quality objectives, air quality criteria, standards and guidelines are intended to describe concentration levels at or under which no "known significant adverse effect" on human health, animals, vegetation, or property will occur.[42] This "pragmatic basis of effects"[43] approach has been consciously chosen instead of an approach based on the competing "non-degradation philosophy" which would aim towards no additions to the atmosphere beyond that which is found in a purely natural environment."[44]

The effects based approach offers some inherent economic efficiencies because of its virtually exclusive emphasis on control of recognized problems which are likely also to be among the most serious actual problems. But it relies on the dubious assumption that where the effects of discharges are not known, the damages involved are tolerable. Given the limited and frequently debatable information available about the effects of individual contaminants, and the general absence of information on the cumulative and synergistic effects of the sum of discharged pollutants,[45] it would be more environmentally prudent to adopt the assumption inherent in the non-degradation approach - that in the absence of knowledge to the contrary any "unnatural" discharge may be hazardous. But this latter assumption by itself provides no basis for deciding, in the inevitable context of limited resources, which of many more and less probable or possible threats should be addressed first and to what extent. Moreover, implementation of the non-degradation approach entails costly abatement efforts that may have no apparent, and perhaps no actual, environmental benefit.

The general anti-pollution provision of the EPA (section 13) seems to support the effects based approach, prohibiting the discharge of any contaminant that "causes or is likely to cause impairment."[46] As noted above,[47] general prohibition has been interpreted by the courts to require evidence beyond a reasonable doubt that a discharged contaminant caused or had the ability to cause (in the concentrations involved) environmental damage. In effect, the enactment of standards through regulation settles any legal debates about whether or not a measured concentration of a regulated contaminant is "likely to cause" impairment, thereby making enforcement considerably easier.[48] MOE officials also argue that because standards provide for uniform enforcement and act as a universally applicable and relatively stable basis for abatement requirements, they are preferable to guidelines which are implemented variably after "economic engineering negotiation for each situation or locality" and tend "to foster arbitrary decisions which can produce unfair competitive manufacturing situations, and also are generally characterized by rapid re-evaluation or change that makes business planning difficult."[49] However, as noted above, guidelines are also used where available data are deemed insufficient to support an air quality standard. Added requirements, sometimes imposed through special standards, are applied on a case-by-case basis, often after extensive discussions (if not negotiations) with affected industries, to deal with problems that are peculiar to certain situations or localities and are not adequately covered by the universal standards designed for more or less average conditions.[50]

Both standards (and provisional standards) and guidelines (and provisional guidelines) are designed to facilitate enforcement of

abatement requirements in relation to single discharge sources and the effects they are designed to preclude are local effects. For prosecution purposes, contaminant concentrations are either measured at points of impingement near sources or calculated from emission, air transport and other factors according to codified formulae intended to provide the equivalent of point of impingement measurements.[51]

This approach has a number of recognized limitations. Ontario's general air standards (ambient concentrations at point of impingement - half-hour average) are more or less inappropriate where a number of significant sources jointly affect air quality; where multiple point-source fugitive emissions (from windows and doors, small vents, storage areas, workyards, etc.) are of considerable importance; where the general plume rise and diffusion assumptions used for point of impingement calculations do not reflect actual conditions;[52] where significant effects and/or risks occur beyond local points of impingement; where contaminants not only have known effects but also pose or contribute to an uncertain extent to additional risks and damages; and where contaminants present in relatively innocuous ambient concentrations are deposited and gradually accumulate (for example, in soils) to hazardous levels. Sometimes (in the case of multiple adjacent sources, for example) exceptional local requirements can be dealt with through special standards or guidelines. Facility-specific director's orders can also be used. But some cases present problems with which not only the current standards but the entire current approach to air quality protection in Ontario is ill-equipped to deal.

Cases in the latter category include some which are of considerable

and increasing concern. One is that of the air contaminants (sulphur dioxide and nitrogen oxides) that are the chief contributors to the acidification of precipitation. These are emitted by a multitude of major and minor sources including many that are outside the province's jurisdiction, are affected by long distance air transport as well as chemical reactions involving other air constituents and contaminants, and are thought to be responsible for a variety of regional and continental scale threats and damages which are incompletely identified or understood and, insofar as they are known, very difficult to evaluate or to relate precisely to specific emission levels at individual sources.[53]

Another group of cases that poses problems for the known effects-based standards and guidelines approach is that of carcinogens and other contaminants for which it is accepted that no entirely safe no-effects exposure level exists.[54] MOE officials have recognized that the apparent need to reduce no-threshhold contaminant emissions indicates a need for reform of current standards-setting procedures if not revision of the entire approach to air emission control.[55]

The effects-based approach is frequently contrasted with the best practicable or best available technology approaches. Ministry officials claim, with justification, that although some environmental risks (unknown or inadequately documented effects) are not addressed by the effects-based approach, it "generally satisfies the rationale for legislation and is usually acceptable to those who are required to spend funds on emission controls since there is a defensible reason for spending the funds."[56]

They also state that the best practicable technology approach

> is independent of air quality needs and therefore can produce a situation of overkill (that is, money can be spent to control beyond the apparent need to do so) . . . and . . . can lead to insufficient air quality control where the technology today is not well developed for control of a specific industrial process.[57]

However, the experience of the Air Standards Setting Committee suggests that at least in the cases handled to date, the latter problem would seldom have arisen. According to Committee officials, enactment of effects-based standards has very seldom been delayed or otherwise affected by the apparent absence of practicable abatement technology.[58] Moreover, they admit that the contaminant level resulting from abatement requirements set on a best practicable technology basis is "frequently lower than that required by a purely effects approach."[59]

In light of the risks inherent in an approach that focusses exclusively on known effects when knowledge of actual effects is far from complete, MOE officials have expressed some interest in adopting an approach that would

> use a standard setting procedure based on the philosophy of effects as a primary requirement, which then is modified by the use of best practicable technology. This would involve the lowering of the emission constraint derived from an effects approach to the minimum level practicable, having in mind the competitive economics of the sources likely to be affected. The concept is to avoid known effects and to control further as far as practicable. The main problem in this is to derive a uniform and fair set of criteria to determine 'practicable' which at the same time does not produce an administrative monster.[60]

2.2.1 Setting Air Criteria, Standards and Guidelines

A permanent, interdepartmental Environmental Standards Setting Committee is used to evaluate available information relevant to worrisome contaminants and to recommend ambient air criteria and point of impingement standards and guidelines.[61] The committee responds to written requests from senior MOE officials for consideration of perceived need for a new or revised standard for a certain contaminant. While in general it follows a procedure aimed at establishing standards or guidelines that will preclude known negative environmental effects, there are some exceptions.

The committee begins in each case by reviewing the known effects of the contaminant on human health, animals, plants and property and on the basis of the data collected adopts by consensus a tentative maximum allowable ambient air concentration level (usually stated as a 24-hour average) intended to protect against the identified effects in each of the four areas of concern. The second stage of the committee's work involves using this tentative ambient objective as a basis for determining an appropriate guideline or (if sufficient data are available) standard which, if met by all sources in an area, will ensure that the ambient air objective will be met.[62] Air guidelines and standards in Ontario are always stated as half-hour average concentration to be measured at points of impingement relative to identified points of emission (i.e. discharge stacks). MOE officials have explained that the point of impingement approach has been adopted in keeping with the effects-based philosophy on the basis that ambient air quality and therefore effects are related not merely to the nature of emissions but also to the nature of air

transport from the point of emission to relevant receptors. Equations that take into account local land usage and topography, micrometeorology and emission characteristics are set out in Regulation 308 to relate contaminant concentrations at points of impingement to emission sources, thereby providing a basis for requiring specific abatement efforts at individual facilities.

Ministry officials have been careful to insist that the Standards Setting Committee follows a "purely effects philosophy."[63] However, the Committee includes representatives chosen to provide (access to) expertise not only about the effects of identified contaminants on human health, animals, vegetation and property, and about the influence of meteorological factors, but also about available technology and the socio-economic impact of implied abatement requirements. Moreover, in translating tentative 24-hour average ambient objectives into proposed half-hour average impingement guidelines or standards, the Committee is expected to consider not only the sampling time differential, background (natural and multiple source) contaminant levels and other factors (for example, time related synergistic reactions, chemical transformations and special health considerations) relevant to avoidance of known environmental effects, but also "practical considerations of emission control." Martin and Kupa stated in a 1977 paper:

> In setting an impingement standard to meet an ambient air objective, consideration of cost is not normally used as a factor because the objective of the exercise is to achieve the air quality objective. However, in special circumstances, source control technology can be used to help set the standard. For example, in the case of a substance for which the determinate factor in arriving at the air objective is odour, and where the odour threshhold is reported to be a wide range (e.g., hydrogen sulphide) the consideration of cost of control may help determine in which end of the threshhold odour range is chosen.[64]

Martin has also claimed that the apparently high or prohibitive cost of currently available abatement technology would generally not affect the rigour of chosen criteria, standards and guidelines, but rather delay their enactment and/or implementation while less expensive technological solutions were sought.[65] According to Martin, delayed enactment of a standard has occurred (for example in the case of sulphur dioxide emissions from small ferrous foundries) but there have been no cases where standards were held up indefinitely for failure to uncover an affordable abatement option.[66]

For a number of reasons, economic factors may be of greater importance in future standard setting. Since 1979, the official guidelines for preparation of Cabinet submissions concerning policy proposals, legislation and regulations have required that the accompanying rationale for proposals cover, among other things, the evaluation of economic effects on private sector economic concerns including cost of compliance, investment capital availability, and employment and consumer price levels as well as economic implications the added extent and cost of government administration and enforcement.[67] The Cabinet requirement is intended at least implicitly to facilitate comparison of the net economic, as well as political and social costs with the benefits of new policies and laws. Because Cabinet consideration of individual standards is "very unusual,"[68] the Cabinet directive may have little direct effect on standard-setting deliberations. It does, however, represent a common thrust of government regulatory reform toward greater appreciation of economic factors. Applied to environmental standard-setting this shift encourages a greater willingness to tolerate certain significant but relatively inexpensive

known effects when elimination of them would entail costly abatement efforts. In effect this would mean compromising the effects-based approach so that a "significant effect" would have to be not merely physically or biologically significant, but also economically significant at least in comparison with the costs of the abatement efforts that would be needed to preclude these effects.

A second factor likely to force increased emphasis on economic considerations is increasing recognition that for many contaminants, especially the potential carcinogens and mutagens (e.g. the dioxins) which are the focus of much current concern, the concept of an effects threshhold is generally thought not to apply.[69] The precise risks of such contaminants may not be known. Given current research methodologies and techniques, the degrees of risk may not even be knowable. And to the extent that they are known the risks at very low contaminant concentrations may be thought to be very small. Still, these contaminants cannot be judged entirely safe at any concentration. In such cases, standard-setting entails decisions about whether total avoidance of risks through elimination of the contaminant is possible and desirable in light of the importance of related productive processes and jobs. In the probably common event that total elimination seems impracticable, standard-setting bodies must decide what levels of more or less uncertain risks (and risks to whom or to what) are to be considered acceptable. Moreover, concerns about the efficiency of environmental protection efforts might suggest that "acceptability" be judged in part through consideration of the costs associated with various degrees of abatement.

MOE officials have not yet decided how current procedures should

be revised to deal with this. They do recognize that standard setting centred on comparison of risks with abatement costs inevitably involves not only complex technical and methodological controversies but also choices which, being based at best only partly on defensible technical and scientific evidence, are more properly treated as political than as administrative decisions, and therefore demand more opportunity for involvement by the affected industries and concerned public than is currently permitted.[70] But the Ministry has not yet determined how to approach the analysis and evaluation of more or less uncertain risks; how much detail about the availability, applicability and costs of abatement alternatives will be required or how such details are to be obtained reliably when much of the needed information is held by the industries to be regulated; how broader public involvement in the decision-making process is to be allowed; or indeed how a risks and costs approach is to be legitimated in terms of enabling legislation that is apparently intended to address known effects without consideration of technical and economic factors.[71]

At present air standards setting process, which begins with a decision by senior officials to examine the current status and urgency of control needs concerning a particular contaminant, consists primarily of the evaluatory work by the Environmental Air Standards Setting Committee, review of the Committee's proposals by senior officials, and submission to and approval by Cabinet. Guidelines receive internal Ministry approval only. Approved standards are published in the Ontario Gazette as additions to Regulation 308.

Some interdepartmental discussion of effects data and other relevant issues is encouraged, especially since some Committee members - most

notably those responsible for human health considerations - are from outside MOE. As well, certain committee members are expected to contact non-government experts and interests. One member is required "to advise . . . on all health aspects, including medical opinion outside government"; another is "responsible for input from the agricultural community and universities with respect to impact on animals and agriculture"; and a third is expected to obtain "initial input from the industry and/or industry association" as well as from MOE officials in the regional and headquarters offices that deal regularly with pollution industries.[72,73] The current process does not, however, offer any formal or regularized opportunity for industry or public knowledge of, let alone contribution to or involvement in, standard-setting discussions and decision-making prior to the publishing of new regulations.

After air quality criteria have been set, summary sheets describing the known effects of each contaminant in the four major categories of concern (human health, animals, vegetation, and property) are prepared and made "readily available to any interested enquirer" along with "the pertinent documentation"[74] Martin and Kupa state:

> The specific documentation and evaluation of this data may be, and in fact should be, open to question, particularly by the scientific community. That is fair and proper. Nevertheless, this process of determining ambient air objectives does provide a reasonable and open scientific rationale for the ambient air quality objectives.[75]

But while the open rationale for each standard is accessible after the standard has been enacted, this rationale reflects only the Committee consensus on the basis for the ambient air quality criterion on which the standard is (in part) based. It does not indicate the nature and extent

of any pre-consensus disagreements among Committee members,[76] and it does not describe or discuss the specific considerations that affected translation of the ambient criterion into a point of impingement standard.

Some changes in MOE policy on involvement in standard-setting may be forthcoming in the near future.[77] In their 1977 paper, Martin and Kupa noted "a growing need for some form of public review of these recommendations (for new standards) before the recommendations are sent to the legal people and the Cabinet for final approval and incorporation into law."[78] A 1978 document describing the air standard setting process referred prematurely to an appointed Advisory Council,[79] with representatives from industry, unions, universities and public interest groups, to review the Air Standards Setting Committee's proposals concerning standards and guidelines. This council was initially intended to review Ministry of the Environment (Air Standards Setting Committee) proposals for air quality standards and guidelines, as well as Ministry of Labour proposals for occupational health regulations, but was later limited to the occupational health area because of the volume of work involved.[80]

A committee of senior MOE officials is currently considering various approaches to increasing public involvement in Ministry standard setting. The issue, reportedly, is how, not whether, to act in this matter. Among the options under consideration are creating an appointed advisory council similar to the one described above, allowing for public response to announced standards and guidelines proposals prior to final enactment, and setting up a public hearing mechanism.[81]

Notes

1. EPA, s. 6.

2. Identification of the conditions under which a requirement and direction ought to be issued under the OWRA is left to the discretion of "Directors" appointed by the Minister. OWRA s. 51, for example, states:

> (1) If an industrial or commercial enterprise makes arrangements for the collection, transmission, treatment or disposal of sewage that are considered unsatisfactory by a Director, the Director may require such industry or commercial enterprise (a) . . ., (b) . . ., (c) . . ., as may be directed from time to time by the Director.

See also s. 17(1).

3. EPA s. 13(2), for example, states that the general prohibition of s. 13(1)(a) "does not apply to animal wastes disposed of in accordance with normal farming practices."

4. "May" is used in the OWRA s. 14; "likely to" is used in the EPA s. 13.

5. See Regina v. Sheridan [1973] 2 O.R. 192 and Regina v. Toronto Refiners and Smelters (1978) 20 O.R. (2d) 772.

6. A defence of "due diligence" is also available to defendants in pollution cases and can be successful where the defendant can convince the court that every reasonable effort was made to ensure that no offence would occur. See Regina v. Sault Ste. Marie. Evidence that every effort was made to correct the problem as rapidly as possible once it was identified is also considered relevant. See Regina v. Falconbridge Nickel Mines Limited (1982) 11 C.E.L.R. 136. The due diligence defence is most applicable in cases of apparently accidental, one-time discharges but can also be successful where there are continuing or frequent discharges that offend against the OWRA or EPA. See Regina v. Sault Ste. Marie.

7. The EPA s. 136(1) also states that

> The Lieutenant Governor in Council may make regulations:
> (a) . . .;
> (b) prohibiting or regulating and controlling the depositing, addition, emission or discharge of any contaminant or contaminants into the natural environment from any source of contaminant or class thereof;
> (c) . . .;
> (d) prescribing methods or standards, or both, for determining the amount, concentration or level of any contaminant, combination of contaminants or any class of either of them;

(e) defining the desirable quality criteria of the natural environment;
(f) . . .;
(g) . . .;
(h) . . .;
(i) . . .;
(j) prescribing the maximum permissible concentration or level in water of any contaminant either generally or with respect to any part of the water of Ontario specified in the regulations;
(k) prescribing methods for determining the concentration or level in water of any contaminant . . .;
(l) prescribing maximum permissible changes in temperatures of water . . .;
(m) . . .;
(n) regulating the quality of fuels that may be used for heating, generating steam or electricity, for industrial processes or for incineration.

8. The OWRA s. 44(1) empowers the Minister, "subject to the approval of the Lieutenant Governor in Council," to make regulations:
(h) prescribing standards of quality for potable and other water supplies, sewage and industrial waste effluents, receiving streams and water courses;
and generally
(u) respecting any matter necessary or advisable to carry out effectively the intent and purpose of this Act.

9. Regulation 308 (General - Air Pollution) R.R.O. 1980.

10. An appendix to Regulation 308 describes means of calculating such concentrations.

11. See the EPA, s. 6.

12. These policy documents are not always made public upon adoption.

13. See Ontario Ministry of the Environment, Water Management Goals, Policies, Objectives and Implementation Procedures of the Ministry of the Environment (Toronto: MOE, November 1978), pp. 32-64; see also Stefan E. Salbach and R. Peter Dennis, "Water Management in Ontario," Water Resources Bulletin Volume 16, Number 4, August 1980 (American Water Resources Association), p. 623.

14. Salbach and Dennis, op. cit., p. 622. This decision contrasts with that of the Ministry concerning air quality criteria, which are, for the most part, established as standards by regulations. See below, pp. 2-17ff.

15. Unnamed official quoted in J. F. Castrilli and C. Clifford Lax, "Environmental Regulation-Making in Canada: Towards a More Open Process," in Environmental Rights in Canada (Toronto: Butterworths, 1981), p.352

16. In addition to MOE, the Ministries of Natural Resources and Health are represented. See Hugh R. Hanson, Access to Information: Ontario Government Administrative Operations, Ontario Commission on Freedom of Information and Individual Privacy, Research Publication Number 6 (Toronto, February 1979), p. 63.

17. Salbach and Dennis, op. cit., p. 622.

18. A committee of senior Ministry of Environment officials is currently reviewing policy in this area and considering the desirability and possible means of providing for industry and public involvement in criteria setting decision-making.

19. MOE, Water Management, p. 4.

20. Ibid., p. 11.

21. Ibid., pp. 20-21.

22. Ibid., pp. 21-22.

23. The OWRA prohibition (s. 14, 16(1)) covers discharged materials that may cause environmental injury. Logically there is room for argument that "may" refers to possibility and that the possibility of injury remains until there is satisfactory scientific information to prove otherwise. However, the conventional legal interpretation holds that it is the actual rather than the logical possibility which must be demonstrated. This latter means that the burden of proof lies upon the Ministry (or whomever else wishes to enforce the prohibitary provisions) to show that the contaminant or contaminants involved are, in the concentrations reaching significant receptors, demonstrably capable of causing environmental impairment. See above at note 5.

24. MOE, Water Management, p. 21.

25. Given the admission in the guideline document (Water Management) that the scientific information base, even for many of the relatively well studied substances covered by Provincial Water Quality Objectives, is insufficient especially with regard to long-term additive and synergistic effects, a prohibition on the grounds of uncertainty would apply to most if not all waste discharges. The idea has some attraction, but in an industrial society highly reliant on chemicals its implementation is close to inconceivable. However, even a more moderate approach recognizing uncertainty (i.e. the absence of proof beyond a reasonable doubt) may be beyond what is authorized by the existing legislation.

26. See note 23, above.

27. MOE officials state that

> the Ministry uses the approach that the discharge of minute quantities of relatively unknown substances is permissible on a controlled case-by-case basis where there is an absence of evidence of risk to the environment or public health.

They also insist that while MOE "does not adhere to the approach of prohibiting discharges in cases of uncertainty," it should not be suggested that the Ministry "is more concerned with ensuring that pollution and polluting enterprises continue than with protecting public health and the environment" (MOE, Comments on a draft of this study under covering letter from W. Bidell, Assistant Deputy Minister, MOE, June 28, 1982).

28. By including a special clause (s. 16(5)) that allows discharges from "sewage works that have been constructed and are operated" in accordance with a government "approval" to be exempt from the general prohibition, the OWRA implies that some exceptions might be acceptable. But no basis for judging possible exceptions are given. Moreover, the general exemption for government approved works in OWRA s. 16(5) appears to be overriden and nullified by the EPA, which embodies a similar general prohibition applicable even to approved operations. See David Estrin and John Swaigen, Environment on Trial: A Handbook of Ontario Environmental Law, revised edition (Toronto: Canadian Environmental Law Research Foundation, 1978), pp. 153-154.

29. Defendants in pollution cases may, however, be able to argue successfully that they exercised "due diligence" in efforts to avoid or mitigate environmental damages. See footnote 6, above.

30. MOE, Water Management, p. 5.

31. Ibid., p. 14.

32. Ibid., p. 15.

33. Ibid., pp. 5, 11-12. A more detailed discussion of mixing zones is provided at pp. 22-23.

34. The Water Management document states (p. 16), "Target dates for the installation of effluent control measures will be established in the context of technical and economic constraints."

35. See Water Management, pp. 16-18, 67.

36. On these general problems of implementation see also Peter A. Victor, Terrence N. Burrell, Jim Evans and Charles Figueredo, Environmental Regulation: Water Pollution and the Pulp and Paper Industry, Economic Council of Canada Technical Report No. 14 (Ottawa, 1981), especially pp. 131-146.

37. Water Management, pp. 15, 18. The province is also committed to use the revised Specific Water Quality Objectives contained in the Great Lakes Water Quality Agreement. See Water Management, p. 4.

38. Victor et al., op. cit., p. 135 (and tables pp. 97-100) observe that the policy of requiring polluters to meet the more stringent demands of federal and provincial objectives "is not always acted upon."

39. In the case of lead by exception a 30-day geometric mean is used.

40. See MOE, "Procedure for the Operation of the Environmental Air Standards Setting Committee," November 7, 1978, especially Appendix pp. 1-3. Guidelines have been established for about 60 contaminants.

41. Ibid., pp. 2-3.

42. See C. Bruce Martin and P. C. Kupa, Air Resources Branch, MOE, "The Rationale, Methodology and Administration Used in Ontario to Determine Ambient Air Objectives and Emission Standards," a paper presented at the 70th Annual Meeting of the Air Pollution Control Association, Toronto, June 19-24, 1977, especially p. 1. Martin and Kupa (p. 1) note: "The expression 'significant effect' used here is meant to exclude such a minor effect as the reversible short-term dilation of the pupil of any eye."

43. Ibid.

44. Ibid.

45. See Ross H. Hall and Donald A. Chant, Ecotoxicity: Responsibilities and Opportunities, Canadian Environmental Advisory Council Report Number 8 (Ottawa: August 1979), especially pp. 1-9.

46. As was noted above, the OWRA, which prohibits discharges that "may impair" (s. 16(1)) is more ambiguous.

47. See above at footnote 5.

48. The regulation must not, however, exceed the authority of the Act. Regulations not adequately based on proof beyond a reasonable doubt that higher concentration would have the ability to impair the environment, would be open to legal challenge. The author is not aware of any such challenges of standards set by Regulation 308 under the EPA.

49. Martin and Kupa, op, cit., p. 2.

50. For example, a special impingement objective has been set for Sarnia area refineries which are multiple adjacent sulphur dioxide emission sources. This objective which was initially in guideline form and

is now in a more rigorous standard was the subject of extensive discussions with the industry involved.

51. See Estrin and Swaigen, op. cit., p. 101.

52. See Martin and Kupa, op. cit., p. 4.

53. See, for example, Brian E. Felske and Associates Ltd., Sulphur Dioxide Regulation and the Canadian Non-ferrous Metals Industry, Economic Council of Canada Technical Report No. 3 (Ottawa, 1981), especially Chapter 2.

54. See, for example, Hall and Chant, op. cit.

55. For example, Martin and Kupa observe (op. cit., pp. 2-3) that one criticism of the current approach "lies in the fact that technology cannot always determine in an absolute sense the effluent level at which there will never be a significant effect." Kupa has also noted (interview, August 17, 1981) that the increasing concerns about contaminants, including the dioxins, for which threshhold effects do not apply has encouraged adoption of approaches emphasizing evaluation of the tolerability of various risk levels. Such risk evaluation would involve detailed assessment of the availability and cost of abatement technology and of the nature, extent and public acceptability of health and environmental risks. The Ministry's Hazardous Contaminants Office has begun the work of establishing a comprehensive new approach to hazardous substances which recognizes the non-scientific problems of risk assessment. See C. E. Duncan, "The Role of the Hazardous Contaminants Office," a paper presented at the Ontario Industrial Waste Conference, Toronto, June 14-17, 1981, especially p. 16.

56. Martin and Kupa, op. cit., p. 2.

57. Ibid., p. 3.

58. Martin, Air Resources Branch (ARB), interview, February 24, 1981; Kupa, ARB, interview, August 17, 1981.

59. Martin and Kupa, op. cit., p. 3.

60. Ibid., p. 6.

61. Except where otherwise noted, the following discussion is based on MOE, "Procedure for . . . Committee" and Martin and Kupa, op. cit.

62. In exceptional cases, where standards designed for general application prove inadequate in some locations with multiple emission sources, special additional requirements are enacted by regulation to ensure compliance with the ambient objectives.

63. Martin and Kupa, op. cit., p. 3.

64. Martin and Kupa, op. cit., p. 4.

65. Martin, interview, February 24, 1981. At the time of this interview Martin was Acting Director of the Air Resources Branch.

66. Ibid.

67. See Government of Ontario, Cabinet Office, Guidelines for Preparing Cabinet Submissions, especially pp. 9-10. These guidelines are also set out in the new MOE Policy Manual, especially s. 16-03.

68. Bidell et al., comments on a draft of this study, June 28, 1982.

69. See footnote 55, above. Hall and Chant, op. cit., pp. 8-9, have argued that the threshhold concept seldom if ever applies:

> The concept of threshhold holds that for every toxic chemical there is a level below which there is no apparent effect. The LD_{50} of a chemical can be determined and, so it is said, also the level at which there is no apparent effect on the test animals. Put more accurately, this is the level below which toxicological technique detects no effect. Large numbers of scientists and especially bureaucrats disregard this inherent limitation of science, and the concept of a real threshhold for every chemical is firmly entrenched. The word threshhold, however, is more a bureaucratic than a scientific judgment.
>
> Because of the complexity of biological phenomena, any toxic substance affects countless processes within an organism, each presumably with a different threshhold. Many effects become permanently fixed in the organism without the need for any subsequent exposure. A single exposure, for example, can set the cancer process in motion. For all practical purposes, there is an infinity of threshholds, and when bureaucrats set a value, to which threshhold do they refer? Policymakers tend to select one or two threshholds and proclaim these significant. Fish containing less than 5 ppm of epoxychlor (an environmentally persistent pesticide), for example, are claimed not to cross a threshhold harmful to human eaters. These bureaucratic judgments ignore the state of health of the eaters, the general quality of food they eat, the presence of other contaminants, any many other factors. Threshhold, as a biological concept, defies legislation.

70. Duncan, op. cit., p. 16, has observed, ". . . to define a level of acceptable risk is a non-scientific exercise and depends on the political and social situation."

71. Bidell et al., commenting on a draft of this study, state, "While it is true that 'MOE officials have not yet decided how current procedures should be revised,' the Ministry has decided to establish a Hazardous Contaminants and Standards Branch to coordinate the development of environmental standards," and "The Minister has created a new position of Senior Advisor to the Minister to assist the Ministry in developing a mechanism for arriving at environmental standards and for gaining public input into the development of such standards."

72. MOE, "Procedure for . . . Committee," p. 2.

73. Representatives of industry associations also hold more or less regular meetings with Ministry officials to keep informed of new concerns and developments, including standard setting work that may be of importance to association members.

74. Point of impingement guidelines, guideline ambient air criteria, and some documentation (sometimes very meagre) on the basis for the criteria levels are also publicly available on request to the Air Resources Branch.

75. Martin and Kupa, op. cit., p. 2.

76. See Hansen, op. cit., pp. 67-68. According to P. Kupa, Air Resources Branch, MOE, private communication, August 17, 1981, such disagreement is rare since each committee member represents a different body of experts.

3. Identification of Pollution Problems

Many of the companies to which control orders are issued have for decades been recognized as major sources of pollutant discharges (see Appendix 1). Many also have a long history of relations with the Ministry of the Environment and some have been recipients of a succession of control orders, requirements and directions and/or other more or less formal abatement directives. This is particularly true in the cases of the mines, smelters, pulp and paper mills and steelworks.[1] Frequently the control orders which have already been issued to major polluting industries contain monitoring and other study requirements intended to provide information on the adequacy of compliance efforts and to reveal any needs for further work.[2] Moreover, the most significant problems addressed in these control orders are typically those of obvious and common contaminants (e.g. suspended solids and biochemical oxygen-demanding substances in water effluents and suspended particulates, sulphur dioxide and strongly malodourous substances such as hydrogen sulphide in air emissions).[3] Consequently, while technological and financial arguments for moderating or delaying abatement requirements may be raised in such cases, there is usually no question about the fact and extent of non-compliance or the desirability of abatement. The central problems are those of determining more precisely what and how serious the violations are, and ensuring that adequate abatement efforts are undertaken.

More complicated problems are presented where the fact of violation and the consequent need for abatement is debatable because of the subtlety of contaminant(s) effects, the combination and possible interactions of contaminants from several sources, the difficulty of conclusive

testing (e.g. concerning odours), or the absence or inapplicability of enforceable standards. In the Toronto-area lead smelter cases, for example, disagreements between the company and the Ministry concerning the severity of environmental impairment traceable to company lead emissions led to a lengthy, sometimes bitter, and no doubt costly confrontation, despite the existence of an enforceable point of impingement lead standard.[4] Considerably greater complexity is involved in the cases of a number of known and alleged polluting industries in the Junction Triangle area of Toronto from which a multiplicity of possibly harmful substances, many of which are not described in enforceable standards, are discharged from many separate but nearby sources resulting in perceived but ill-defined and difficult-to-trace health effects in the local residential neighbourhood.[5]

In cases such as those in the Junction Triangle, at least some of the possible problems may not be amenable to confident identification and evaluation due to emission and impingement monitoring difficulties, and due to the inevitable uncertainty of the effects data.

In the lead smelter, Junction Triangle and other similar cases, the MOE has been pressured strongly by local residents, municipal bodies and the media to act decisively, not merely to identify the specific problems but also to ensure rapid abatement or other action to remedy the perceived problems.[6] Such pressures, which are likely to become more common given rising public and scientific concerns about chronic low level exposures to many contaminants and combinations of contaminants (especially potential carcinogens) and the still increasingly prevalent use of potentially hazardous chemicals, present a serious dilemma for the

Ministry.[7] On one hand, financial constraints limit the resources and staff available for monitoring and testing and some of the possible problems are not amenable to confident evaluation due to the weaknesses in techniques for emission and impingement analyses and effects identification. On the other hand, the legislative basis for requiring abatement action seems to demand substantial scientific certainty about the contaminant concentrations and effects traceable to identified sources.

Another concern, of uncertain magnitude, is that of identifying new or at least previously unrecognized problem discharges, especially where the contaminants involved are not accompanied by more noticeable problems which would spur inquiry. Where unacceptable odours or other immediately obvious damages or nuisances are associated with more subtle hazards, citizen complaints and public indignation can be expected to alert Ministry officials to the need for investigation and abatement.[8] But where the effects are more insidious, the Ministry must generally rely on its own investigations of suspected problem areas.

The MOE does carry out such investigations. For example, it recently produced a three-volume report on contaminants, particularly organic chemicals, in the St. Clair River and in effluents from eleven major industrial sources discharging into the river.[9] Unfortunately, these investigative studies are generally limited by resource constraints to relatively high profile concerns (among which the acidic precipitation problem is currently predominant), to areas where the quantity and/or multiplicity of discharges are virtually certain to pose identifiable and possible significant risks, and to cases where problems have already been quite clearly identified.

Relatively little attention is paid to discharges from smaller sources - even if highly toxic substances are being manufactured, used or otherwise handled - unless there are complaints and/or immediately apparent effects. The Ministry does not have a register listing companies handling and, therefore, possibly discharging toxic substances. Some steps are being taken in the direction of correcting this situation. MOE's Hazardous Contaminants Office is currently developing a detailed listing of commercially used contaminants and their known toxicological properties according to priority of concern, and is beginning discussions with industry association representatives concerning how information about the extent and location of use may be gathered without threatening confidentiality of proprietary information.[10] But the Ministry is some distance from having a register that indicates possible sources of hazardous contaminant discharges. And district industrial abatement staff typically spend all or nearly all of their time responding to citizen complaints about noise, visible discharges and odours, or dealing with companies whose already identified problems have required initiation of some kind of abatement program. Little investigatory work is done to identify more subtle problems and sources.[11]

A final factor of some importance is that decisions about investigative priorities are not based solely on environmental protection grounds, nor even on the environmental-economic grounds of seeking to protect against the most costly known and possible risks. Some decisions to act have clearly been influenced by the strength of pressures from citizens, municipal authorities and the media.[12] Conversely, in at least one reported case, fears of research findings that might increase public

concerns and pressures reportedly led to stoppage of investigatory work.[13]

3.1 Access to Investigatory Research Findings

It is explicit MOE policy that

> Where the Ministry has decided not to prosecute a polluter, the Ministry will make information regarding the pollution available to other parties upon request, subject to constraints imposed by legislation.[14]

In addition, information gathered by MOE researchers in investigatory monitoring of discharges and ambient air and water quality is available for public examination. However, the data collected are not always presented and interpreted in a manner accessible to the non-expert, and (except for the policy stated above), the Ministry has no regular policy or method of publishing its findings or otherwise providing them to potentially affected and/or concerned individuals or groups.

Arrangements for community consultations concerning monitoring data (and abatement matters) have been made in some instances. In the Canada Metal case, for example, MOE representatives provided monitoring information to open meetings of a neighbourhood liaison committee and posted testing results in the window of the Ministry's mobile monitor when it was used in the area.[15] Ministry officials have stated that further efforts to make research results accessible and to discuss findings with community groups and other interests (as well as industrial sources) would present "no major problem" and might assist MOE efforts.[16] Still, the Ministry has no policy of encouraging the establishment of liaison committees and while MOE officials state that they would participate in such committees whenever such would be "appropriate and useful," decisions to do so are made on an ad hoc basis in response to someone else's request.[17]

In the absence of effective freedom of information legislation, public access to government data, including environmental research findings, is not guaranteed, and there are exceptions to the Ministry's general policy of openness.[18] When, for example, lawyers from the Canadian Environmental Law Association were preparing for a private citizen's prosecution against Cyanamid of Canada Limited, they were refused access to MOE files containing effluent testing data, on the grounds that the files also contained "information required to be kept confidential under the (Environmental Protection) Act, and it is estimated that at least two full days would be needed to review the files and sort out the 'confidential' and 'non-confidential' items."[19]

The confidentiality considerations noted in the above quotation refer to EPA s. 130(1) which, presumably in order to protect valuable proprietary information (about industrial processes, products, and production capabilities, for example) requires that information gathered in EPA-related research about matters other than contaminant discharges must be kept secret unless required in the administration or enforcement of the Act and regulations or unless permission to release is granted by the person (company) in question. These restrictions pose no barrier to access by the company whose discharges (and processes, etc.) have been subject to study.[20]

Companies have no general guaranteed access to Ministry research data. However, s. 126 of the EPA, which provides the statutory basis for studies of (possible) contaminant sources, states that the provincial officer who carries out a study "shall report his findings and recommendations" (s. 126(1)) and "shall file his report of his findings and

recommendations with the Ministry and shall serve upon the person responsible for the source of contaminant a copy thereof" (s. 126(2)).

A s. 126 report containing a finding of non-compliance must be filed before a control order may be issued.[21] These reports, which generally contain discussion of processes and abatement possibilities in addition to findings about contaminant discharges, are seldom made available to the public.[22]

Notes

1. The lengthy history of successive orders in the pulp and paper industry is summarized in Peter A. Victor, Terrence N. Burrell, Jim Evans and Charles Figuerdo , Environmental Protection Regulation: Water Pollution, and the Pulp and Paper Industry, Economic Council of Canada Technical Report No. 14 (Ottawa, 1981), pp. 123-124, 143-144.

2. Monitoring and research requirements are especially important in orders which set out what is expected to be at best the penultimate steps toward adequate abatement. See, for example, reference to the Dofasco and Algoma Sault Ste. Marie control orders in Appendix 1.

3. See Appendix 1.

4. This comment is substantiated by an exhaustive reading of the MOE files on abatement requirements and related concerns involving the Canada Metal Company Limited smelter in Toronto. An account of the Toronto lead smelter cases is provided by C. C. Lax, "The Toronto lead-smelter controversy," in William Leiss, editor, Ecology versus Politics in Canada (Toronto, 1979), pp. 57-71.

5. See, for example, MOE, "Environment Minister Norton Orders Special Abatement Program to Stop Pollution by Junction Triangle Companies," news release, July 16, 1982; also City of Toronto, Department of Public Health, files on the Junction Triangle.

6. See footnotes 4 and 5, above.

7. Dennis Caplice, interview, 31 March 1981. Caplice was at the time of the interview director of MOE's Central Region.

8. Complaints are by far the most important spur of facility or area specific MOE investigations. David Ireland, Industrial Abatement, MOE Canbridge District, interview, September 3, 1981.

9. The study, based mainly on sampling done in 1977-78 found effluents were deleterious to fish life or edibility and downstream receiving waters contained low concentrations of chemicals which are known to be toxic to animals in greater concentrations in short term tests, but which pose unknown risks given long term low level exposures. See Michael Keating, "84 Chemicals Discovered in St. Clair River near Sarnia," Toronto Globe and Mail, April 2, 1981; and "4 firms along St. Clair River linked to mutative damage," Toronto Globe and Mail, August 21, 1981.

10. Chester Duncan, Hazardous Contaminants Office, MOE, interview, August 31, 1981.

11. Ireland, op. cit.

12. Officials involved in the Toronto lead smelters cases readily admit that such pressures caused them to monitor emissions more closely and to push harder for abatement.

13. See Gwen Smith, "Germ study halted by political fears, scientists say," Toronto Globe and Mail, December 1, 1980. This case involves a study team examining bacteria in recreational area waters that was apparently ordered not to work near the Hidden Valley resort near Huntsville "because the Ministry's central branch did not want the public, already aroused about problems with Hidden Valley's sewage lagoon, further upset by findings of a health hazard." W. Bidell et al., commenting on a draft of this study state that "Ministry staff doubt the validity of the article by Gwen Smith."

14. MOE, Policy Manual, p. 05-02-11.

15. Tom Armstrong, Central Region Industrial Abatement Manager, MOE, private communication, April 7, 1981.

16. Ibid.

17. R. J. Frewin, Information Services Branch, MOE, private communication, May 4, 1981.

18. See David Estrin and John Swaigen et al., Environment on Trial, revised edition (Toronto: CELRF, 1978), p. 100; see also J. F. Castrilli, Canadian Environmental Law Association, "Public Access to Government Environmental Field Documents: A Critique of Government Testimony Before the Standing Committee on Resources Development," submission to Ontario Standing Committee on Resources Development, May 16, 1979.

19. Correspondence regarding Regina ex rel. Michael Dickman v. Cyanamid Canada Inc. from Carol Olchowski, Legal Services Branch, MOE, to Robert Timberg, Canadian Environmental Law Association, June 10, 1981.

20. An exception could occur where (if) files contained information about two or more companies.

21. See EPA, s. 6. In the case of requirements and directions under the OWRA, no such report is needed. However, the Director must "serve notice of his intention together with written reasons therefor" (OWRA, s. 61(1)) upon the proposed recipient of a requirement and direction.

22. See chap. 4, footnote 1, below.

4. Control Orders and Other Options

4.1 Options

Several formal and informal options are available to the Ministry under the EPA and OWRA once unacceptable contaminant discharges are identified.

4.1.1 Informal Options

In part because all of the more formal legal means of encouraging and forcing abatement efforts demand considerable expenditure of limited Ministry resources, the vast majority of pollutant discharge problems, especially those which are relatively minor and easily correctible, are handled at least initially on an informal basis. The usual approach to the more common, small-scale problems which are commonly identified in response to citizen complaints involves notification of and discussions with those responsible; agreement on a voluntarily adopted abatement action program, which must in most cases be initiated immediately; and follow-up monitoring to identify any failure to undertake the actions as promised.

Where problems are somewhat more substantial and/or not clearly defined, a s. 126 study may be carried out with a survey and analysis of discharges undertaken by the Ministry and discussions with the discharger concerning adequate and technically and economically feasible abatement options. If there is considerable public concern, the findings may be released (in edited form) for public information and reaction.[1]

However, decisions to undertake a s. 126 report and to release findings of violations for public consideration do not preclude continuance of informal approaches to requiring abatement action. The

commitments involved may be enshrined only in an exchange of correspondence.

MOE considers these relatively informal measures to be inappropriate where a history of violations or other indications of non-cooperation or inadequate environmental concern suggest a need for firm commitments with enforceable requirements, including compliance deadlines and/or clear demonstration of the legal as well as environmental unacceptability of non-compliance. In the latter circumstances, where larger, more serious and more intractible problems are involved and where considerable public pressure for a demonstration of firmness by the Ministry has been or may be expressed, MOE officials may turn to one or more of the more formal options, the most significant of which are program approvals, control orders (or requirements and directions), stop orders, special regulations, and prosecutions.

4.1.2 Program Approvals

Program approval involves an abatement program voluntarily proposed by the discharger and formally accepted by the Ministry.[2] During the term of the approval, the discharger is immune from prosecution under the Environmental Protection Act so long as the terms of the approval are met.[3] However, a control order or stop order may be issued to supercede a program approval if a "Director" considers this necessary or advisable.[4]

Program approvals, which were intended to allow polluters time to achieve compliance after the legislation first went into effect,[5] have until recently been commonly used.[6] The device is also presented in the Ministry's official pollution abatement policy statement as the first

approach to be considered where formal requirements are judged to be necessary. However, the policy statement makes it clear that program approvals are appropriate only in certain limited circumstances and senior Ministry officials confirm that granting of these approvals is discouraged because other devices, especially control orders, provide a stronger basis for enforcement action if terms are not met.[7]

The Ministry policy statement, "Pollution Abatement Program: Development, Compliance and Enforcement"[8] deals virtually exclusively with the more formal responses where there is "a severe, long-standing problem having a large degree of environmental impact."[9] In such cases, the policy requires first that the company responsible "prepare a report outlining the technical options available for correcting the problem" and addressing such factors as the "capital investments required, operating costs, economic feasibility, socio-economic implications and environmental benefits."[10] Although s. 127(1) of the EPA seems to provide a basis for legally requiring that the company undertake such a study, the absence of references to economic and technical factors in the Act raises doubts about the enforceability of this requirement. Moreover, a report prepared under duress and unaccompanied by evidence of cooperative intent may be of questionable value. Consequently the Ministry accepts that companies may refuse to prepare the report as requested[11] (in which case the Ministry will undertake the studies). However, in keeping with its general preference for having the polluter bear the costs of environmental protection, and its recognition that the companies involved often have, or have access to, greater technological expertise and are better placed to assess many of the financial and economic factors, the Ministry prefers

to have the companies do the work. A program approval will be considered only where the company involved has prepared the requested technical-economic report.[12]

The completed analysis of the pollution problem and the technical-economic report become the basis for specific abatement discussions between the Ministry and the polluter (only). These discussions cover not only the adequacy and acceptability of the abatement options under consideration but also the availability of financial assistance programs.[13] According to the abatement program policy statement, a polluting company that has prepared a satisfactory technical-economic report and is willing to take sufficient abatement actions, with or without financial aid, may apply for a program approval. But such approval can be granted only if

> (a) The polluter has demonstrated good faith through responsible timely pollution abatement in the past, or
>
> (b) The Ministry staff are confident of the polluter's intent and ability to implement a Program Approval.[14]

The policy also requires that senior officers of the polluting company sign a program approval document that includes clauses indicating corporate conviction that the proposed projects are feasible, commitment that sufficient funds have been earmarked and that deadline dates for various stages of the work will be met (failing which the approval is void), recognition that the approval and consequently the immunity from prosecution applies only to the processes and contaminants specifically mentioned, and willingness to participate in a public information and comment process concerning the approval if the Ministry decides this is necessary.[15] Finally, the policy limits the period for discussions leading to an abatement program approval. If an approvable program

cannot be assured within six months, other devices are to be used.[16]

These conditions would not seem to be so demanding that program approvals must necessarily be rare. However, senior Ministry officials state that because commitments made in program approvals are more difficult to enforce than those in control orders the latter are now heavily favoured whenever there is any uncertainty about the likelihood of compliance. According to one Regional Director, the program approval device is presented as an alternative in the new MOE policy statement only becasue it appears in the legislation.[17]

4.1.3 Control Orders

4.1.3.1 The Device

The control order device as described in sections 113-116 of the EPA is a document issued by a Director requiring the recipient

> to do any one or more of the following, namely
> (a) to limit or control the rate of addition, emission or discharge of the contaminant into the natural environment in accordance with the directions set out in the order;
> (b) to stop the addition, emission or discharge of the contaminant into the natural environment
> (i) permanently,
> (ii) for a specified period, or
> (iii) in the circumstances set out in the order;
> (c) to 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) to 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) to 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.

In addition, control orders frequently include requirements to undertake and report on studies of discharge sources, contents, levels

and effects, and of abatement needs, alternatives and plans. While not included in the s. 113 listing of legitimate control order contents, such requirements are legitimated by s. 127(1) which holds that,

> For the purposes of the administration of this Act and the regulations, a provincial officer may . . . make or require to be made such surveys, examinations, investigations, tests and inquiries . . . as he considers necessary. . . .

Such requirements can, however, and sometimes are set out in a separate document called a Provincial Officer Requirement. This has been done, for example, in the case of certain research requirements imposed on Inco Limited concerning technological options for abatement of sulphur dioxide emissions from its Copper Cliff facilities.[18] A Provincial Officer Requirement is apparently not subject to appeal.

Control orders can only be issued after an EPA s. 126 report, containing a finding of contaminant discharges in violation of the EPA or its regulations, has been filed with the Ministry and the company.[19] A copy of the report and a notice of intent to issue a control order must be delivered to the polluting company at least 15 days before a control order is issued.[20] The Act states that at any time before a control order is issued the intended recipients may make submissions to the Director.[21] In practice, "submissions" are likely to be received well before a notice of intent is issued. Preparation of the s. 126 report may involve fairly frequent contact and even close cooperation between Ministry and company staff, especially under the new Ministry policy which requires a report on the technical and economic aspects of relevant abatement options to be prepared by the company or failing that, by the Ministry.[22] Moreover, notices of intent are often the product of detailed and lengthy discussions and negotiations between the two parties.

Pre-notice negotiation and general agreement has been encouraged by the recept adoption of a policy requiring arrangements for public discussion of most proposed new or amended control orders.[23] Because the Ministry wishes to avoid stirring public skepticism about its commitment to ensuring maximum environmental protection, it prefers to present control order proposals which are unlikely to be weakened in response to subsequent objections from the companies involved.[24]

Emphasis on pre-issuing negotiation and agreement is also encouraged by the nature of the appeal process.[25] Control order recipients, who are dissatisfied with the terms of an order may within 15 days of receipt require a hearing by the Environmental Appeal Board.[26] Within 30 days of the EAB's decision the company may appeal on a question of law to the county court,[27] and within 30 days of the EAB's or the court's decision, the company may appeal in writing on non-legal questions to the Minister.[28] The prospect of an appeal is unattractive to the Ministry not only because it entails additional demands on limited staff time and resources but also because the appeals process can be expected to take several months at the least and by s. 122(2) of the EPA, the order does not come into force until after disposition of the last appeal.

While they are in effect, control orders, like program approvals, confer immunity from prosecution under the EPA so long as interim deadlines and other terms and conditions of the order are met.[29] Control order requirements are sometimes vague[30] and deadline or expiry dates are not always set out.[31] In such cases prosecution for non-compliance with the order is difficult if not impossible and immunity from prosecution for polluting is open-ended.

The penalty for conviction for non-compliance with the terms of a control order is a fine of not more than $5,000 on the first conviction and of not more than $10,000 for each subsequent conviction, with each day of continuing offence considered a separate violation.[32]

Requirements and directions issued under s. 51(1) of the OWRA differ only in some minor ways from control orders under the EPA. While the OWRA (s. 61(1)), like the EPA (s. 116(1)) provides that "written reasons" must accompany notices of intent, there is no requirement for provision of a report equivalent to that described in s. 126 of the EPA.[33] The maximum penalty for non-compliance with a requirement and direction ($200 for each day the contravention continues[34]) is much lower than that for non-compliance with control orders. And, compliance with a requirement and direction seems less certain to ensure immunity from prosecution for polluting than does compliance with a control order.[35,36]

4.1.3.2 The Process

As noted above the Ministry's new pollution abatement policy document describes a process that begins with the undertaking of two related studies.[37] The first study, generally carried out by Ministry staff and presented as an EPA s. 126 report, identifies and defines the pollution problem involved. The second, preferably but not necessarily carried out by the polluter, involves analysis of the technical and economic aspects of available abatement options and identification of the most desirable abatement program. According to the policy, the Ministry and company positions concerning the abatement options are to be made public and subject to a public review process before a notice of intent is issued. The MOE Policy Manual describes the approved approach to control orders

(excluding those relating to minor pollution problems) once the abatement options report has been completed and MOE-company discussions about an abatement program and the availability of financial assistance have been held. The process is as follows:

> (i) Where the company or owner has prepared the (abatement options) report . . . the Ministry will prepare a written review of it, and both reports will be made public, subject to the confidentiality of proprietary information.[38]
>
> (ii) Where the company or person refuses to prepare the (abatement options) report . . . the Ministry will prepare the report, and both the report and any response by the company will be made public.[39]
>
> (iii) After making the abatement options report, and Ministry review or company comments public . . ., the Director will hold a public information session for significant pollution problems that generate high public interest.[40]
>
> (iv) After making the report public . . ., or after holding a public information session, the Director will receive written comments from the public for a period of thirty days.[41]
>
> (v) After receiving public comment, the Director will . . .
>
> (a) sign the Program Approval or issue a Notice of Intent, or
>
> (b) If a significant alternative proposal is received, then the Director will conduct a second public information session.
>
> (c) If, in the opinion of the Director, a significant change in the abatement program becomes necessary as a result of public response at point (v)(b) above, then he shall proceed to renegotiate the program with the polluter.[42]

Perhaps as an oversight, the renegotiation mentioned in the last clause above appears as the first indication in the policy outline that the abatement options report and the Ministry review document are in fact usually espected to lead to a negotiated agreement between the Ministry and the polluter.[43] In practice, since the new policy came into effect, draft control orders, rather than options reports and reviews, are presented for discussion at public information meetings, at which members of the public are allowed to question Ministry and company representatives and to present comments and suggestions for revision.[44] These draft

orders usually reflect a negotiated agreement between the Ministry and the polluting company and are defended by the two parties at the public information meetings.[45,46]

Where the draft orders presented for public consideration are products of successful negotiation, the polluting company and the Ministry may appear to be somewhat uncomfortable allies. Company representatives and Ministry officials express their support for the proposed requirements in separate statements, which may differ noticeably in points of emphasis and apparent enthusiasm. For the public, however, these differences tend to be overshadowed by recognition that the negotiations have been completed and that neither party foresees (or wishes to be forced by members of the public to make) major changes in the proposed order. Ministry representatives may express firm commitment to public involvement and public comments on problems that have been overlooked in the draft order may be actively solicited. Ministry officials defending these public consultation efforts can in fact point to a number of cases where public comments have led to changes in draft orders.[47] The general impression remains, nevertheless, that the public information meetings are convened largely as public relations gestures. Since the negotiations have been completed, both the Ministry and the company statements (and other information released to the public) are presented in support of the conclusions that all relevant matters have been considered thoroughly and that the proposed set of abatement requirements represents the most demanding yet feasible option available. The statements and documents also carry an implicit message that the scientific, technological and financial issues involved are complex beyond the understanding of the non-expert public,[48]

and major public contributions to the decision-making process cannot be expected.[49]

More significant public contributions to control order decision-making would be encouraged if the process in practice followed more closely the path outlined in the Ministry policy quoted above. The policy calls for public release and discussion of an abatement options report and a review of this report. If this were done (as the policy apparently intends) before the Ministry and the polluting company agree upon any one option, the public would have a much stronger basis for belief that some major issues were still undecided.

One of the difficulties that has proved to be a barrier to direct implementation of the new policy is that in many cases the environmental abuses being addressed are long standing ones that have been the subject of previous control orders and/or other abatement requiring devices. For example, the proposed control order relating to the Algoma Steel Corporation's steelworks in Sault Ste. Marie, presented to the public at meetings on April 29 and 30, 1981, was preceded by a Minister's order issued on July 7, 1970, a program approval issued on April 3, 1973, and amended on June 27, 1973 and on December 17, 1973, a requirement and direction issued on March 12, 1974 and a control order issued on October 16, 1975 and amended on May 30, 1978.[50]

The proposed new Algoma control order was intended to "include requirements to study and resolve unabated pollution sources which were not addressed in previous Orders and Program Approvals, as well as the carry-over of a number of items from the Amended Order which related to the maintenance of existing facilities and the installation and operation

of facilities which were not completed during the life of the Amended Order."[51] In such circumstances the new policy outline is not, or has not been treated as, entirely applicable. Insofar as new abatement initiatives are involved, the studies and reports, which the policy suggests should be completed prior to negotiations and public discussions, are often included as tasks required to be completed by certain dates during the term of the proposed order. Insofar as "carry-over" work is involved the question is seldom what to do but how quickly can it be done (and what must be done to ensure that the new deadline will be met).

In another apparent departure from the stated policy, MOE officials report that studies of economic factors related to abatement needs are undertaken only in cases where the company claims financial incapacity in the face of abatement requirements.[52]

Even in the less common case of a control order being developed for application to a newly recognized problem, the Ministry could, and might often be tempted to issue a control order requiring studies of both the discharges and the abatement options (in addition to requiring certain immediate abatement efforts). This approach places the polluter under an enforceable obligation to carry out the required studies within a designated period, thereby reducing demands on Ministry research resources and putting the study cost burden on the polluter.[53] It also allows for a control order including immediate or interim abatement measures as well as studies to be issued sooner than if the issuing has to wait for completion of the report. At the same time it would protect the polluter from prosecution during the study period.[54]

As a result, the actual process leading to a control may differ

in some important ways from the description contained in the MOE Policy Manual. Instead of a company report on the economic and technical aspects of abatement options and a review of this report by the Ministry (or a Ministry-prepared report with company comments) what is likely to be presented to the public is a negotiated position, perhaps backed by separate rationale documents submitted by the Ministry and the company, but set out in a single draft control order that might well include investigation and reporting requirements on at least some of the discharges and abatement options involved.

A final problem with the current process is that the assessment of financial and technical factors is usually done by the polluting company.[55] MOE officials insist that while the company may do the initial assessment, "the Ministry performs its own independently within the bounds of the resources available."[56] Especially in times of fiscal constraint, however, the available resources of funds and expertise are limited. Ministry officials must usually rely heavily on the technical and financial information supplied by the polluter. The company invariably knows more about its own operations and may have greater access to expertise on other relevant matters (industry experience with new abatement technologies, for example) than the Ministry. But the company is also certain to have a more or less pressing vested interest in ensuring that unprofitable abatement expenditures are minimized and postponed as long as possible.

The new policy suggests some steps toward addressing this problem. Recognizing the need for considering the technical and economic aspects of abatement options, the policy not only requires critical review of company reports by the Ministry, but also calls for release of both the

company reports and the Ministry reviews for public comment. However, as noted above, actual practice has not followed the policy in this matter. The possible contribution of public commentators to redressing the imbalance in expertise is reduced when what is in fact presented for public comment is not an options report and a review but rather a draft control order incorporating the single preferred option already agreed upon by the Ministry and the polluting company.

4.1.3.3 Monitoring, Amendment and Enforcement

In keeping with the Ministry's general position that polluters ought to pay for as much as possible of the costs associated with the abatement program, the new policy provides that a company to which a control order is issued may be required to monitor and report findings on discharges and ambient air and water quality, and will be required to submit regular status reports on compliance with control order terms and deadlines. The Ministry will then merely audit the monitoring data and compliance reports and "carry out any additional tests that may be required."[57] The policy also holds that information submitted by the company will be made available to the public (except for information which the company claims and the Ministry agrees is proprietary), and "may be used for enforcement purposes."[58]

A company that fails to meet the terms and deadlines of a control order may be prosecuted. But prosecution in the event of non-compliance is not mandatory and while the new policy is intended to reflect a somewhat tougher stance than that which prevailed throughout the 1970's, it retains considerable flexibility. The new policy provides that prosecutions will be initiated where the polluter "has not essentially complied

with the intent of any item in the order."[59] However, a company which foresees that one or more it its control order deadlines will not be met may apply for amendments to the order[60] and there are a number of factors which encourage Ministry officials to grant amendments even where the company's rationale for non-compliance is not totally convincing.[61]

If only minor changes or brief deadline extensions are requested and the company can convince the Ministry that needs for more time are the result of matters over which the company had no control, the Director may simply grant the modification through an amending control order and notify the public through local newspapers and the Ontario Gazette.[62] If the request involves more significant changes and delays, and the Director believes that in the light of the circumstances of the case the request is worthy of consideration, a process similar to that used for initial orders is applied: options are considered, negotiations take place, and reports are prepared. If Ministry-company agreement is reached a draft amending control order is released, public information and comment sessions are held and a new notice of intent is issued.[63] If the Ministry is not convinced that the company has satisfactory reasons for requesting an amendment, or if negotiations toward agreement on an amending control order are not successful, the Director may refuse to grant an amendment and may recommend prosecution of the company for any failure to meet the terms and deadlines of the original order.

Decisions about whether or not to allow a control order amendment involving a significant time extension and/or other relaxation of initial control order requirements are governed by a number of factors. First, several kinds of unforeseen problems and barriers are treated as

legitimate grounds for an extension request. Among these are failure of suppliers to deliver needed equipment on time, labour disputes that interrupt installation work, major technical difficulties in adapting abatement technologies developed elsewhere in relation to somewhat different processes and conditions, disappointing results from attempts to develop and apply new abatement technologies,[64] and unexpected financial constraints. Presentation of one or more of these reasons is not always successful. For example, Ministry staff may judge late equipment deliveries to be at least in part due to late ordering by the company or that the technical difficulties encountered could have been surmounted if the company had devoted sufficient effort and resources to the task.

Control order extension requests by pulp and paper companies are subject to an industry-specific policy that precludes acceptance of amendment requests based solely on the presence of financial constraints.[65] This policy, developed in the context of the long-standing inadequacy of pulp and paper industry pollution abatement efforts,[66] and the recent provision of generous financial assistance programs for modernization and abatement purposes,[67] provides as follows:

> (a) The cyclical nature of profits in the industry will not be accepted as a reason for delay in program implementation. Ample opportunity exists to consider the potential effects of an abatement program on profits during (development of initial control orders).
> (b) Companies are urged to take advantage of the opportunity to review and discuss available financial assistance programs during (initial) abatement discussions . . .
> (c) Financial constraints alone will not be an acceptable reason for not meeting the terms of a Control Order.[68]

There are, however, certain other factors which discourage resistance to requests for extension of control order deadlines. Chief among these are the limitations of remaining measures for forcing abatement efforts, and

the possibility that extension refusals can be appealed.

Three major alternatives to granting an extension are available to the MOE when a polluter refuses or fails to comply with the terms of a control order: stop orders, Minister's work orders, and prosecutions.

The stop order device (discussed in more detail below) is applicable only where human life, health, or property is in immediate danger. Because it means shutting down a facility (or at least that part of a facility that is the source of offending discharges), a stop order issued against a place of employment entails significant and possibly extremely contentious negative effects that make use of the device more or less unattractive. Stop orders take effect immediately but are appealable and experience has shown that the Ministry must have firm evidence of immediate danger if the order is to be sustained.[69]

The Minister's work order device is described in s. 143 of the EPA:

> Where the Minister or the Director has authority to order or to require that any matter or thing be done, the Minister may order that, in default of it being done by the person ordered or required to do it, such matter or thing shall be done at the expense of such person and the Minister may recover the cost of doing it, with costs, by action in a court of competent jurisdiction as a debt due to the Crown by such person.

This option is not mentioned in the Ministry's policy document. However, it has been used. A Minister's order requiring work to be done at the owner's expense was issued on March 4, 1980 to Erickson Construction Company Ltd., the current owners of facilities and property once owned by Deloro Smelting and Refining and Deloro Stellite, from which arsenic-contaminated effluents and leach waters were entering the Moira River. The Minister's order followed non-compliance not only with a control order issued on February 21, 1978 but also with a stop order issued on April 2,

1979. The application of the Minister's work order in this case suggests that it is considered a device of last resort to be used in a situation of some urgency only after a control order and a stop order have proved to be ineffective.

Whether or not the Erickson case is typical of ones in which this device might be used is not clear. The prior use of a stop order was perhaps unusually non-controversial because a non-operational facility was involved and the stopping of discharges would have had a positive rather than negative effect on employment. Also the issuing of this kind of Minister's order may have been unattractive and therefore a last resort because the company had insisted that its non-compliance reflected financial inability, giving the Ministry reason to anticipate difficulties in recovery of costs. However, both non-operational facilities and cost recovery problems might be typical features of cases where use of the device would be seriously considered. Application to operational facilities would clearly raise a multitude of headaches (concerning for example ownership, relation of abatement to production facilities and operations, tax rules, maintenance and breakdown responsibility) that the Ministry would no doubt wish to avoid. Cost recovery would be a problem whether non-compliance was due to the financial weakness of the polluter or to the uncooperative position of a company that believed itself not to be under a defensible legal obligation to do the work. Consequently, the cost-recoverable Minister's work order might be inherently unattractive and seldom provide a tolerable means of responding to control order non-compliance.

Minister's work orders could be considered where the owners of an

operational facility that was an important source of employment as well as pollution proved themselves to be financially incapable of complying with abatement requirements. In such cases the orders would almost necessarily be steps to complete takeover of the facilities involved. This prospect has not attracted the Ministry or the provincial government to date. Where the possibility arose concerning Reed Paper Ltd. and the pulp and paper mill in Dryden, the government preferred to encourage sale of the mill to a new owner with sufficient financial strength to carry out the needed abatement work without further delay.[70]

The third and most important means of responding to control order non-compliance is prosecution. According to the MOE Policy Manual this is the preferred option. It is an offence to fail to comply with a control order and the offender "is liable on first conviction to a fine of not more than $5,000 and on each subsequent conviction to a fine of not more than $10,000 for every day or part thereof upon which such offence occurs or continues."[71] For companies subject to requirements and directions, the penalty for conviction of failure to comply is only $200 per day.[72]

The MOE Policy Manual states that charges will be laid where the polluter "has not essentially complied with the intent of any item in the Order."[73] But as will be discussed below, the prosecution option has serious weaknesses. Its effectiveness as a sanction against non-compliance (and therefore as an encouragement for compliance) is limited because convictions are not assured (although prosecution for failure to meet control order terms is easier than prosecution for offences against the general s. 13 prohibition), because fines upon conviction seldom match

economic incentives for abatement delay, and because corporate sensitivity to public image damages from convictions may not be significant. Moreover, prosecutions can take years to complete and contribute nothing to the progress of abatement action. A final difficulty associated with the prosecution option is that it is commonly viewed as a hostile action likely to discourage further cooperation on the part of the polluter, and therefore considered desirable only where there is no significant evidence that any cooperative inclinations remain.[74]

The weakness of the prosecution response to control order non-compliance and the limited applicability of the stop order and Minister's work order alternatives are not the only barriers to firm insistence on initial control order deadlines. An additional, relatively new problem is that a denial of a request for an extension of control order deadlines (or any other request for amendment) apparently is appealable. This possibility was confirmed recently by the Anchor Cap and Closure Corporation of Canada Ltd. case. This company was issued a control order on October 31, 1977 concerning air emissions from its facilities in the Junction Triangle area of Toronto.[75] The order was amended once, on December 5, 1978 at the company's request but a further amendment formally requested on August 8, 1979 was turned down.[76] A chronology of the events prepared by the Ministry indicates that the second amendment request was preceded by little substantive abatement action.[77] According to the MOE chronology, Anchor Cap argued that an amendment was justified because of "substantial and relevant changes in the company's operations."[78] In the Ministry's reply, contained in a letter to the company dated September 27, 1979, "the company was informed that their proposal was unlikely to result in

effective and adequate abatement of odourous emissions and for this reason it would be inappropriate to further amend the Control Order."[79]

The company then (October 22, 1979) requested a hearing under the appeal provisions of EPA s. 122 and, despite argument from the Ministry that there was no right of appeal to a Ministry letter denying a request for a control order amendment, the Environmental Appeal Board decided to hear the company's argument concerning its right to appeal.[80] On February 27, 1980, the Board accepted the company's position and granted the request for a hearing on the Ministry's denial of the company's amendment request. The Ministry appealed the Board's decision to the courts.[81] On April 7, 1981, the Board's decision was upheld by the Divisional Court (a branch of the Supreme Court of Ontario) in a split decision and the Ministry prepared to initiate an appeal to a higher court.[82] Leave to appeal was denied. The Ministry laid four charges against Anchor Cap on February 21, 1981 for failing to comply with the terms of the existing control order. The charges, which were held in abeyance until the question of right to appeal an extension refusal was settled, have now been dropped.[83]

If the Anchor Cap initiative is successful in establishing a right to appeal denials of amendment requests, it will mean that compliance with initial control orders will be even more difficult to enforce. Any company facing deadlines will be free to request an extension and to appeal a refusal. If the right were commonly exercised, it would add considerably to the workload of the Board and lead to long delays. While the case is under appeal, no abatement requirements can be enforced. More importantly, presence of a right to appeal amendment refusals will force the

Ministry to weigh the risks of an extension refusal being overturned by the Board[84] and will generally constitute a further barrier to Ministry insistance on tight schedules for compliance. If this barrier is considered sufficiently onerous, the Ministry might be tempted either to propose legislative changes or to rely more frequently on non-appealable specific regulations (see below) rather than control orders.[85]

4.1.4 Stop Orders

A Director who has "reasonable and probable grounds" for believing that contaminant discharges present "an immediate danger to human life, the health or any persons, or to property" may issue a stop order in writing and with written reasons to the person (company) responsible requiring that the discharges involved be immediately halted.[86] Stop orders are appealable to the EAB and to the courts, but unlike control orders, they remain in effect while the appeals are being considered.[87] Because of the difficulty of establishing immediate danger to human life, etc. is present, because of the Ministry's negative experience on the first occasion that the device was used,[88] and because of a general desire to avoid the inevitably negative socio-economic effects of closures, stop orders are rarely used. The existence of such a device may, however, be used to encourage those responsible for apparently dangerous discharges to comply with control order requirements and otherwise cooperate with Ministry requests.

The Act does not require the Director to issue a stop order when an immediate danger is perceived and the Director may, for example, choose to apply a control order which allows continued operation and precludes prosecution so long as abatement work is carried out as required. This

seems to have happened in the case of Masterloy Products Ltd., which was issued a control order on May 18, 1976 containing the following introductory clause:

> And whereas arsenic and vanadium have been emitted from your plant into the natural environment such that it is necessary, in my opinion, for the protection of the natural environment and the prevention and control of an immediate danger to human life and health of persons, to issue this control order.

The presence of this clause, which was accompanied by several others stressing the seriousness of the hazards posed by the emitted contaminants, is unusual in control orders and may well have been intended not only to underline the importance of the work required but also to suggest non-compliance would lead to the issuing of a stop order.

Emergency orders issued under s. 62 of the OWRA are essentially the same device as stop orders under the EPA, except that they apply only in cases of water pollution.[89] Both stop orders under the EPA and emergency orders under the OWRA are issued by Directors. However, the MOE policy statement on pollution abatement requires the Director to "seek legal advice and obtain the consent of the assistant Deputy Minister."[90]

4.1.5 Special Regulations

Under s. 136(1)(b) of the EPA, the Lieutenant Governor in Council may make regulations,

> prohibiting or regulating and controlling the depositing, addition, emission or discharge of any contaminant or contaminants into the natural environment from any source of contaminant or any class thereof.

This provision allows for regulations applicable to single facilities or a specified group or class of facilities as well as for generally applicable regulations. Until recently this regulation-making power was used

only where the concentration of similar pollutant sources in one area made the general point of impingement standards inadequate. For example, a special regulation has been applied to Sarnia area refineries which are multiple adjacent sources of sulphur dioxide emissions.[91] Such regulations have usually, if not always, been the product of (or at least have followed) extensive discussions between the Ministry and the companies to be affected.

A somewhat different application of the regulation-making provision is evident in the "Copper Cliff Smelter Complex" regulation announced on September 2, 1980.[92] This regulation, which relates only to sulphur dioxide emissions from Inco Ltd.'s smelter complex at Sudbury, was drafted in the context of concerns about environmental effects (resulting from the long distance atmospheric transport of the contaminants and their contribution to acidification of precipitation and receiving waters) with which the existing point of impingement standards were not designated to deal. However, the main rationale offered for the regulation was concern that the company would appeal if a proposed amending control order including the same emission limits set by the regulation, were issued.

On May 1, 1980, Dr. Harry Parrot, then Minister of the Environment, reported to the Legislature that the existing control order issued to Inco Ltd. on July 27, 1978 would be replaced by an amending control order with additional requirements including lower main stack sulphur dioxide emission limits. The new emission limits would reflect current production rates and preclude production increases (unless accompanied by additional emission abatement success) and reduction of sulphur dioxide emissions from the current 2500 tons per day to 1950 tons per day by June 1, 1983

(presumably through implementation of a new pyrrhotite rejection process).[93]

At a public meeting held to allow comment on the proposed order in Sudbury on June 4, 1980, the President of Inco Metals, Walter Curlook, expressed "serious Inco concerns regarding the proposed control order" which rested on belief that the new emission limits were not based on any clearly established link between specific emission levels and resulting effects were therefore "purely arbitrary" and represented an unfair penalty against the company, and that the main technological advance that would permit the required emission reduction by June 1, 1983 was much less certain than the Ministry apparently assumed.[94] Mr. Curlook also stated that "Inco has not ruled out exercising its rightful option of appeal."[95]

After notice of intent was issued on July 18, 1980 Inco presented a 600-page submission to the Ministry concerning the proposed order. The August 1, 1980 submission, described as "huge and argumentative," challenged the Ministry's legal right under the EPA to require technical submissions. It reiterated the company's position that no direct cause-effect relationship between Inco emission and acid precipitation damages had been demonstrated, and argued that persisting problems with the new pyrrhotite separation process meant that the June 1, 1983 deadline for abatement to 1950 tons per day could not be met.[96] The submission further substantiated Ministry fears that the control order would be appealed and, according to Dr. Parrott, was the main factor leading to the Ministry's decision to seek Cabinet approval for special regulation.[97]

The Ministry's position on this was not changed when at a meeting on August 19, 1980 the Minister was informed by Inco Ltd. Chairman Charles

Baird that the pyrrhotite rejection process problems had been overcome and that the June 1, 1983 target could be met.[98] The special regulation received Cabinet approval in August and a new control order referring to the regulation was issued on August 28. The regulation was announced on September 2, 1980. According to Dr. Parrott, the purpose of the regulation was "to remove any question of our authority" to preclude an appeal that would have interrupted and delayed abatement action.[99] Inco Chairman Baird responded that the regulation was "unprecedented, discriminatory, extraordinary and extreme" and suggested that since the Minister had been informed that the company could meet the deadline the regulation was also unnecessary.[100]

In light of Inco claims that the company would have met the proposed requirements without a regulation, opposition party representatives asserted that the move was motivated more by a political desire to provide the illusion of environmental firmness than by legitimate fear of appeal and determination to force abatement efforts on a non-cooperative polluter.[101] But whatever the actual balance of motivations were, use of the special regulation device in this case clearly points to the possibility of its more frequent future use as a means of avoiding the appeal process and resulting delays.

This use of the special regulation option would seem not to be significantly limited by the regulation-making provisions of the EPA. Because of the time-consuming necessity of Cabinet involvement (and preparation of background information, including economic effects analyses, for Cabinet use), it is not likely to be favoured by the Ministry or by the Cabinet except in unusual cases. Issuing of a special regulation may

be considered where the prospect of a control order appeal is considered to present risk of unacceptable delay, where the environmental problem addressed is apparently serious but the available scientific data are not adequate to support defensible application of devices based on the general prohibitions and provisions of the Act,[102] where the extent of public concern in combination with other political considerations makes use of this relatively firm measure appealing to the Cabinet. However, the central importance of the special regulation option may be that the possibility of its use strengthens the hand of Ministry officials facing recalcitrant polluters. No explicit policy has been developed to indicate clearly the circumstances under which special regulations of the kind applied to Inco's Copper Cliff facilities will be used in the future.

4.1.6 Prosecutions

The prosecution option has been noted above as a possible response to non-compliance with the terms of a control order. Prosecution is also among the available initial responses to identification of pollution problems. Under the EPA, it is an offence to violate the general prohibition in s. 13(1), which provides:

> 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.

or the more specific prohibition referring to the regulations (s. 5(1)), which provides:

> No person shall deposit in, add to, emit or discharge into the natural environment any contaminant, and no person responsible for a source of contaminant shall permit the addition to, emissions or discharge into the natural environment of any contaminant from the source of contaminant in an amount, concentration or level in excess of that prescribed by the regulations.

In cases of pollutant discharges into water, prosecution is also possible under s. 16(1) of the OWRA, which provides:

> Every . . . 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 . . .[103]

And if the discharges are into waters inhabited by fish, prosecution may be initiated under the federal Fisheries Act, which the province is empowered to enforce. S. 33 (2) of the Fisheries Act provides that:

> no person shall deposit or permit the deposit of a deleterious substance of any type in waters frequented by fish or in any place under any conditions where such deleterious substance or any other deleterious substance which results from the deposit of such deleterious substance may enter any such water.[104]

The industry specific regulations which have been promulgated under the Fisheries Act and under the federal Clean Air Act may also be used as the basis for a provincial prosecution.

The potential penalties involved are much higher under the federal legislation. Under the EPA and the OWRA convictions may lead to a maximum fine of $5,000 for the first offence and $10,000 for each subsequent offence, with separate charges possible for each day on which an offence occurs or continues. The maximum fine for a conviction under the Fisheries Act is $100,000[105] and under the Clean Air Act, $200,000.[106]

The maximum fines have seldom, and only recently, been assessed in Ontario.[107] In 1979, the Standing Committee on Resources Development reported that in the preceding five years, the Ministry had won four convictions against the pulp and paper industry - an industry described by the then Minister as the one that had "done less than any other major industry in the province to control the pollution it inflicts on the environment":[108]

> Canadian International Paper was convicted in November 1974 and fined $2,000; Ontario-Minnesota Pulp and Paper was also convicted and fined $2,000 in 1974; American Can of Canada, which was charged under federal legislation (the Chlor-Alkali Mercury Regulations under the Fisheries Act), was convicted on a number of counts in April 1977 and fined $64,000; and Reed Paper, also convicted on a number of counts, was fined $5,000 in 1977.[109]

Prosecutions under the general provisions of the legislation are usually more difficult than prosecutions of offences against the more specific regulations,[110] but regulations are not applicable to all cases. As was discussed above, Ontario has not set regulations concerning pollutants discharged into water. Some regulations have been issued under the federal Fisheries Act, but these cover only a limited number of industries (and often just new, altered or expanded facilities of those industries) and contaminants. Moreover, they are intended only to provide minimum point of emission standards based on the best practicable technology approach and may therefore fall short of precluding environmental damages.[111] The federal Clean Air Act regulations suffer similar limitations.

Ontario's point of impingement standards for air quality cover many, but not all air contaminants.[112] These standards are generally intended to preclude known effects but are limited in their application by focus on single contaminants and sources and codified near distance points

of impingement.[113] They are more difficult to enforce than the federal emission point regulations and are generally inadequate in face of problems involving multiple contaminant loadings and sources, long distance atmospheric transport of discharged contaminants, and cumulative disposition.[114]

Where regulations do not apply, the Ministry must base any prosecutions on the general prohibitions. The likelihood of conviction in such cases may be particularly uncertain because of difficulties of establishing cause-effect relations, and because the legal meaning of the prohibitions - especially the phrases "likely to cause impairment" (EPA s. 13(1)), "may impair" (OWRA s. 16(1)), and "likely to be rendered deliterious" (Fisheries Act s. 33(11)) - remains open to debate. In the absence of regulations, prosecution in cases involving contaminants or combinations of contaminants with subtle, low dose, cumulative, additive or synergistic, delayed and/or ill-defined effects is seldom attempted and convictions may often not be possible, even though the weight of available data and scientific opinion may indicate that significant risks of environmental damage and negative health effects are present.

Because a defence of "due diligence" is available, it may not be enough for a prosecutor to surmount the difficulties of proving beyond a reasonable doubt that a discharge took place that at least "had the ability to" cause impairment "in the circumstances that existed."[115] The prosecutor must also be prepared to counter claims by the defendant (who needs to make the case only on a balance of probabilities) that every reasonable effort was made to ensure no offence would occur and to correct the problem once it did occur.[116] These complexities mean that the preparation

for the undertaking of legal proceedings inevitably makes substantial demands on limited resources. This factor alone is a powerful disincentive to heavy reliance on the prosecution option.

More frequent use of the prosecution option may also be discouraged by uncertainties about the direct abatement impact and general deterrent impact of legal actions. The Ministry has found that companies facing prosecution often move quickly to clean up before their court appearances.[117] But this does not necessarily happen and the likelihood of this response may be difficult to assess in individual instances. Moreover, while the majority of cases take less than six months, others take years to complete, especially if appeals are involved.[118] During this period the discharges in question may continue unchecked.[119]

Ministry officials have traditionally believed that, because prosecutions are adversarial proceedings, they tend to cement attitudes of opposition and hostility, which pose serious problems in a jurisdiction with an approach to industrial pollution that relies heavily on industry information and cooperation. An alternative view is that a demonstrated willingness to prosecute may earn the Ministry more respect and lead to greater compliance by polluting companies. In this matter too the responses of polluting companies may well vary.

The effectiveness of convictions as deterrents is likely to be most strongly affected by the size of the fines (and other costs associated with the proceedings)[120] involved relative to the costs of compliance or, at least, the financial benefits of abatement delay. Given the fines maxima set in the EPA and OWRA, the fact that maximum fines are rarely assessed, and the general practice of assessing lower fines to smaller operators,

it would seem unlikely that even multiple convictions could result in fines approaching the financial incentives not to comply. Use of the federal legislation can result in higher fines upon conviction, but as noted above, the applicability of the federal legislation is limited and unless multiple charges are involved and the fines approach maximum levels, the costs of abatement and the benefits of delay may still be greater. Indeed it may be unreasonable to expect such fines since the courts have not been directed by the legislation to set penalties with a view to over-matching the economic incentives for non-compliance.[121]

In some cases concerns that a conviction or repeated convictions will have a negative effect on the offending company's public image may provide a more powerful incentive to comply than the fines potentially involved. The Ministry's Director of Legal Services, for example, has stated, "I have the feeling that most industries prefer to avoid prosecutions for a number of reasons and a fine is just one of them."[122] However, this concern may often be minimal. Stuart, C. J. noted in his decisions concerning Regina v. United Keno Hill Mines Limited:

> Public censure directed at corporate criminality is diluted by the dispersal of responsibility throughout the hierarchy of the corporation and by the anonymity afforded by acting in the corporate name. Any corporation whose operations involve little or no direct contact through sales with the general public is probably only peripherally concerned about a public image.[123]

As a matter of policy, MOE has long considered prosecutions to be a measure of last resort, especially because legal proceedings shift expertise and resources from pressing investigatory work,[124] rarely lead to immediate environmental benefits or deterrent sentencing,[125] and tend to harden adversarial attitudes.[126] In recent years and at least partly in response to public pressures for more rigorous enforcement efforts, the

Ministry has adopted a somewhat harder line on prosecutions, particularly but not exclusively in the event of evident non-cooperation and non-compliance with abatement program commitments.

The MOE's Director of Legal Services has stated that prosecution is now increasingly considered as an option of first resort.[127] However, a decision about whether or not to prosecute after initial identification of an apparent violation is based not only on evaluation of the adequacy of relevant evidence and the likelihood of gaining a conviction, but also on consideration of additional factors "including the past history of the company, the seriousness of the offence, (and) whether a health problem was involved."[128] Decisions are also affected by knowledge that under both federal and provincial legislation other parties, for example private citizens, may launch prosecutions which, especially if successful, may be seen as indications that the Ministry (which chose not to prosecute) is not sufficiently resolute in its enforcement of the legislation, and in its stand against pollution.[129]

4.2 Choosing Among the Options

As is evident from the above discussion of the options, the Ministry's preferred first response to an identified pollution problem is usually encouragement of immediate voluntary abatement action. This informal approach entails relatively few demands on Ministry resources, involves a minimum of unpleasant relations with the offenders, and if successful may lead to adequate abatement without the delays associated with the more formal options. On the other hand, use of the informal approach relies heavily on cooperation which may be maintainable only through significant compromise on abatement requirements. It also has the disadvantage of

providing no stronger basis for enforcement actions if commitments are not met.

Where abatement efforts are needed in addition to those the offender is willing to adopt voluntarily, where there is a significant possibility of insufficient dedication to commitments, and where the depth or extent of public concern suggests a need for more formal and enforceable requirements, the currently favoured option is the control order. Program approvals are now officially discouraged because of their more limited enforceability; stop orders are rarely applicable, difficult to sustain because of problems proving "immediate danger," and unattractive because of entailed employment losses; prosecutions, which suffer from a number of limitations, are seldom considered an alternative to control orders, although they are the major available response to indefensible non-compliance with control orders; and special regulations of the Inco Copper Cliff type involve complicated decision-making and are likely to be considered too draconian for use except in exceptional circumstances. As a result the most common choice is between continuing with informal voluntary abatement relations and issuing a control order.

No set of criteria has been developed for judging whether or not the control order device should be applied in a particular case.[130] In some cases, especially where there is a history of broken commitments and non-cooperation or where major, complex and high profile problems are involved, control orders are clearly the most appropriate option. Similarly where relatively small problems and reliable cooperative offenders are involved, informal approaches may be obviously preferable. Uncertainty applies to the middle ground where control orders are viewed as

advantageous because of their enforceability but disadvantageous because of the additional bureaucratic and investigatory work required and the possibility of appeals which entail delay of abatement action. Consequently, the decision turns in part on an evaluation of the likelihood of cooperation and compliance or of an appeal.

Regional officials may deal at least occasionally with over 2,000 dischargers that are subject to monitoring and/or involved in some kind of abatement work.[131] Of these perhaps a dozen or less will be subject to control orders. Regional directors, who must sign these orders, are often involved significantly in control order decision-making because the orders may be controversial and because the preparation of the required s. 126 reports entails a sizeable commitment of resources. But the much more frequent decisions to use informal methods are generally made at lower bureaucratic levels.[132] Proposed control orders are reviewed by the Ministry's Legal Services Branch and may be examined by senior officials including the Deputy Minister and the Minister, even Cabinet, if the case is politically sensitive.[133,134] One of the factors discouraging extensive use of the formal control order requirement is that greatly increased use of the device would create a bureaucratic overburden or entail devolution of responsibility to an extent that would make effective central control and exercise of responsibility even more difficult than it is now.

4.3 Determining Control Order Contents

In the absence of legally enforceable criteria for effluent discharges and water quality, and in the face of air standards of limited scope and applicability, the process of determining the contents of a control order is typically an exercise in determining what the relatively vague and difficult-to-enforce general prohibitions against polluting will be taken to mean in specific circumstances. In effect, control order decision-making is a standard setting process as well as a means of determining the nature of the abatement program needed to ensure compliance with the law.

Ministry officials usually insist that their criteria (standards, objectives and guidelines) setting process is based on the no-significant-known-effects philosophy. This philosophy (and these criteria) also provides part of the background for the Ministry's efforts in control order decision-making. However, there are certain complications. One is that the Ministry is empowered to enforce federal legislation based on the best practicable technology approach and the Ministry has as a matter of policy committed itself to applying the most stringent of any competing requirements.[135] A more important complication is posed by the fact that the contents of control orders are the product of negotiations between a polluter and the Ministry.

In these negotiations representatives of the Ministry do not have overwhelming bargaining strengths. This is in part due to the limitations of the prosecution option which provides the basis for Ministry insistence on commitment to and compliance with requirements for costly abatement work. Ministry representatives are also generally aware that much of the

relevant technical expertise and knowledge about financial constraints and capabilities lies with the companies involved, and that while the law may provide the Ministry with the power to force companies to provide relevant documents, successful application of the adversarial approach necessarily would entail much greater financial and technological expertise and resources than are currently available in and to regional and district industrial abatement offices. The resulting tendency to value cooperative relations is further encouraged by recognition that the appeal rights of control order recipients provide a means of ensuring a considerable delay of abatement work and of perhaps having Ministry requirements overturned. Companies whose facilities provide a sizeable portion of the employment opportunities in their locale have additional bargaining advantages.

This is not to say that the polluters hold all the cards. So long as blatant non-cooperation is relatively rare, the cases can be handled more or less adequately without excessive strain on Ministry resources, and can stir public indignation that may make firm government action (or at least the appearance of it) politically necessary. Furthermore, the ultimate power of regulation and legislation rests with the government and although it may be argued that this power has in the past been exercised more often to protect than to overwhelm individual polluters,[136] it is not unthinkable that persistent and well-publicized non-cooperation could spur government action to strengthen Ministry negotiators' hands or to make negotiation unnecessary.

It remains, nevertheless, that cooperation is valued in the interests of easier access to technical and economic information, pleasant

relations and avoidance of delays through appeals and other adversarial actions. And to maintain such cooperation compromises may be necessary.

Compromise is especially important in the setting of compliance deadlines, but can also enter into decisions concerning determination of specific abatement requirements. Negotiable requirements include those relating to discharge rates and loadings (particularly for contaminants not described in standards), size of mixing zones for effluent discharges into waterbodies, and laboratory and pilot scale testing of technological options.

Negotiations can centre on questions about whether and to what extent significant or measurable environmental effects will be reduced by expenditures on abatement facilities and practices. Such concerns are most likely to be expressed in cases where the contaminants involved are not covered by standards established by regulation, or where the standards are not directly or easily applicable (for example, where several sources may contribute to point of impingement measures or where the identified problems are beyond codified points of impingement, are difficult to evaluate, or not easily traceable to single point sources).[137] Insofar as expression of such concerns raises doubts about whether strict requirements will withstand appeal, they will strengthen the negotiating position of the polluter.

Negotiations may also centre on questions about the technological and financial feasibility of proposed abatement requirements. As has been noted above, technological, financial and socio-economic considerations can be important at various stages of the control order process, even though the enabling legislation does not authorize taking such

factors into account and appears to be intended to preclude known environmental damages. Technical and economic matters enter to some degree in the development of general standards and objectives. But they are typically much more important in the de facto standard setting that takes place through control order decision-making.

Although the Ministry prefers to approach an industrial pollution problem by setting out the extent of abatement required and leaving to the company decisions about methods of achieving the abatement targets, the need, in the face of appeal rights, to set compliance targets that can be shown to be reasonable forces Ministry officials either to develop an understanding of technological options and financial possibilities or to accept blindly the company's position on these matters.

In many cases, recognition of financial constraints will lead only to changes in abatement priorities (allowing more costly work to be done last) and to granting of extended deadlines for general compliance or completion and specific items. For example, in the debate during 1979 about the proposed new control order to be issued to Reed Paper Ltd. concerning its pulp and paper mill in Dryden, the fundamental issue was whether, in light of the company's previous record of non-compliance and its current financial difficulties, to insist on a 1982 compliance deadline or to allow the company an additional three years.[138]

The Ministry has also sometimes allowed companies to continue discharging undesirable quantities and/or concentrations of contaminants because no available means of abating these discharges is considered to be economically feasible. In such cases, economic feasibility is not always determined solely in relation to the company's financial

capabilities. The draft control order presented for public discussion in April 1981[139] concerning the Algoma Steelworks in Sault Ste. Marie contains clauses requiring only minimal abatement efforts concerning certain major emission sources that have a relatively short future life expectancy. The company probably has the financial strength to do more extensive abatement work concerning these emission sources, but the Ministry agreed with the company position that major abatement expenditures concerning facilities that would be replaced in the relatively near future could not be justified.[140]

In such and similar cases the issue faced is not simply the polluter's potential ability to pay but the "practicability" of requirements. "Practicability" has apparently not been clearly defined and may be applied differently in various cases. The factors involved in assessing practicability can include the financial capabilities of the polluter, the capital and operating costs of the technology, the degree of confidence that the available abatement technology can be applied successfully in the specific case, and the significance of the anticipated environmental improvement.

Acceptance of practicability as a legitimate concern in control order decision-making adds considerable flexibility and room for negotiation in the process. The absence of "practicable" solutions can lead to issuance of control orders that are in fact permits (subject to various terms and conditions) to continue discharges that are expected to cause environmental damages and even to violate the standards set by regulation, although such orders usually also contain requirements for further studies intended to identify practicable abatement options.[141] This is most

frequently the case where relatively old and perhaps economically marginal pulp and paper mills, which are often also major local employers, discharge unacceptable effluents into rivers with seasonally or generally limited assimilation capacities.

The central problem that arises where the question of practicability is involved is probably not that in some exceptional cases there may be satisfactory reason for allowing a facility to continue operating when its discharges have environmentally negative effects if no practicable abatement solution is available, but rather that in most cases it is difficult to know to what extent company claims of impracticability are justified.

While the provisions of the EPA s. 127 appear to empower provincial officers to gather information relevant to the evaluation of practicability where this is an issue in control order negotiations,[142] it is generally beyond the resources of the Ministry to carry out detailed assessments of available and potential abatement technologies, their applicability to particular company processes, equipment and plant layout, implied capital and operating costs, and current and potential company financial capabilities. The Ministry may be able to carry out such assessment in some detail in a limited number of cases. Moreover, Ministry officials may have a fairly sophisticated understanding of some important factors as a result of long-term experience with the companies and technologies involved. Still, the Ministry has in the past often relied heavily on company information and arguments concerning technological and financial matters and has sometimes found or suspected that the accuracy and adequacy of this information was limited. For instance, a

Ministry official commented in a 1976 memorandum that, "The steel industry as a whole may be snowing various government agencies as to the reliability of retrofits by not making a serious effort to maintain them."[143]

It is possible that the new Ministry policy of requiring reports on technical and economic factors where there may be issues in significant pollution abatement cases will lead to closer Ministry scrutiny of company assertions about practicability. The reports are to be reviewed by the Ministry if prepared by the company, or in the event of company non-cooperation, prepared by the Ministry. They are also to be released for public scrutiny, subject to provisions for confidentiality of proprietary information. Where such reports are prepared, and where the current confidentiality restrictions do not prove to present a major barrier to public release of crucial contents (possibly a rare occurrence) the prospect of public scrutiny will provide an incentive for thoroughness in MOE reviews. However, as has been noted above, such reports are not always prepared. The new policy provides only for closer Ministry attention to review of company claims. It does not alter the basic situation that adequate examination and evaluation of the relevant questions are beyond the resources and expertise available to the Ministry if more than a few simultaneous cases demand detailed review.

Notes

1. EPA s. 126 reports are generally not released, at least in part because they frequently contain information about matters other than the discharges and their effects and by s. 130 such information must be kept confidential. In some cases provincial officials may choose to remove the confidential material and release the balance of the report. For example, an edited copy of the report completed in August 1981 by the MOE Cambridge District office concerning air emissions, including malodourous contaminants from the Breslube Enterprises oil re-refinery in Woolwich Township was released to the township council, which had earlier expressed concern about the emissions and had asked the Ministry to report on them. This was the first public release of a s. 126 report in the experience of the MOE District Officer involved (David Ireland, MOE Cambridge District office, interview, September 3, 1981). New Ministry policy suggests that public release of s. 126 report findings may be more common in the future. See MOE, Policy Manual, p. 05-02-07.

2. EPA, s. 9, 10.

3. EPA, s. 146(2).

4. EPA, s. 7, 113-119.

5. See Estrin and Swaigen, Environment on Trial, p. 34.

6. One MOE district officer has estimated that in one-quarter to one-third of cases where a pollution abatement program has been required the program approval device has been used. David Ireland, MOE Cambridge District Office, interview, September 3, 1981.

7. William Bidell, Assistant Deputy Minister, Regional Operations and Laboratories, MOE, and William Balfour, Regional Coordinator, interview, June 2, 1981; and Erv. McIntyre, Regional Director, Northeastern Region, MOE, interview, April 29, 1981.

8. The policy, effective February 9, 1981, is outlined in the MOE Policy Manual at pp. 05-02-01 - 05-02-12. It is accompanied by a statement entitled "Pollution Abatement Program for the Pulp and Paper Industry," which is described as an industry specific application of the general policy (see pp. 05-03-01 - 05-03-03). Additional policies on the consideration of technical and socio-economic matters and on public participation are currently in developmental stages. These, when approved, will at least in part also complement the existing policy on pollution abatement.

9. MOE, Policy Manual, p. 05-02-04. However, the only reference to non-formal approaches indicates that such are expected to be more

typical of Ministry abatement encouraging activities. S. 1.6.4 of the policy statement (p. 05-02-07) provides:

> The normal inspection and complaint investigation activities, followed by voluntary abatement actions, will continue and are not restricted by any of the foregoing points.

10. Ibid.

11. Ibid., p. 05-02-07.

12. Ibid., p. 05-02-05.

13. Ibid., p. 05-02-04.

14. Ibid., p. 05-02-05.

15. Ibid., pp. 05-02-05 - 05-02-06.

16. Ibid.. p. 05-02-06.

17. Erv. McIntyre, Northeastern Regional Director, MOE, private communication, April 29, 1981.

18. A Provincial Officer Requirement of this kind was issued to Inco Ltd. on July 31, 1978.

19. EPA, s. 6.

20. EPA, s. 116(1).

21. EPA, s. 116(2).

22. See above, pp.54-55 . Despite the policy, which suggests that such reports be prepared prior to the issuing of program approvals or control orders, detailed studies of contaminant discharges and control options, including related technical and economic factors, are usually among the requirements written into control orders and are carried out subsequent to their signing.

23. See MOE, Policy Manual, Pollution Abatement Program, s. 1.9, p. 05-02-07.

24. See MOE, Policy Manual, Pollution Abatement Program, s. 1.9, p. 05-02-07.

25. Estrin and Swaigen, op. cit., p. 35.

26. EPA, s. 122(1).

27. EPA, s. 123(2).

28. EPA, s. 123(3). Only the recipient of a control order may require an EAB hearing. Appeal from the EAB to the courts or to the Minister is open to anyone who is a party to the EAB hearing. By s. 124 of the EPA the appelant, the Director, "and any other person specified by the Board are parties to the hearing."

29. See EPA, s. 146(2). Control orders do not provide immunity from conviction concerning matters not dealt with in the control order. Nor do they protect against conviction under other legislation including, for example, the federal Fisheries Act. In August, 1981, Cyanamid Canada Inc. was convicted under s. (1) of the Fisheries Act for discharging effluent toxic to fish in the Welland River, despite being in compliance with the terms of a current control order. Control order compliance was, however a factor in sentencing. The company was fined $1 and given a month to pay. See R. v. Cyanamid Canada Inc. (1981), 11 C.E.L.R. 31.

30. For example, the first item of the amending control order issued on February 21, 1978 to the Dominion Foundries and Steel Company in Hamilton requires that

> By April 30, 1978, Dofasco shall implement all changes necessary to improve emissions from the Hot Metal Transfer Station.

31. For example, the control order issued on July 4, 1978 to the Algoma Steel Corp. Ltd. concerning its sintering plant in Wawa has no expiry date. Instead it requires a continuing program for emission curtailment when needed to prevent local sulphur dioxide fumigations under certain atmospheric conditions.

32. EPA, s. 146(1).

33. Reports on discharges and on abatement options may, however, be undertaken or required and the new MOE pollution abatement policy (pp. 05-02-04 - 05-02-07) suggests that in most serious pollution cases such studies would be done.

34. OWRA, s. 51(3).

35. OWRA, s. 16(5) provides that any discharge "from sewage works that have been constructed and are operated in accordance with the approval of . . . a Director . . . is not a contravention" of the general prohibition. But while the work demanded in a requirement and direction often involves the preparation of plans and facilities which the Director may grant some sort of approval,* and while the inadequate existing facilities may have been approved by a relevant agency in the past, it is these approvals, not the requirement and direction that suuply the promise of immunity.

OWRA, s. 30 provides that "sewage works that are being or have been constructed, maintained or operated with the approval of . . . a Director . . . and in accordance with the terms and conditions

imposed in any . . . direction . . . shall be deemed to be . . . by statutory authority." But while this section mentions directions it seems to suggest both an approval and compliance with a direction are necessary. Moreover, the statutory authority may not be sufficient to preclude prosecution under the EPA which appears to override the OWRA (see Estrin and Swaigen, op. cit., pp. 153-154).

*Sometimes this involves preparing an application for a certificate of approval. (See for example the direction issued to Genstar Chemical Ltd. on August 2, 1979 regarding a nitrogen fertilizer manufacturing complex, especially clause 3(b)(iii) which requires submission to the Director of "applications for approval of sewage works" that will allow achievement of effluent quality targets set out in the direction.) Other times what is required is a "proposal satisfactory to the Director." (See, for example, the requirement and direction issued on December 6, 1977 to Denison Mines Ltd. regarding its Elliot Lake mining operations, especially clauses 1(2) and 3(2).) In the latter case this Director's action may not constitute an "approval" in the sense of OWRA, s. 16(5).

The results of the Cyanamid case discussed above (fn. 29) also suggest that compliance with a requirement and direction will not preclude conviction under federal legislation.

Insofar as requirements and directions do confer immunity from prosecution while they remain in force, it is significant that in some cases the documents are issued with no firm expiry dates or clearly detailed compliance requirements. For example, the requirement and direction issued on December 6, 1977 to Rio Algom Ltd. concerning its Elliot Lake mining operations contains several clauses requiring the company to "proceed with" abatement efforts to be identified and approved at earlier stages in the work. No final compliance deadline is set.

36. An additional minor difference is that, unlike the EPA s. 113 which describes control orders, OWRA s. 51(1) includes reference to investigations and reports on matters related to "the collection, transport, treatment, or disposal of sewage" as valid requirements in a direction. The OWRA does not contain a section like s. 127 of the EPA which empowers a provincial officer to require such studies.

37. MOE, Policy Manual, p. 05-02-04.

38. Ibid., p. 05-02-07. It may be significant that the policy statement makes no mention of the s. 126 report (or its equivalent minus proprietary information) being publicly released.

39. Ibid. There is no mention of any sanction contemplated for refusal to prepare an abatement options report except that such refusal precludes use of the program approval device (application

of which Ministry officials discourage anyway). Neither is there any mention of confidentiality although a report prepared by the MOE would doubtless cover much the same ground as a report prepared by the company (which is to be released subject to confidentiality of proprietary information) and although EPA s. 7 would seem to protect proprietary information no matter which party prepares the report.

40. Ibid., pp. 05-02-07 - 05-02-08. The policy outline lists five exceptions to this requirement. Four of the exceptions cover situations in which control orders are not involved. The last exception is in cases of "orders for minor pollution problems."

41. Ibid., p. 05-02-08.

42. Ibid.

43. See below, section 4.3.

44. These meetings are usually held on the day following informal open house sessions at which Ministry and company representatives give out background information and answer questions.

45. The Ministry and the polluters do not always negotiate mutually agreeable positions prior to the calling of public information meetings. In the Inco case described below (s. 4.1.5), company representatives expressed substantial disagreement with the proposed order and referred pointedly to their right to appeal. In this case a special regulation was subsequently issued to remove the appeal right and impose the contents of the proposed order. The case is, however, exceptional.

46. De facto negotiation of abatement requirements in the absence of legislation authorizing this approach is not peculiar to Ontario. See Andrew R. Thompson, Environmental Regulation in Canada: An Assessment of the Regulatory Process (Vancouver: Westwater, 1980), especially pp. 33-36.

47. W. Bidell and other Ministry reviewers of a draft of this study state that "changes in draft Control Orders at Thunder Bay (Great Lakes), Espanola (Eddy Forest) and Fort Frances (Boise Cascade)" resulted from public comments at information meetings on the proposed orders.

48. The problem with this message is not that it is false. Certainly great complexities are involved. Indeed the complexity of pollutant pathways and effects is often beyond the understanding of foremost experts. The problem is that the message is not accompanied by recognition that on some matters of central importance to bargaining on abatement requirements (for example, what value to place on rapid reduction of certain kinds of risks and damages)

members of the affected public are as well qualified as any company or ministry official to make the necessary judgement.

49. These comments are based largely, but not exclusively, on the meetings held, and documents presented, at Sault Ste. Marie on April 29-30, 1981, concerning a proposed control order to be issued to the Algoma Steel Corporation Ltd.

50. See MOE, Northeastern Region, "A History of the Pollution Control Programme at the Algoma Steel Corporation Limited in Sault Ste. Marie, Ontario," pp. 1-12. The new policy has also been applied in the cases of several pulp and paper mills where the new or amending control orders followed a long succession of earlier efforts.

51. Ibid., p. 13.

52. Andre Castel, J. A. Donnan, et al., Program Planning and Evaluation Branch, MOE, private communication, April 21, 1981.

53. Alternatively, a Provincial Officer Requirement could be issued under s. 127 of the EPA. This device allows for studies and research work to be required of a polluter but does not supply immunity from prosecution.

54. As noted above, the protection would not be absolute. It would, however, be of some value to the polluter even though the penalties assessed after successful prosecutions in the past do not make the danger of prosecution a fearsome thing. It is conceivable that the Ministry could also view favourably the granting of immunity since the Ministry's requirements in the control order would remain enforceable and prosecutions by other parties might be politically embarrassing or contribute to adversarial relations which the Ministry has at least in the past tried to avoid wherever possible.

55. The fact that the polluting companies are as a matter of policy requested to prepare reports on "technical options, capital investments required, operating costs, economic feasibility, socio-economic implications and environmental benefits" (MOE, Policy Manual, p. 05-02-04) and may be required to do so by control orders, may raise questions when the enabling legislation does not mention these factors as valid concerns.

56. Bidell et al., op. cit.

57. MOE, Policy Manual, p. 05-02-10.

58. Ibid.

59. Ibid., p. 05-02-11.

60. Amendments, usually extending control deadlines but sometimes also reducing abatement requirements, have been common. See, for example, Peter A. Victor et al., Environmental Protection Regulation: Water Pollution and the Pulp and Paper Industry, Economic Council of Canada Technical Report No. 14 (Ottawa, 1981), chapter 6. The new policy statements indicate a shift to move rigorous insistence on initial order deadlines, especially when the pulp and paper industry is involved (see fn. 68, below). Whether significantly increased rigour results in practice remains to be seen.

61. See below, pp. 67 - 73

62. MOE, Policy Manual, p. 05-02-12.

63. Ibid., p. 05-02-11.

64. For example, according to a history of the Algoma case prepared by the MOE, the company responded to one of its major polluted effluent abatement problems as required by the amending control order of May 30, 1978, "by undertaking a number of trials which seemed promising on paper, but none proved worthwhile." The requirement was carried over into the new control order. See MOE, Northeastern Region, "A History . . .," p. 11.

65. MOE, Policy Manual, p. 05-03-02.

66. See Legislature of Ontario, Standing Committee on Resources Development, Final Report on Acidic Precipitation Abatement of Emissions from the International Nickel Company Operations at Sudbury, Pollution Control in the Pulp and Paper Industry, and Pollution Abatement at the Reed Paper Mill in Dryden, October 1979, especially pp. 55-57. Then Environment Minister Harry Parrott told the committee that the pulp and paper industry "has in general done less than any other major industry in the province to control the pollution it inflicts on the environment." See also Victor et al., op. cit., chapter 6.

67. Ontario Standing Committee on Resources Development, op. cit., pp. 58-61.

68. MOE, Policy Manual, p. 05-03-02. This is a restatement of the policy position first submitted to the Ontario Standing Committee on Resources Development in 1979. See the Committee's report, op. cit., p. 61.

69. The major case experience was Re Canada Metal Co. Ltd. et al. and MacFarlane (1973) 1 O.R. (2a) 577; 41 D.L.R. (3d) 161; 2 C.E.L.N. 161 (Ont. H.C.). A stop order was issued by the Ministry on October 27, 1973 to halt lead emissions from the Canada Metal facilities in Toronto. The company immediately challenged the validity of the order and on October 30, the order was set aside by the Supreme

Court of Ontario, which determined that the order had not been issued "upon reasonable and probable grounds," that the emissions posed "an immediate danger to human life, the health of any persons, or to property" (EPA, s. 7). Some commentators have argued that the Ministry was unjustifiably ill-prepared for the company's challenge; see C. C. Lax, "The Toronto lead-smelter controversy," in William Leiss, ed., Ecology versus Politics in Canada (Toronto: University of Toronto Press, 1979), pp. 62-63.

70. The possibility of a public takeover was raised in discussions and testimony before the Ontario Standing Committee on Resources Development in 1979. Reed had been given notice of a new control order which would replace an earlier requirement and direction (1969-1974) and control order (1974-1976) the terms of which had not been met. The company argued that it was financially incapable of meeting the terms of the new order which required compliance by the end of 1982. The proposed order was eventually issued (and appealed) despite Reed's arguments. Shortly thereafter, the Dryden mill was sold by Reed to Great Lakes Forest Products Ltd. See the Committee's report, op. cit., pp. 85-115.

71. EPA, s. 146(1).

72. OWRA, s. 51(3).

73. See MOE, Policy Manual, p. 05-02-11. Some flexibility is clearly allowed. Prosecution is unlikely where non-compliance is considered unavoidable, acceptably brief, or relatively minor.

74. See below, section 4.1.6.

75. See MOE, Central Region, MOE Chronology, Subject: Anchor Cap and Closure Corp. of Can. Ltd., 275 Wallace Avenue, Toronto, p. 4.

76. Ibid., pp. 4-5.

77. Ibid., pp. 4-6.

78. Ibid., p. 6.

79. Ibid.

80. Ibid.

81. Ibid.

82. See Re MacFarlane and Anchor Cap and Closure Corporation of Canada Limited (1981), 10 C.E.L.R. 72.

83. MOE Chronology, op. cit., p. 7.

84. The EAB has not been a rubber stamp for Ministry decisions. For example, the Board decided on August 13, 1981 to grant an approval allowing Tend-R-Fresh Ltd. to expand its poultry rendering operations in the village of Petersburg, overruling a December 1980 Ministry decision to reject the company's application. The EAB decision was in turn reversed on appeal to the Minister. See "Norton rejects Tend-R-Fresh expansion," Kitchener-Waterloo Record, April 20, 1982.

85. In July 1982 the Ministry announced, "Existing environmental legislation will be amended . . . to ensure that, once in place, control programs will be finally firm and enforceable . . ." See MOE news release, "Environment Minister Norton Orders Special Action Program to Stop Pollution by Junction Triangle Companies," July 16, 1982, p. 1.

86. EPA, s. 7, 117-119.

87. EPA, s. 122.

88. See footnote 69, above.

89. The conditions under which an emergency order may be issued are described in s. 62(1) as

> an emergency by reason of,
> (a) danger to the health or safety of any person;
> (b) impairment or immediate risk of impairment of any waters or the use thereof; or
> (c) injury or damage or immediate risk of injury or damage to any property or to any plant or animal life.

90. MOE, Policy Manual, p. 05-02-06.

91. O. Reg. 151/81.

92. R.R.O. 1980, Reg. 301.

93. See MOE, "Brief on Proposed Inco Limited Control Program," May 1980.

94. Walter Curlook, President and Chief Executive Officer, Inco Metals Company, "Remarks at the Ontario Ministry of the Environment Public Meeting to Discuss Proposed Control Order," Sudbury, June 4, 1980, especially p. 8.

95. Ibid.

96. See Kirk Makin, "Ontario Cabinet Orders Inco to Cut Stack Emissions," Toronto Globe and Mail, September 3, 1980.

97. Ibid.

98. Ibid.

99. Ibid.

100. Ibid.

101. See Kirk Makin, "Move on Inco Empty Ploy, Opposition Members Claim," Toronto Globe and Mail, September 4, 1980.

102. Possible application of the special regulation option in this manner is limited by the general rule that the contents of regulations cannot exceed the authority of the Act under which the regulations are issued. As noted above (section 2.2.1) the EPA (s. 13) requires proof beyond a reasonable doubt that the contaminant in question "causes or is likely to cause impairment."

103. Impairment is defined in s. 14. See above, p.

104. The definition of "deleterious substance" provided in the Fisheries Act R.S.C. 1970, ch. F-14, as amended, s. 33(11) is as follows:

> (a) any substance that, if added to 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 or 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 or fish that frequent that water.

105. Fisheries Act, s. 33(5). Before the Act was amended in 1977 the maximum fine was $5,000.

106. Clean Air Act, S.C. 1970-71-72, ch. 47, s. 7(1).

107. In October 1982 Nacan Products Ltd. was fined the maximum of $10,000 (second offence) for a discharging of 820 gallons of vinyl acetate and butyl acrylate - chemicals which are toxic, flammable and highly odorous. See C. Slotnick, "Firm fined $17,000 for chemical spill, delay in reporting," Toronto Globe and Mail, October 14, 1982. The maximum fine was also assessed in June, 1980 against Barco Materials Handling United for noise pollution. On appeal the conviction was upheld on February 25, 1981.

108. Hon. H. Parrott, quoted in Legislature of Ontario, Standing Committee on Resources Development, op. cit., p. 55.

109. Ibid., p. 67. In the Reed case, the company was charged with 10 violations (two per day on 5 separate days). It was convicted of 5 and assessed fines totalling $5,000. The maximum possible fine would have been $45,000 - $5,000 for the initial offence and $10,000 each for the four subsequent ones.

110. Prosecuting under the regulations does, however, require accurate measurements which may not be available and are open to challenge.

111. See Estrin and Swaigen, Environment on Trial, p. 143.

112. Relatively vague requirements by regulation also apply to nuisance (e.g. odour) and smoke that are easily perceptible but difficult to measure. See Regulation 308 (under the EPA) s. 6-8.

113. Special case specific regulations have been used to overcome these difficulties in some cases. See above, section 4.1.5.

114. See above, section 2.2.

115. See above, chapter 2, footnote 5.

116. See above, chapter 2, footnote 6. Countering due diligence defences is especially difficult because the defendant has direct access to the facts about the diligence actually exercised and little incentive to share these facts with the prosecutor.

117. Bidell et al., op. cit.

118. Zettel Manufacturing Ltd., a Kitchener metal stamping company, was charged in June 1979 with offences relating to the noise pollution provisions of the EPA and a city bylaw. The initial trial was not completed until late July 1981 and sentencing not done until October 1982. The company, which was fined a total of $4,500 for nine offences, appealed to the county court. After the appeal was discussed in late November 1982, counsel for the defendant stated that he would discuss with the company the possibility of further appeal. See "Zettel noise appeal dismissed," Kitchener-Waterloo Record, November 24, 1982.

119. While prosecutions necessarily refer only to specific instances of allegedly illegal discharges, they are often initiated against companies with a history of apparent violations.

120. In many instances the need to have expert legal and scientific assistance will pose a larger economic deterrent than the possible fine.

121. See J. A. Donnan and P. A. Victor, Land Use Coordination and Special Studies Section, Environmental Approvals Branch, MOE, Alternative Policies for Pollution Abatement: The Ontario Pulp and Paper Industry, Volume III Summary and Update, October 1976, p. 59.

122. J. N. Mulvaney, Director of Legal Services, MOE, to Standing Committee on Resources Development. See the Committee's report, op. cit., p. 67.

123. R. v. United Keno Hill Mines Limited (1980), 10 C.E.L.R. 43, at p. 52.

124. See Ontario Standing Committee on Resources Development, op. cit., p. 78 regarding testimony of J. A. Donnan of MOE.

125. Ibid., p. 63 regarding testimony of Hon. H. Parrott, Minister of the Environment.

126. In the Toronto lead smelters cases, for example, prosecutions were on several occasions delayed on the grounds that the proceedings might upset delicate cooperative relations.

127. See Ontario Standing Committee on Resources Development, op. cit., p. 67.

128. Ibid., p. 68.

129. As noted above, the Ministry has a policy of making information about polluting discharges available on request where it has itself decided against prosecution. But see chapter 3, above (at footnotes 18 and 19).

130. Tom Armstrong, Manager Industrial Abatement, MOE Central Region, interview, April 7, 1981. The MOE Policy Manual provides only general guidelines on control order use.

131. Ibid.

132. The Manager of Industrial Abatement activities in the MOE Central Region "has a hand" in the twenty or so most serious cases and occasional involvement regarding some of the approximately 150 industries of moderate concern. Armstrong, op. cit.

133. Political sensitivity is presumed when significant economic impacts are or may be involved.

134. Where prosecutions are to be undertaken or new abatement initiatives are to be required of a pulp and paper company following preparation of reports on the problems involved and the options for dealing with them, a special Ministry policy holds that an Authorization to Proceed Form must be signed by the Assistant Deputy Minister for Regional Operations, the Deputy Minister, and the Minister as well as by the Regional Director and MOE Legal Counsel. See MOE, Policy Manual, p. 05-03-01, 05-03-03.

135. See MOE, Water Management, November 1979, p. 15. But see also above, chapter 2, footnote 38.

136. The KVP case is the most famous example. Landowners downstream on the Spanish River from the Kalamazoo Vegetable Parchment Co. Ltd. pulp and paper mill in Espanola obtained (and maintained despite a succession of appeals ending in the Supreme Court of Canada) an injunction against the company's polluting discharges. The government responded with a special statute to dissolve the injunction and sanction the discharges. The decisions are reported in (1949) 1 D.L.R. 39, and KVP Company v. McKie (1949) S.C.R. 698. The special statute is The KVP Company Limited Act S.O. 1950, ch. 33. See generally Estrin and Swaigen, Environment on Trial (2d ed.), pp. 181-182.

137. In the Canada Metal case, company representatives frequently raised questions about the contributions of discharges from automobiles and from other point sources in the vicinity to measured ambient air and soil concentrations of lead.

In the Inco case, company representatives have argued that the sulphur dioxide emissions from the Sudbury facilities constitute a small percentage of continental discharges of acidifying oxides and that because the Ministry has not established clearly the relationship between Inco Sudbury emission levels and specific environmental damages, any emission rate limitation based on existing information is arbitrary.

138. See Ontario Standing Committee on Resources Development, op. cit., pp. 85-115.

139. The order itself was not delivered to Algoma until June 23, 1982.

140. Item 2(d) of the Algoma Sault Ste. Marie order proposed in April 1981 requires that the non-complying No. 5A and 5B coke oven batteries be shut down by the end of 1985. Company representatives have stated that, "while it might be possible to operate this battery beyond 1985, Algoma could not justify spending the millions of dollars required for a conventional pushing emission control system such as would be required by the Ministry to allow the battery to continue to operate." See Algoma Steel Corporation Limited, "Presentation for Public Hearing regarding Proposed Control Order," Sault Ste. Marie, April 30, 1981.

141. The amending control order issued on July 4, 1978 to Algoma Steel Corporation Ltd. regarding its sintering plant in Wawa includes a preferatory clause which states that the installed tall stack has been shown not to be "an appropriate solution to the Algoma Ore Division's sulphur dioxide problem" and consequently,

> Until some practicable methods become available to control sulphur dioxide concentrations in the sinter plant emissions, an approved Sinter Plant operation curtailment program should be implemented, supplimented (sic) by adequate monitoring, to ~~protect those populated areas which might otherwise be subject~~ to unacceptable sulphur dioxide fumigations.

142. Ministry officials report that gathering such information has not been a problem in the past, although company officials have expressed concerns about maintenance of confidentiality. Andre Castel et al., Program Planning and Evaluation Branch, MOE, interview, April 21, 1981.

143. Memorandum, J. G. Fry, Manager Industrial Abatement MOE Northeastern Region to G. J. LaHaye, District Officer Industrial Abatement, MOE Sault Ste. Marie, January 1976.

Ministry files concerning the Algoma case also include the findings of a special MOE study of the company's financial ability to carry out abatement requirements. The study, undertaken in late 1977 after the company had claimed financial inability to meet control order terms, concluded that the company had overstated past expenditures on pollution abatement (actual expenditures were judged to be less than half of those claimed) and current expenditures (also less than half) that the company was more unwilling than unable to pay for abatement work, and that the central problem was the absence of sufficient incentive for the company to allocate funds to pollution abatement projects.

It is noteworthy that the findings of the special study had little if any apparent effect on subsequent decision-making. The District Industrial Abatement Officer has stated that the findings were not found "useful." G. J. LaHaye, MOE Sault Ste. Marie, private interview, April 30, 1981.

5. Problems and Criticisms

5.1 Standards, Guidelines and General Prohibitions

Both the EPA and the OWRA reflect an apparent legislative intention to eliminate polluting discharges which have known, or at least knowable, detrimental effects on the environment (including "material discomfort" to humans[1]). This intention, evident in the nature of the general prohibitions under the two acts is at once extremely ambitious and narrowly restrictive.

The definition of "contaminants" is broad.[2] One commentator has noted that "you cannot even fart without being in breach of Section 13 (1)"[3] of the EPA. Moreover, the requirement that discharges of known contaminants are to be eliminated is not compromised by any legislative recognition that technical, financial or socio-economic factors ought to be considered in judgements about the need for abatement efforts.

At the same time, however, the general prohibitions are directed against discharged substances which are known to cause environmental degradation, or at least known to be capable in given concentrations of causing damage. Section 1(1)(c) of the EPA defines contaminants or substances or qualities (e.g. heat) which "may" have adverse environmental effects. But, as discussed above (Chapter 2) the actual prohibitions come into play only when a prosecutor can demonstrate beyond a reasonable doubt that the contents of a given discharge have actually caused or clearly had the ability to cause detrimental effects in the circumstances that existed at the time of the alleged offence. It is not enough merely to establish that the given concentrations of discharged substances are not known to be harmless and therefore "may" cause impairment.[4]

5.1.1 Uncertainty of Hazardousness, Uncertainty of Safety

Unfortunately, one of the central problems facing environmental protection authorities (and industrial dischargers and their critics) is that of uncertainty about the effects, especially indirectly, cumulatively and over the longer term, of many of the substances discharged into the environment from industrial and other sources.

For many individual substances there are insufficient satisfactory scientific data to establish with beyond-a-reasonable-doubt certainty whether or not their presence in currently measured ambient or accumulated concentrations and exposures does cause or is capable of causing detrimental health or other environmental effects. It is often impossible to determine conclusively whether or not (and if so, where) a hazard threshhold exists, or to establish what risks are or may be expected to be associated with specific exposures. Perhaps more importantly, there is a general paucity of acceptable information about the risks associated with the immediate and cumulative interrelations of substances and conditions.[5]

This uncertainty problem was not well recognized when the EPA and OWRA were drafted. But it is now increasingly predominant in general reviews of the quality and adequacy of anti-pollution laws[6] and in evaluations of specific standards, guidelines and abatement requirements.[7]

Some of the obviously damaging pollutant discharges that the EPA and OWRA were intended to address continue at unacceptable levels despite a decade or more of regulatory effort. This is particularly true of discharges from pulp and paper plants.[8] In other areas there has been considerable reduction of total discharges and evident local effects of

remaining discharges. But far from finally solving pollution problems, these successes in dealing with immediately obvious pollution problems, have frequently allowed identification of and increased public focus on more complicated and less visible problems and issues. Reduction of lead emissions and point of impingement readings has not ended local concerns, but rather, focussed attention on questions about cumulative loadings, the existence of any hazard threshhold level, and the precise degree and nature of risks relative to a complex of variables (age, level of exposure, period of exposure, inhalation versus ingestion, etc.). Similarly, reduction of sulphur dioxide emissions and local fumigation frequencies has been followed by concerns about the wisdom of dilution and dispersion strategies, and about the longer distance cumulative and synergistic effects of such emissions in combination with emissions from other sources.

The environmental concerns currently most prominent in public media - ubiquitous carcinogens and acidic precipitation - are typified by an apparent absence of identifiable hazard threshhold levels, by ill-defined environmental pathways and relations with other stresses, by long term and/or long distance effects, by costly, difficult and time-consuming research requirements, and by virtual impossibility of total elimination.

There is little doubt that significant, possibly very serious environmental damages may result from continued and cumulatively increasing production and environmental release of carcinogenic, acid-producing and other industrial substances. But in few cases are there sufficient data to prove irrefutably whether or just when a discharge containing more subtle pollutants (or low concentrations of substances

that are obviously unacceptable pollutants if present in higher concentrations) is a contaminant in the sense of EPA s.1 (1)(c).

A number of steps have been taken at the federal and provincial levels to spur research on at least some of the more suspect subtle pollutants and generally to encourage development of the toxicological sciences in Canada and Ontario. Unfortunately, there is little prospect of uncertainty problems being overcome or even substantially reduced in the near future by added research efforts. On the contrary, some experts fear that toxicological, epidemiological, and other relevant research efforts are in danger of falling further and further behind as more and more new substances are introduced into production, distribution, use and disposal. Uncertainty - the presence of possible, even probable, but not provable beyond-a-reasonable-doubt hazards - would seem to be an unavoidable fact of future life for pollution regulators.

The MOE has not ignored the uncertainty issue. But faced with the limitations of the enabling legislation, Ministry officials have avoided setting enforceable standards (or even, in the case of water quality, objectives) relating to discharges of substances and substance concentrations about which only limited or debatable effects data are available. Worrisome characteristics and even best guess acceptable concentrations of such substances have been described in policy documents outlining non-enforceable guidelines.[9] But enforceable abatement requirements concerning such substances being discharged from existing industrial facilities exist only insofar as the guidelines are incorporated into control or other orders, and such requirements are vulnerable to removal through the appeals process.[10]

The use of the special regulation device in the Inco case (where company officials had objected to a proposed control order on the grounds of scientific uncertainty about assignable effects[11] suggests that the Ministry may be willing and able to make regulations under the EPA despite some of the uncertainty problems noted above. But such regulations would seem incompatible with the historical interpretation of "may impair" to mean clearly having the ability to impair in the specific circumstances, and may not survive test cases.[12] Substantial revision of the existing legislation is necessary if a way is to be opened for an approach to pollution abatement that recognizes needs to reduce discharges that pose major but ill-defined risks as well as those that pose minor but well known damages.

As they now stand, the EPA and OWRA provide a relatively strong basis for requiring efforts to reduce or eliminate discharges that are known to be capable of having detrimental environmental effects, even if the abatement efforts involved are very costly and the detrimental effects of the discharges very minor. The Acts do not provide a solid basis for requiring efforts to reduce or eliminate discharges that may be worrisome but cannot be shown beyond reasonable doubt to be (potentially) traceable to specific effects, even if the abatement costs involved would be small relative to the environmental values (resources, human health, etc.) thought to be endangered. This would seem unacceptable. If as is now commonly alleged, some of the most serious modern environmental problems involve specific substances about which insufficient pathways and effects data are available, or reflect the interactions and accumulations of the vast sum of well and ill-studied substances, then

an exclusive legislative focus on individual known contaminants is unlikely to serve the interests of economic efficiency or protective effectiveness in pollution abatement decision making.

Unfortunately, it is virtually impossible to know just when and to what extent efficiency and effectiveness are served by abatement decisions based on uncertain or incomplete data. Even where there is sufficient information to indicate the risks associated with various concentrations of a given substance, there is no scientific means of determining just what risks are acceptable. As the Great Lakes Science Advisory Board has noted:

> The judgment of an acceptably safe concentration of a hazardous substance is frequently cast as scientific but is, in fact, more societal. The questions are then who decides for whom, and how well informed are those affected by the choices. Most people seem to tolerate more personal risk in their daily lives if they choose the risks. On the other hand, people oppose risks which are placed on them indiscriminately by others.[13]

Thus the need to recognize and address known risks of uncertain acceptability, and uncertain risks of great importance, implies a need for more open decision-making in which the views of interested and affected parties, including those potentially subject to the risks involved, can play a significant role.

Inevitably, revision of the process for setting general anti-pollution standards and guidelines, and specific abatement requirements (including control orders), to deal with uncertainty problems would make decision making more complicated. Recognition that "objective" scientific data can provide only part of the basis for abatement requirements would open the door to disputes about "subjective" factors. Broadly political influences would assume greater or, at least, more evident significance.

This is not a prospect that appeals much to the industry representatives surveyed in the course of this study.[14] In general, the regulatees want to know that required abatement efforts are environmentally necessary and economically justified. If they must expend funds on abatement of discharged substances, they want convincing, non-political and unbiased research data on the known effects of the substances in question and an unbiased review of the risks and uncertainties involved. They want reliable assurances that individual requirements are elements of a comprehensive abatement approach, based on careful assessment of priorities, reflecting the relative severity of problems. They want to be convinced that the benefits to be gained are at least equivalent to the costs of abatement work. And (although they want the application of requirements to be sufficiently flexible to recognize facility-specific technical and financial, as well as environmental factors), they want the regulatory regime and requirements to be applicable equally to competitors and stable enough over time to allow for confidence in long term planning.

Industry representatives have no single position on how the uncertainty problem ought to be addressed. Some individuals tend to downplay the significance of uncertainty arguments, suggesting, for example, that for most pollutants a "tolerable" if not "effects threshhold" level can be identified largely and perhaps exclusively on the basis of research data. Others are more willing to recognize the limits of available research data and to consider the need for broader involvement in decisions concerning the acceptability of known and suspected risks. But most insist:

(i) that the process of determining abatement requirements should begin with review and analysis of available information about worrisome substances, covering what is known, what is possible, what is at risk and to what extent;

(ii) that these reviews and analyses should be carried out in a manner that minimizes the influence and perception of bias, and should be presented for public evaluations;

(iii) that where a significant basis for concern is revealed there should be an additional examination of the costs associated with reducing the identified risks (the task force approach with public or third party as well as government and industry participation is favoured); and

(iv) that abatement action priorities ought to be established on the basis of this information.

This approach appears to entail a great deal of costly and probably lengthy research and assessment prior to abatement action.[15] It begs the question of how, in the face of the currently vast and still growing number of industrially used substances and combinations of substances, a system of controls and advanced research can be designed to ensure that reviewers and evaluators will be able to catch up. Because it focusses on individual contaminants or potential contaminants, this approach may also contribute further to neglect of the possibly different and more serious dangers associated with the cumulative and synergistic effects of the totality of new and newly concentrated substances entering

the environment. But it does indicate a willingness on the part of industry to approach the uncertainty issue by accepting, even encouraging, an opening of the process. It provides a valuable emphasis on the importance of clarifying wherever possible, the extent and nature of certainties and suspicions. And it points usefully to the inevitable relevance of economic and technical factors to abatement decision making.

In general, the industry response to the uncertainty problem is that the requisite decision making changes should ensure that uncertainties are addressed in the context of economic efficiency and other practical considerations which may include factors relating to specific facilities as well as factors relating to net benefits of overall or industry-wide abatement of specific discharges. Environmentalists have expressed concerns about industry advantages in complex decision making process required for implementation of this approach. But they have little objection to the general thrust of the industry position on abatement requirements, so long as the extent and depth of current uncertainties are recognized and accepted as reasons for extreme caution. In particular, they insist that in the consideration of specific substance standards and individual discharge requirements, account must be taken of the danger of unanticipated additive and synergistic effects with other substances, discharges, conditions and stresses, and (where persistent contaminants or contaminant products are involved) the incalcuable likelihood of cumulative and incremental damages over the long term from discharged substances from all sources.[16]

5.1.2 Practicalities

Neither the EPA nor the OWRA suggest that technical, financial or socio-economic factors ought to be considered in the setting of abatement requirements through standards or through specific orders (or indeed in any other matter relevant to the legislative purpose of eliminating contaminants). Still, an unavoidable fact of life for pollution abatement officials is that such practicalities must frequently be taken into account, if not in the setting of general standards and objectives, then in their application in specific circumstances.

As has been shown in the preceding chapters, the silence of the law has not prevented MOE officials from considering technical and economic factors in the setting of standards and objectives and, especially, in the drafting of site specific control orders.

While MOE officials have asserted that air and water standards and objectives have generally been established solely on the basis of effects data,[17] "practical" considerations have delayed promulgation of air standards,[18] are allowed by explicit policy to play an important role in the implementation of water quality objectives[19] and are in perhaps all cases taken into account in the drafting of control orders.[20]

Industry representatives have long insisted on this. They have argued:

(i) that pressure for rapid abatement action may discourage development of less expensive and more efficient technologies;

(ii) that the often sizeable sums devoted to meeting abatement requirements must be subtracted from funds available for other needed and potentially more beneficial investment purposes (e.g., modernization and expansion);

(iii) that even when the nature, severity and causes of environmental contamination are unquestioned, the expected benefits of abatement may not justify the level of expenditures required;

(iv) that in cases of economically marginal facilities, abatement requirements may threaten the immediate survival or longer term viability of operations which provide needed jobs and may support whole communities; and

(v) that because the nature and importance of specific financial and technological factors may vary greatly from facility to facility, considerable flexibility should be allowed in the application of abate requirements.

Their position emphasizes the potential wastefulness of premature investment in unproven abatement technology, of efforts to reduce discharges that are only suspected of causing or contributing to environmental harm, of heavy anti-pollution expenditures which do not lead to at least equally significant benefits, and of abatement investment requirements which undermine the short or long term economic viability of important facilities.

Some economists and many environmentalists have countered that the technical and economic barriers to, or at least, disadvantages of, strict application of demanding deadlines for abatement have been overstated by representatives of polluting industries.[21] Critics of the industry position argue that:

(i) polluters generally perceive no economic incentives to reduce pollutant discharges beyond demonstration of good corporate citizenship;

(ii) that companies have tended to overlook or fail to report the benefits (e.g. resource recovery or improved efficiency) resulting from abatement investments and associated modernization efforts;

(iii) that pressures for consideration of site specific technical and financial problems rest in part on awareness of the limited evaluation capacities of the regulators, and the superiority of industry expertise in these matters;

(iv) that the threat of plant closure has been used too frequently to be automatically credible; and

(v) that some companies that have claimed financial inability to carry out abatement requirements have made sizeable concurrent investments in other fields, sometimes outside the country.

Despite these criticisms, environmentalists generally agree that greater and more regularized attention will have to be paid in the

future to assessment of technical and economic possibilities and implications relative to abatement needs. Environmentalists who take this position do so assuming that regulators, including Ministry of the Environment officials, will be increasingly willing or forced to require abatement of discharges which present uncertain risks. Environmentalists insist that the acceptability of such risks is not a matter for solely scientific or administrative adjudication. And they hold that public decisions on the acceptability of risks and the consequent requirements for discharge abatement ought to be informed by information about technical and financial possibilities and socio-economic implications as well as about the nature and limits of available scientific information. As indicated above in the discussion of the uncertainty problem, these assumptions are not necessarily in serious conflict with industry views on the nature of proper decision making considerations and procedures. The crucial issue concerns just how decisions are to be made when the uncertainties are considerable. Environmentalists fear that, in the absence of a well defined decision making process which emphasizes maximum access to existing information and which ensures effective public involvement, the uncertainties will usually be resolved in favour of the industrial discharger.

Because the silence of the Acts does not preclude consideration of technical, financial and socio-economic factors,[22] the government may, as a matter of policy, decide to devote greater attention to these factors, even to formalize the entry of such considerations in the setting of standards and the drafting or orders, without revising the legislation.[23] Indeed, there are indications that economic matters will

be increasingly emphasized because of the recent Cabinet policy on economic evaluation of proposed regulations and because of growing acceptance that in the absence of effects threshholds for many contaminants, environmental quality standards and abatement requirements will have to be based on comparison of scales of potential damages and costs.[24]

From an economic efficiency point of view, greater recognition of tehcnical, financial and socio-economic factors as legitimate considerations in the establishment of abatement requirements may be generally laudable. However, in the context of legislation that focusses exclusively on known contaminants, and of implementation approaches that typically focus on local, short term effects of individual contaminants, this step is only part of what would be required if the larger interests of economic efficiency were to be served. Moreover, efficiency may not be well served if, as is commonly alleged and occasionally admitted, the extent and depth of Ministry expertise on industry-wide and facility-specific technical and financial matters is limited and reliance on the assertions of the regulatees is frequently unavoidable.[25]

From an environmental protection effectiveness point of view, the result of increased attention to such "practical" matters is almost invariably a weakening of abatement requirements concerning known contaminants.

This might be acceptable if combined with other initiatives to ensure effectiveness as well as efficiency benefits. A package of such initiatives would include, for example, reforms that would:

(i) address uncertain but possibly significant hazards and risks (including potentially major economic

costs) and allow for enforceable abatement requirements where the undesirability of the risks outweigh the costs of abatement;

(ii) encourage, require or provide incentives for abatement efforts in addition to those implied by available known effects data; and

(iii) more effectively discourage delay and non-compliance.

In the absence of such additional changes, devotion of greater attention to technical and financial factors would mean accepting known determination of environmental quality in recognition of the perceived practicalities facing polluters, without making any compensatory effort to protect the environment from suspected uncertain hazards.

Both consideration of technical, financial, socio-economic factors in setting requirements and expansion of requirements and incentives to address uncertain hazards should force recognition that decision making cannot be based merely on scientific facts. Evaluations of the severity of socio-economic implications and of the undesirability of risks cannot be done properly without involvement of the public to be affected. To allow for such public involvement, or at least for effective scrutiny of the work of the public representatives, the information base for control requirement decisions and the decision making processes themselves ought to be as open as possible. (See section 5.6, below)

5.1.3 Standards and Facility-Specific Considerations

At present, control order abatement requirements are generally intended to ensure compliance with standards set by regulation, or

objectives and guidelines set by policy. Requirements based on regulations are more directly enforceable and less flexible than those based on objectives and guidelines. Standards do not have to be justified in prosections and appeals, though the specifics of their application and the nature of their abatement implications may be debatable. Deadlines for compliance with standards may be altered in control order negotiations and appeals but the standards themselves cannot be compromised (except by allowing perpetual control order extension).[26]

Offences against objectives and guidelines are enforceable only under the general prohibition provisions of the EPA and OWRA (or under other legislation - e.g. the Federal Fisheries Act and regulations). In general, enforcement of these general prohibitions is scientifically, legally and economically more difficult than enforcement of standards set by regulation.[27] Similarly, control order abatement requirements based on non-legislated objectives and guidelines are more vulnerable to successful appeal than requirements based on standards.

Because appeals of objective-based requirements may be upheld, and because all appeals, successful and unsuccessful, delay implementation of control orders and completion of abatement work, Ministry negotiators may see environmental advantages in reducing objective-based requirements when it is perceived that the polluter may otherwise appeal the order. Consequently, in comparison with standards, objectives and guidelines provide a relatively weak basis for setting control order requirements.

This, and concerns about the generally limited enforceability of non-regulated objectives and guidelines have led environmental advocates

to urge greater use of regulation-setting powers and translation of many existing objectives and guidelines, especially the Water Quality Objectives into more enforceable regulations.

Environmental interest groups claim that the current scope of environmental quality regulations in Ontario is much too limited. Point of impingement maximum concentration standards are set for a substantial number of air contaminants and special air quality protection standards cover certain areas and facilities. But even in relation to known problems related to contaminants discharged into air, the regulations are not comprehensive,[28] and there are no regulations covering water contamination or (with the limited exception of the special Inco regulation) covering uncertain but possibly very severe damages from air or water discharges.

Proponents of legislated standards covering water quality and other currently neglected areas, argue that increased use of regulation making powers would provide benefits in addition to improved enforceability and increased control order strictness. It would, they suggest, also establish a clearer and more uniform regulatory regime, providing a more equitable basis for industry competition and a more predictable basis for industry planning. Moreover, it would serve administrative efficiency since the implications of new information on a contaminant's effects could be incorporated by adjustments to widely applicable standard without the need to alter a multitude of individual facility specific requirements.

Industry representatives are generally less inclined to favour an increase in the scope of standard setting. While they frequently emphasize the importance of competitive equity and regulatory predictability, they also insist that facility and industry specific factors are often

crucial and that inflexible requirements are undesirable. These positions are not altogether compatible, and industry representatives have been accused of choosing whichever of the two positions would, in a given context, permit lower abatement expenditures. Nevertheless, industry ambivalence on the question of province-wide standards points to several limitations and disadvantages of an environmental protection strategy that relies solely or largely on legislated standards.

A number of problems are raised by the inflexibility of standards. As has been noted above,[29] there is a multitude of different discharged contaminants and combinations or contaminants. There are also many different post-discharge contaminant pathways and exposure effect possibilities. It is doubtful that a set of well-evaluated standards could be established and maintained even to deal only with the problems associated with known pollutant concentrations and combinations. But to the extent that such a set of standards is conceivable, it must face the fact that many of the standards involved would be uniformly applicable to a variety of facilities with widely differing technical barriers, financial strengths and socio-economic burdens discharging into ecosystems with widely differing characteristics, including subjection to other human-source stresses. In such cases two more or less unacceptable alternatives are available:

(i) "practicalities" can be largely ignored in standard setting and considered, if at all, only in the scheduling of implementation deadlines. This is, generally speaking, MOE's current approach.[30] Its appropriateness is generally restricted to cases of

contaminant discharges which present known, unacceptable threats to environmental quality. Where the nature, extent and acceptability of risks are debatable, where the costs associated with abatement may be of at least comparable magnitude to those associated with the risks and damages of continued discharge, and where the balance of environmental risks and abatement costs varies significantly from facility to facility, reliance on province-wide standards is inappropriate.

(ii) Alternately, technical, financial and socio-economic implications can be considered in a general province-wide fashion in standard setting. This approach is encouraged by the new Cabinet requirements for consideration of the economic impact of proposed regulations. The acceptability of abatement or the acceptability of risks from given discharges differ significantly from facility to facility. If a general "average facility" standard is adopted some facilities which could practicably undertake more adequate discharge abatement programs would be allowed to pollute up to the average standard. Meanwhile, facilities at the other end of the scale, facing much more serious technical and financial difficulties, would be forced to take generally regrettable steps including closure or would have to be granted exemption from the standards (by non-enforcement, by special legislated exemptions or by infinitely renewed control orders). Since exemptions to standards can be politically unattractive, desires to avoid the need for

> such exemptions tend to bias the standard setting process toward acceptance abatement requirements which can be met even in the most problematic situations. This is of particular concern where legislated standards are the major basis for enforceable or otherwise effective abatement requirements because all polluting activities up to the level set by regulation are tolerated and may be encouraged by other incentives.

In general, then, legislated standards have certain advantages. But they cannot be designed to cover all industrial pollution problems. They are ill-suited to situations where facility-specific technical, financial and socio-economic factors ought to be taken into consideration, and may be inappropriate where the nature or acceptability of environmental risks is debatable. They are also inadequate without additional measures to encourage, if not require where technically feasible and economically justifiable, abatement beyond the minimum needed to meet standards. It would seem, therefore, that while the scope of legislated standards in Ontario might well be expanded, general standards have limited applicability and should not be expected to provide a comprehensive or wholly adequate answer to enforcement weaknesses.

Instead, legislated standards might best be used only to set out basic legal criteria providing for effective enforcement of abatement requirements relating to discharges of pollutants which are known to threaten damages or believed to present risks that are intolerable relative to any "practicalities" that may apply.

Additional abatement requirements could be set through enforceable, facility-specific regulations or control orders set with regard to the known and suspected deleterious effects of the contaminants involved and the relevant facility-specific technical and economic factors.[31] In some cases the abatement requirements could be based on application of general non-legislated guidelines in the particular circumstances of individual pollution sources and local receptors. These guidelines would cover pollutants and pollutant concentrations known or believed to threaten effects that are undesirable but not always severe enough to warrant application without regard for technical and economic factors. In other cases, the contaminants involved (sulphur and nitrogen oxides, for example) have regional, even global effects and ought to be dealt with through concerted abatement efforts covering many sources, perhaps in a variety of industries and jurisdictions. Where such contaminants are involved, the facility-specific abatement requirements should be developed in a comprehensive manner that ensures adequacy of overall abatement action as well as sensitivity to industry- and facility-specific technical and economic factors.

Finally, means of encouraging abatement work beyond that required by standards and control orders could be introduced through economic incentives. It is beyond the scope of this study to review the merits and limitations of the various conceivable positive and negative incentives.[32] It may well be that no single approach would be broadly appropriate. But especially because of the prevailing uncertainties about the industrial, cumulative and synergistic effects of contaminants, there is need for some kind or kinds of incentives for such abatement.

Such incentives should also encourage prompt compliance with the abatement requirements set by regulations or control orders as well as foster development and adoption of more effective and less costly abatement technology. An important caution is that there may seldom be much reliable information about the possible environmental benefits of abatement actions beyond those required to meet regulated standards and control orders. Decisions about the appropriate size of economic incentives (e.g. tax concessions or effluent charges) would involve a large subjective element. Consequently, the nature of the decision making process would be very important.

The result would be an approach with three basic elements - enforceable standards, guidelines applied with flexibility through enforceable control orders, and additional abatement incentives - that would allow for stricter and more efficient enforcement, permit consideration of "practicalities" where necessary, encourage additional abatement whenever economically feasible, and address uncertain but significantly worrisome as well as known pollution problems. To be possible and effective, this approach would have to be supported and supplemented by legislative changes. Adequately powerful disincentive penalties for contravening standards and control order requirements would be needed. Action against uncertain hazards and consideration of technical, financial and socio-economic factors in the implementation of guidelines would have to be allowed and incentives for further abatement action would have to be established. Changes would be needed in the decision-making processes leading to the setting of standards,

in the recommendation and justification of guidelines and objectives, in the determination of control order requirements and in the choice of incentives for additional abatement. Adequate and effective public involvement must be ensured if the value-laden and ultimately political questions about the point of balance between undesirable environmental damages or hazards and unattractive economic costs or risks are to be addressed in a democratic manner (see section 5.6 below). The control order appeals process would also have to be changed in order to prevent fear of appeal delays from encouraging a tendence to weaken legitimate abatement requirements. (see section 5.5 below).

5.2 Identifying Pollution Problems

The MOE currently undertakes a limited number of studies devoted to identifying or at least clarifying the nature of suspected pollution problems. However, most industrial abatement actions result not from study findings, but from citizen complaints. Such studies as are undertaken are often initiated in response to expressed public concerns. Responsiveness of this sort is not to be discouraged, especially when the Ministry faces considerable public distruct.[33] However, reliance on complaints to initiate action or study tends to narrow the focus of efforts to discharges containing visible and odourous pollutants (with which invisible and odourless contaminants may be associated), or having more or less immediate and evident effects. This focus may be politically expedient, but if so, it is largely because of public ignorance about the seriousness of more subtle, and longer term contaminant effects and hazards.

From a scientific and environmental viewpoint there is little reason to presume that the visible and odourous pollutants are the most detrimental or that immediately evident damages are most serious. In fact, after more than a decade of efforts and incomplete but considerable success in dealing with the most apparent problems, it is now more likely than it once was that many of the most pernicious remaining pollutant discharges are those containing contaminants that are difficult to identify and have delayed synergistic or otherwise obscure effects.[34] While the relative environmental and economic importance of problems that have not been individually identified cannot be calculated, it would seem reasonable to assume that considerably more attention ought to be devoted by the Ministry to the identification of potential sources of subtle contaminant discharges, the establishment of priority concerns, and the undertaking of special research projects designed to uncover and assess subtle contaminant effects and hazards.

There are several barriers to this. One is that identification of previously unrecognized subtle contaminant problems can only add to the research and administrative burdens and public pressures on the MOE. Especially in the context of increasing budgetary restrictions, Ministry officials will not find additional burdens and pressures attractive. Moreover, they may with some legitimacy fear that members of the public will conclude that the mere existence of a Ministry study is indicative of a serious environmental problem. (Such a conclusion is not unreasonable when budgetary constraints force the MOE to spend research dollars only where serious problems probably exist or where public perception of serious problems has already demanded a research

response.) Already beset by public demands for closer attention to specific identified problems and for more rapid and effective abatement action, Ministry officials are generally loath to add to public worries and demands, particularly where no clear cut problems are evident and where research may lead to inconclusive findings.

A second barrier is that of the budgetary constraints themselves. Studies of subtle, long term synergistic and generally obscure effects are typically complex and difficult. Usually this implies costly work. There are immediate political disadvantages to shifting funds from research on publicly evident problems to research on subtle contaminant effects even if the latter threaten to be much more serious.

A related difficulty is posed by current methodological and ecological knowledge limits. Subtle contaminant research projects may fail to reach reasonably certain conclusions, not because the hazards presented by identified substances and combinations of substances are marginally significant, but because the hazards cannot be assessed, given present information. The current extraordinary ability to identify very small quantities of substances is not matched by knowledge of the environmental pathways and implications of the presence of substances in such quantities. In such a context the proper approach to concerns about subtle contaminants is probably not to rely on more studies, but rather (or also) to seek means of reducing potential hazards by discouraging and limiting use of such contaminants and carefully restricting introduction of new ones.[35]

Finally, there may also be problems of overlapping jurisdictional responsibilities. This is perhaps most significant where human health

concerns are involved. In such cases, at least part of the research responsibility would usually fall on local and provincial health authorities and efforts to identify and assess effects would require cooperative action by two or more agencies. Such cooperative activity is traditionally difficult to arrange, even when significant political pressures are exerted. It may be considered highly unlikely where political disadvantages are possible unless clear policy commitments have been made to ensure inter-agency research cooperation addressing an accepted priority list of subtle contaminant problems.

These are not impassible barriers. But they indicate that vague recognition of the potential seriousness of subtle contaminant problems will not lead to adequate efforts to identify or reduce these problems.

Perhaps the greatest additional need is for more forthright official recognition and public discussion of the limits to current knowledge about subtle contaminant hazards. Past hesitancy to underline these limits has been based in part on desires to avoid stirring "irrational" public fears and on assumptions about the overriding benefits of the productive activities associated with possibly detrimental discharges. Neither basis is strong. Concern about increasing public fears must now be considered in the light of pervasive public distrust of governmental assurances about environmental safety.[36] And public servants probably should not merely accept their own conclusions about the balance of benefits and risks, given the uncertainties about risks and the assessment of both risks and benefits. There is increasingly widespread public recognition that risks of many kinds pervade the lives of all citizens. Regulatory officials have observed, often with dismay, that citizens

are usually much more tolerant of risks they accept voluntarily than risks to which they are subjected without choice. Insofar as public responses to environmental risks are irrational, the only effective remedy is likely to be frank public discussion of the nature, limitations and implications of current knowledge about the environmental risks, and greater public involvement in judgments about the acceptability of these risks.[37]

Public discussion and evaluation of uncertain environmental risks will increase demands for further research to reduce the uncertainties. The resulting pressures on limited research funds and expertise will encourage more cooperation among federal and provincial research agencies in despite interjurisdictional rivalries. Given the multitude of pollutants and uncertainties, public focus on environmental risks may be expected to underline the immediate need for rapid identification of priority concerns and existing discharge sources.[38] It will also encourage preventative efforts to discourage continued use and further introduction of ill-understood and potentially hazardous substances.[39]

5.3 Control Orders and Other Options

Application of the control order device currently entails environmental, technical, legal and, in some cases, financial-economic reviews, as well as negotiations and public meetings. In the event of appeals, legal proceedings may also be involved. All of these consume time, expertise and dollars. Largely because of this, the Ministry has found it necessary to use control orders only in a small minority of the many cases where there are needs for some abatement action. In most cases,

informal voluntary compliance agreements are preferred. Particularly where the abatement requirements relate to guidelines rather than standards, the threat of prosecution does not provide a strong incentive for voluntary agreement and compliance. The Ministry has responded to this difficulty by adopting a policy of allowing no more than six months for agreement on voluntary abatement programs (including program approvals).[40] If voluntary agreement is not reached or if informally agreed upon actions are not undertaken on schedule, then the MOE applies formal enforceable requirements, including control orders.

Adoption of some of the suggestions implicit in the comments in sections 5.1 and 5.2 - e.g. recognition of the need for requirements addressing uncertain hazards in the context of facility-specific practicalities, and acceptance of the need for public involvement in the setting of such requirements - could add to the complexity and inevitably the cost of control order decision-making. This would increase the importance of encouraging effective voluntary compliance in order to avoid frequent use of the costly control order process.

Some problems are raised by the need to minimize use of control orders. One is that, while control order requirements must be fair and reasonable, the rigour and enforceability of these requirements must be sufficient to preclude any perception on the part of polluters that the control order process offers attractive opportunities for postponement of pollution abatement expenditures. Particularly because of appeal delay opportunities and the very limited disincentives provided by non-compliance penalties, the vigour and enforceability of control orders are not at present sufficient for this purpose.

A second difficulty is that extensive use of the voluntary compliance approach would seem to entail that decisions on the nature of abatement requirements will be set by private negotiation between Ministry officials and the offending polluters, without public involvement. This may be acceptable where the polluters are willing to comply with abatement requirements based on the most demanding of existing standards and guidelines and these standards and guidelines have been established through a process which ensures adequate public involvement. But where technical, financial and/or economic factors are presented as reasons for reducing guideline-based requirements or for allowing extended compliance deadlines, use of a control order process with extensive public involvement opportunities would be more appropriate. Certainly, any decision to revise the current approach to industrial abatement to allow for explicit legislatively based consideration of uncertain hazards and technical and economic factors should be accompanied by development of a clear policy on the place and limits of informal voluntary compliance agreements and the conditions under which control order decision-making processes must be initiated.

5.4 Control Order Contents

The requirements set out in control orders are currently set through private negotiation between the Ministry and the offending company. Industry representatives have sometimes complained that they are hampered by the absence of clear and constant abatement targets backed by detailed and convincing evidence of environmental necessity. Insofar as this reflects the general weakness of the environmental and toxicolo-

gical information base, this problem may not be resolvable in the foreseeable future unless abatement requirements are limited to cases of contaminants and contaminant concentrations which have undisputed intolerable effects. Such a limitation appeals to industry representatives who are concerned about the perceived willingness of environmental protection authorities to require costly abatement efforts which cannot be shown to offer equally significant benefits. But, as has been suggested above, an environmental protection strategy which addresses only well documented hazards fails to respect the depth and extent of current ignorance about environmental interrelationships and contaminant effects.

Industry representatives have also argued that in the absence of clearly documented environmental quality criteria, public awareness and acceptance of these criteria, companies sometimes face Ministry officials who, because of public agitation, are under considerable political pressure to ensure control order requirements are, or at least seem to be, very strict and demanding. In such cases, the offending companies may be pressed to carry out costly abatement work that is not justified by any measurable anticipation of benefits and that may not be required of competing companies whose equally or more worrisome discharges have not become a focus of public attention. Those who make this complaint may not be adequately sensitive to the variety of factors influencing acceptability of damage and risk or to the ultimately societal or political nature of decisions that identify balance between environmental and economic costs and risks. But they point usefully to the need for comprehensible and reputable public information about the implications and limits of available contaminant effects data and to

the need for a more regularized and open approach to addressing questions of uncertainty in the face of important practical considerations.

Ministry officials usually claim to be successful in control order negotiations. They admit, however, that they must often rely heavily on the assumed accuracy of company claims about the technical and financial feasibility of abatement requirements and deadlines. It would also seem that the Ministry's hand is significantly weakened by the generally limited enforceability of the legislation where standards have not been set, the modesty of penalties for non-compliance and the desire to avoid the expenses and delays that characterize the current appeals process.

The enforcement incentives and appeals questions would seem to be answerable through specific reforms.[41] The technical and financial government expertise would be prohibitively expensive. As a compromise, the new Ministry policy requires that polluters be encouraged to prepare technical-economic reports which will eventually be released to the public "subject to the confidentiality of proprietary information".[42, 43]

Unfortunately, the legal basis for this encouragement is weak because the existing legislation which does not include reference to technical and economic factors as legitimate concerns, does not clearly authorize the Ministry to order companies to spend their money this way. And while public access to the (edited) documents prior to public meetings on proposed control orders might allow for some additional review of company claims, the fact that this is allowed only after Ministry-company negotiations have been completed, minimizes possible impact.

These limitations could be corrected through reform of the legislation and revision of the control order development process to allow

for public information and involvement during the negotiation period. The latter change might be particularly useful where public participation provisions encourage access to relevant labour expertise and knowledge of in-facility processes, practices and conditions. (Labour participation would would also encourage consideration of implications for the occupational environment, job security and other important factors which might not be central to the purposes of Ministry or company negotiators.)[44]

Still, even with strengthened technical-economic reporting provisions and greater opportunity for public scrutiny and participation, the polluter will in many cases, retain a position of advantage with respect to knowledge about the technical and economic feasibility and implications of proposed requirements. Temptations to abuse this position could, however, be reduced by a program of abatement incentives that is more or less independent of control order requirements and presents effective incentives for abatement efforts.[45]

5.5 Appeals

Many of the strongest criticisms leveled by environmental advocates against the current control order process focus on appeal provisions.[46] The major problems are that control orders do not apply until all appeals are exhausted, that fear of appeals and resulting delays weakens the Ministry's hand in control order negotiations, that initial appeal rights are limited to the control order recipient, and that appeals and delays are allowed not only when control orders are issued, but apparently also during or at the end of a control order's term of application whenever a request for an extension of a deadline or a revision of the order is

refused. The result is that, except for any perceived dangers associated with the possibility of incurring the hostility of the MOE, or of tarnishing a public image, polluting companies face few disincentives to use of appeal procedures for delay purposes.

The fact that relatively few appeals have been launched does not convince the critics that the problems involved are negligible. Instead, they argue that the rarity of use reflects the compromising efforts of the Ministry, the easy availability of extensions and the weakness of any threat of prosecution in the event of non-compliance. They also suggest that legislative and policy reforms to strengthen penalties for control under non-compliance might well lead to greater use and abuse of the appeals mechanism.

The principle behind the appeal rights is that persons and companies subject to regulatory decisions by administrative authorities who are not politically accountable ought to be allowed to appeal such decisions. This would seem a legitimate defence against the possibility of bureaucratic tyranny. While the extension of appeal rights to cover all control order decisions, including every refusal of a proposed deadline extension, may be questionable, denial of appeal opportunities would seem to be extreme and possibly dangerous. On the contrary, a case is made by some environmentalists that appeal rights ought to be allowed to the affected public as well as to the affected company since both are arguably subject to the results of control order decisions.[47]

Removal of the provision for control order delay until an appeal is settled is more attractive. But this could present problems where the appeal involves work required to be undertaken immediately (i.e. during

the appeal). If an appeal is successful, work already done in compliance with the original control order requirements might be found to have been unnecessary. This problem could be avoided if delay of control order implementation is applied only to appeal of a newly issued order requiring action (i.e. no appeal of a refusal of a request for an extension or other amendment) only to the specified control order requirements under appeal, and only to appealed requirements that entail immediate action. Unfortunately, even with such restrictive appeals provisions could be used for illegitimate delay purposes.

Perhaps the most effective response to the delay problem would be government efforts to ensure that the Environmental Appeal Board is able to give prompt and thorough attention to any appeal. In the case of extension or revision denials, the recently established right to appeal[48] might be replaced by an opportunity to petition for an Appeal Board hearing which, if granted, would be carried out promptly and thoroughly and would not, in the meantime, invalidate or postpone existing control order requirements.

An alternative response to the prospect of an appeal delay is the use of a special facility-specific regulation to impose non-appealable requirements.[49] This is not an elegant approach and its application may be limited by the need to follow complex cabinet approval procedures and by the political desirability of using it only when creation of a public impression of decisive action is sought. Moreover, despite the effectiveness of the special regulation as a response to appeal delay threats, it remains a fundamentally non-participative and authoritarian measure, the use of which in this context reveals more problems than it solves.

Industry critics of the use of the special regulation device in the Inco case[50] are probably justified in their claims that industry and facility-specific regulations ought to be the product of more participative discussions.

A second general problem with the current implementation of the appeals process concerns the treatment of technical and financial factors. As noted above,[51] the EPA is silent on these matters. Accordingly MOE lawyers have advised the Environmental Appeal Board that it should not consider these factors.[52] The Board, however, believes such matters are of central importance and evidence of the technical infeasibility of the abatement requirements or evidence of the polluter's financial inability to meet these requirements within the proposed deadlines may be taken by the Board to be a satisfactory basis for overruling the control order.[53] Despite this, the financial claims of the company are seldom challenged by Ministry lawyers.[54] The Ministry seldom has an adequate base of evidence upon which to prepare a case countering company claims, in part because Ministry lawyers feel they cannot demand access to a company's financial documents and still claim that economic factors are not a legitimate matter for Board consideration.[55, 56]

A partial solution to this dilemma will be provided if the EPA and the control order process are revised to allow explicitly for consideration of "practicalities". Reform of current appeals arrangements along the lines suggested above would, hopefully, obviate the need for application of the special regulation device in order to preclude appeal delays.

5.6 Public Participation

5.6.1 General Considerations

Once predominant theoriticians held that the requirements of democracy were satisfied if citizens had regular though infrequent opportunity to choose an elite of decision makers to direct and supervise administrators acting as public servants.[51] This image of democratic government retains some important adherents. But over the past two decades there has been increasing recognition that elected decision makers are seldom effectively accountable for individual decisions, that public servants and bureaucracies have their own interests, that many decisions left to administrators are in fact heavily value-laden, that public concerns can often and easily be overlooked or misinterpreted by those responsible for defence of the public interest, that the local expertise of affected citizens is frequently both valuable and available only directly from them, and that people find participation in decision making to be valuable in itself as well as beneficial through the improvement of resulting decisions. These factors have encouraged a growing inclination to view democracy more literally as government by, as well as for, the people, requiring the provision of maximum opportunities for individuals to participate in making the decisions which will affect them.[52]

Proponents of greater opportunity for and encouragement of public participation in environmental decision making generally subscribe to the latter image of democracy.[57] However, they also argue that many specific aspects of environmental protection decisions make public involvement in this area especially important. The central aspect is

that few purely scientific or administrative decisions are possible. This is primarily because of the limitations of current ecological and toxicological knowledge, the evident incentives for biased presentations if not more serious distortions arising from the particular interests of corporate and government participants, the depth of resulting public mistrust and the inevitable subjectivity of necessary judgments about the tolerability and relative undesirability of uncertain risks and known costs or effects. Openness and public involvement in decision-making concerning standards, guidelines and facility-specific abatement requirements are requisite elements of any adequate response to this situation. Public scrutiny encourages intellectual honesty on the part of representatives of special interests and, insofar as such honesty is demonstrated, it allows for the rebuilding of public trust and respect of government and corporate representatives (in contrast to private discussion and negotiations, which breed suspicion). Public involvement allows for direct consideration of questions about tolerability and desirability and fosters increased public awareness of corporate concerns and the nature and limits of environmental effects information.[58]

This latter point is of considerable importance. Environmental protection authorities frequently express worries about public skepticism concerning governmental assurances and ill-informed public concerns perceived as irrational chemophobia. Environmentalists, on the other hand, fear that individuals confronted with a constant barrage of conflicting claims about a multitude of contaminants or possible contaminant, will eventually choose to ignore all claims and proceed fatalistically, except, perhaps for unpredictable bursts of outrage of the narrow put-it-

in-someone-else's backyard kind. Such reactions cannot be expected to serve corporate interests either. In the end everyone has a stake in furthering public awareness of the complexities of environmental problems.

5.6.2 Specific Comments and Suggestions

Measures to allow and improve opportunities for public involvement are possible in two major contexts - in decision making concerning environmental quality standards and objectives and in the establishment of facility-specific abatement requirements.[59]

(a) Standards and Objectives

If the suggestions outlined in section 5.1 above are followed, standards would be set to indicate pollution discharges and concentration levels that are considered intolerable. Public involvement in such decisions would allow public scrutiny of the scientific information and public contribution to the judgmental determination of the point of intolerability. Because a certain degree of scientific uncertainty can be expected in most cases and because some contaminants or concentrations may be considered intolerable even in the face of considerable scientific uncertainty, the judgmental component of standard setting may seldom be inconsequential.

Following the same suggestions, objectives would be set to indicate more demanding environmental quality goals that ought to be reached in most cases but which may be compromised to some degree or acceptably approached in a relatively gradual manner in special cases where particular environmental circumstances or serious technical, financial or socio-economic barriers and costs can be shown to affect the acceptability of

damages or risks. (These special case considerations would be addressed in control order deliberations.) As in the case of standard setting, public involvement in establishment of objectives would facilitate public scrutiny of the information base and contribution to judgments concerning acceptability levels, especially in the face of uncertainties.

Most public participation objectives might be met if existing standard and objective setting committees would publish draft standards and objectives reports with proposed criteria levels (possibly including alternative recommendations) as well as criteria documents setting out the assumptions and scientific information base used to arrive at the proposed standards and objectives, and seek comments from potentially affected industries, independent experts, public interest groups, other relevant and concerned groups, and private individuals, before reaching a final decision. But direct public and industry representation on such committees would also be useful. This would, for instance, allow for some contribution to determining committee priorities. It would also permit early notification of important considerations and concerns which might otherwise be neglected in the initial drafting stage.

It is probable that in open decision making processes industry representatives have an unfair initial advantage over environmentalists, who tend to be over-extended, under-funded and generally limited to voluntary expert assistance. Even modest funding aid for environmental interest groups could probably do much to reduce this inequity. It is significant, however, that most proponents of stricter environmental protection requirements believe that even if a participative process

tends to favour industry representatives, the mere fact that the bases for discussions are open to public scrutiny and subsequent reference will, at least in the longer term, favour decisions which accurately reflect the implications of scientific findings and the depth of public concern.

Most of the industry representatives surveyed in connection with this study[60] also favour a more open approach to the setting of standards and objectives. Some expressed concerns about confidentiality of proprietary information, but these concerns seem more appropriate to public involvement in control order decision making. In general, industry representatives would seem to welcome opportunities to ensure that their views are made known to the public as well as to governmental officials responsible for environmental quality criteria and to insist that problems be addressed by order of environmental priority and that firm rationales be required for standards and objectives used in the determination of specific abatement requirements.

(b) Control Orders

Public involvement in control order decision making presents more difficult problems. Clearly, public participation is important, particularly where (as will frequently be the case) the timing and extent of compliance with objectives must be assessed in the context of facility-specific environmental, technical, financial and socio-economic factors. The question of acceptability is central and cannot be answered without reference to those who must do the accepting. As with standard and objective setting, oppenness of control order deliberations to public scrutiny may provide an important balance against the polluter's advantages in information about the technical and financial feasibility

of abatement requirements. Public involvement may also provide the only means of reducing public suspicions about industry-government collusion when control order requirements are negotiated.

The central difficulties are posed by company desires to protect the confidentiality of proprietary information and the general opposition of industry and government representatives to "negotiate in a goldfish bowl". It has been suggested, even by industry representatives, that the confidentiality argument is frequently overstated. The confidentiality factor may also be of negligible importance in many cases. But it is based on a legitimate concern that may, in some cases, be of considerable relevance. One of the problems is that of determining its significance in specific instances in difficult cases. Perhaps an independent third party, acceptable to the affected groups (the company, the MOE, and interested participants) may be required to determine what ought or ought not be made public.[61]

The negotiations-in-a-goldfish-bowl problem may not present an impenetrable barrier. Public involvement in the negotiation of control orders could be allowed in a variety of ways that would allow for public scrutiny of the bases for decisions and public contributions to the identification of acceptable compromises without compromising necessary confidentiality or creating a fishbowl atmosphere. In particular limited number of representatives of major affected or interested parties and independent experts (including in-facility workers, neighbourhood groups, downstream residents, etc.) could be invited under explicit confidentiality-respecting conditions to participate in company-government discussions and could act as conduits for public concerns and comments.

Secondly, company and government prepared environmental, technical and economic reports and reviews[62] could be released prior to, or at least during, the negotiation phase and general public comment sought before a negotiated position, to which both sides have some commitment, is reached. In addition, attempts could be made to ensure that this information is presented in a manner that is not only comprehensible to the lay reader, but also designed to emphasize and clarify those aspects of the abatement issues most likely to be relevant to public concerns.[63]

In this regard, lessons can be learned from the experience of many of the post-negotiation public meetings on proposed control orders. In general, these events, advertised but not promoted by the Ministry, appear to be and are generally viewed as public relations exercises in which the nature of technical requirements, the size of agreed upon expenditures and the calculated eventual discharge levels of individual contaminants are described, but little attention is paid to the nature and limits of anticipated ecological improvements. Public assessment of the environmental acceptability of the results is not facilitated and while public observations of neglected problems may be solicited, the atmosphere is one of self-congratulation that the negotiations have been successfully concluded, not one of anticipation that expressed public concerns and comments will provide a crucial basis for anticipated revision of the current draft.

Finally, the general problems of public mistrust of government and industry and of inaccurate public perceptions of abatement requirements, legal limitations and contaminant hazards may well be best

addressed through neighbourhood liaison committees.[64] The MOE does not currently take the initiative in encouraging the establishment of such committees.

5.7 Penalties and Incentives

One of the important advantages of control order requirements is that they are much easier to enforce than the general prohibitions of the OWRA and EPA. Unfortunately, the prosecution response to non-compliance has a number of serious weaknesses.[65] Some of these can and ought to be corrected -- for example, by amending the EPA to provide for minimum and higher maximum penalties, which at least match economic incentives for delay, and to clarify the application of the Act to ill-defined hazards. But prosecutions may be incorrigibly slow, costly and (unless powerful precedents are set as a message to others tempted by non-compliance) environmentally unproductive.

The central problem to be addressed is the generally recognized weakness or absence of any concrete incentive for compliance. Perhaps the prevalence of goodwill, enlightened citizenship and environmental consciousness among industrial polluters is underestimated and these will in many cases supply an adequate basis for compliance, despite contrary economic temptations. But reliance on these seem not to provide an adequate basis for environmental legislation and abatement policy. Moreover, Ontario's control order compliance success record (especially against pulp and paper industry discharges) is not exemplary. In this context, adoption of a device providing an additional economic incentive for compliance is desirable.[66]

Finally, a serious drawback of a standards, objectives and control orders approach to pollution abatement is that it offers no incentives to encourage abatement beyond that legally required even where considerable additional reduction of discharge could be achieved at minimal cost. In light of current ignorance about the ecological implications of industrial discharges (and other environmental abuses) there is considerable reason to minimize contaminant discharges whenever this is feasible. There is a vast literature on alternative economic mechanisms for providing effective abatement incentives. This is not the place to outline or assess the various options. But it is worth emphasizing that provision of such incentives would be an important element in a package of reforms and initiatives designed to improve Ontario's approach to industrial pollution abatement.

Notes

1. EPA, s. 13(1)(c).

2. EPA, s. 1(1)(c).

3. P.S. Elder, "An Overview of the Participatory Environment in Canada" in Elder, ed. Environmental Management and Public Participation (Toronto: CELRF/CELA, 1975), p. 375.

4. See above, Chapter 2, footnotes 5 and 6.

5. Ross H. Hall has stated, "there is reason to suspect that the more serious aspects of environmental contamination result from the accumulated effects of the tens of thousands of contaminants in interaction with one another in the environment.

   The contribution of any one may be so minor as to seem inconsequestial, but cannot be ignored. For example, it has been demonstrated that two chemicals separately may not cause cancer in laboratory animals, but together they may become deadly. Because of the lack of precise information, one can only surmise the toxic effects of the unlimited combinations of environmental contaminants."

   R. H. Hall, presentation to CELRF, Rountable Discussions on Toxic Chemicals Law & Policy in Canada, Toronto, June 15-16, 1981.

6. See for example, Ross H. Hall & Donald A. Chant, Ecotoxicity Responsibilities & Opportunities, Canadian Environmental Advisory Council Report No. 8, (Ottawa, August 1979).

7. This has been particularly evident in the contentious debates about emissions from secondary lead smelters in Toronto.

8. See J. A. Donnan & P. Victor, and Legislature of Ontario, Standing Committee on Resources Development, Final Report on Acidic Precipitation, Abatement of Emissions from the International Nickel Company Operations at Sudbury, Pollution Control in the Pulp & Paper Industry and Pollution Abatement at the Reed Paper Mill in Dryden (October 1979), pp. 55-84.

9. See, for example, the table of "Substances with Undefined Tolerance Limits" in MOE, Water Management, pp. 45-50, and the discussion of air quality guidelines in MOE, "Procedure for the Operation of the Environmental Air Standards Setting Committee," November 7, 1978, Appendix, pp. 1-3.

10. See above, pp. 20 - 23, 58.

11. See above, section 4.1.5.

12. See Chapter 2, footnote 48.

13. Great Lakes Science Advisory Board. 1980 Annual Report to the International Joint Commission: A Perspective on the Problem of Hazardous Substances in the Great Lakes Basin Ecosystem.

14. The following outline of industry attitudes represents a distillation of the not always consistent or compatible views expressed by industry representatives in interviews with the author and in other fora (for example the CELRF, Roundtable Discussions on Toxic Chemicals Law and Policy in Canada, Toronto, June 15-16, 1981.) It should not be assumed that there is in fact a single accepted industry position. See Appendix III.

15. The usual industry assumption is that the costs of the decision making process should be borne by the government except insofar as industry initiates its own research efforts or agrees to participate in joint programs.

16. It is certainly not true that there is a single environmentalist position any more than there is a single industry position. There are not(only) two clearly oppositing and monolithic sets of ideas. What is presented here is distilled from a variety of sources (see Appendix III) and is intended only to present in a summary fashion the essence of a debate.

17. See above,Chapter 2, esp. pp. 23, 29.

18. See above, p. 30.

19. See above, Section 21.2.

20. See above, Section 4.3.

21. A useful summary of arguments that the negative consequences of environmental protection are often exaggerated by polluters, is provided in J. A. Donnan, "Environmental Protection - The Burdens and the Benefits: An Overview", a paper presented at the Canadian Environmental Law Research Foundation Workshop, Environmental Regulation - The Benefits and the Burdens, February 10, 1981.

22. It has, however, been suggested that the EPA does not provide a basis for requiring polluters to carry out technical studies.

23. The OWRA and EPA assign considerable discretionary powers to Directors as well as to the Ministry and Cabinet. Perhaps most importantly, the Acts impose no obligation to set or enforce standards, or to issue abatement orders requiring discharges

of known contaminants to be eliminated. See, for example, EPA, s. 6 and 7 under which a Director may issue stop or control orders, and s. 136, under which the Lieutenant Governor in Council may make regulations. This discretion works more in the direction of allowing consideration of technical and economic matters which may weaken the application of the Acts than in the direction of allowing regulation of possibly dangerous but ill-studied substances which would broaden the application of the Acts.

24. See above, Section 2.2.1.

25. See above, p. 64.

26. See above, Chapter 2.

27. See above, section 4.1.6, and especially Chapter 4, footnote 110.

28. For example, the point of impingement standard for lead does not cover the problem of lead accumulation in soil after deposition.

29. See above, section 5.1.1.

30. See above, section 2.2.

31. Control orders would also be used to set deadlines for compliance with the general standards.

32. While many proposed forms of economic incentives are theoretically elegant, problems of application are considerable. See, for example James B. Stevenson, editor, The Practical Application of Economic Incentives to the Control of Pollution. The Case of British Columbia, (Vancouver, UBC Press, 1977); and Donald N. Dewees, Evaluation of Policies for Regulating Environmental Pollution, Economic Council of Canada, Regulation Reference, Working Paper No. 4 (Ottawa, 1980). It is assumed in this study that legally enforceable abatement requirements in some forms will and should continue to be used in Ontario. But for encouragement of additional abatement and technology development economic incentives are necessary.

33. The depth of this distrust has been indicated recently by the decisions of citizens in a number of locations - e.g. Cayuga and Stouffville - to send suspected pollution samples to independent laboratories because of doubts about the honesty of Ministry accouncements and/or the accuracy of its scientific findings. See Zuhair Kashmeri, "Chemical traces found in Stouffville well," Toronto Globe & Mail, 10 December, 1981; and "Solvent from Cayuga tested: Charges possible over leak," Toronto Globe & Mail, 13 July, 1981.

34. It is arguable that worry about subtle contaminants has always been close to the root of modern environmental concerns. Certainly part of the push for environmental legislation in the 1960's was inspired by Rachel Carson's warnings about DDT. But fifteen years ago pollution was commonly associated with black smoke and foaming rivers. Today the best publicized pollutants are the acidifying oxides that cause acid rain, the dioxins, and environmental carcinogens generally.

35. Certainly this is easier said than done. As P. N. Summers (President and Chief Executive Officer, The Canada Metal Co. Ltd., correspondence to CELRF, July 28, 1982) observed after reviewing a draft of this report,

> On the surface this seems a fairly innocuous statement, however if one looks underneath its simplicity to implementation, it becomes obvious that someone must determine which contaminants should be so restricted. It seems to me anyway that so many of the thousands of new products which are developed each year are potential environmental problems of unknown eventual impact that to apply this position would restrict development of most of these new products which our society demands.

But if there is a basic conflict between our society's apparent demands both for products that are potentially hazardous and for environmental well being, the problem will have to be confronted eventually. It is well beyond the scope of this study even to propose a range of possible approaches. However, a comprehensive set of steps to discourage and limit the introduction and use of possibly destructive substances would certainly include more than just an agency (or agencies) to decide on contaminant use restrictions. (Several such bodies already exist.) The basic issue of social demands for worrisome products and alternative means of providing the benefits associated with these products would have to be addressed. This would have to be the subject of public debate, the likely results of which are not predictable. Especially if fundamental changes in attitudes and actions are proposed, public decision making on desirable disincentives for, and restrictions on, use of potentially destructive contaminants will pose as many difficulties as implementation of the eventual decisions. The prospect of decision making complexities and implementation difficulties on an unavoidable issue is a strong reason for a prompt beginning of discussion.

36. See above, footnote 33.

37. See below, section 5.6.

38. Efforts in this direction have already been initiated by the MOE Hazardous Contaminant Office. See C. E. Duncan, "The Role of the Hazardous Contaminants Office" a paper presented at the Ontario Industrial Waste Conference, Toronto, June 14-15, 1981.

39. See above, footnote 35.

40. MOE, Policy Manual, March 15, 1981, p. 05-02-06, policy 1.6.

41. See below, sections 5.5 and 5.7.

42. MOE, Policy Manual, March 15, 1981, pp. 05-02-04/07.

43. Summers (op. cit.) has suggested that establishment of "a new breed of firm called the 'Environmental Audit Company' ... comprised of professionals, would serve a purpose similar to the current role played by tax auditors, assuring the general public that, (1) a new product is 'reasonably' safe based upon known or anticipated data, and (2) that the techno-economic facts related by a company in regards to the control order process are as stated." Only the second role is relevant here. ((The first which involves a large measure of subjective judgment in evaluation of the acceptability of risks, is not only a different matter but one that ought not be entrusted to experts who are expected to retain an image of disinterested professionalism.) Some control orders now call for preparation of reports by consultants following terms of reference acceptable to both MOE and the polluter. (See, for example, the control order issued to Spruce Falls Power and Paper Co. Ltd. on March 28, 1977).

    Summers' suggestion would involve regular use of a specialized kind of consulting firm and creation of "some sort of non-aligned body which would be responsible for assuring the professionalism and neutrality of the company's position with regards to environmental issues." Summers argues further that

> Fees associated with this activity would be paid by the subject industry or company and would be allowed for tax purposes to be capitalized as part of the project...in addition...special tax concessions should be implemented similar to those that are implemented for research and development expenditures.

44. Participation by workers in polluting facilities could be encouraged through use of existing occupational health & safety committees already established in larger workplaces. In some unionized workplaces where environmental protection clauses have been included in collective bargaining agreements, special joint company-union environment committees have been created. Efforts to further labour's role in environmental protection through such committees have been

encouraged by the Canada Labour Congress. In March 1978 the CLC Executive Council approved the resolution

> That workers monitor workplace practices by acting as environmental ombudsmen; and that all unions be urged to negotiate a clause in their collective agreements which (a) commit both parties to the maintenance of a clean environment; (b) provide for the right of the worker to refuse to carry out a directive which would unnecessarily pollute the environment; (c) provide the union with the right to grieve or arbitrate a disciplinary action against a worker who acted under (b) above.

A suggested clause for collective agreements, recommended by the CLC to its affiliates in January 1981, includes a provision calling for

> The establishment of a Joint Committee to (a) assess the nature and extent of environmental hazards attributable to the operation of the enterprise; (b) identify the causes and sources; (c) recommend measures to be taken leading toward early action to correct the procedures and practices responsible; (d) implement a monitoring operation to provide continuity for the program.

45. See above, pp. 128 - 129.

46. See, for example,"Submissions of the Canadian Environmental Law Association to the Standing Committee in Resources Development," by John Swaigen, General Counsel, 13 February 1979, p. 2.

47. Ibid., p. 5.

48. See above, pp. 71 - 73.

49. See above, section 4.1.5.

50. Ibid.

51. See above, section 5.1.2.

52. J. N. Mulvaney, Director, MOE Legal Services, interview, February 23, 1982.

53. L. DeGroot, Chairman, Environmental Appeal Board, interview (with B. Savan), December 2, 1982.

54. Ibid.

55. Mulvaney, op. cit.

56. The Ministry's ability to counter company claims is also constrained by Board procedures which require the Ministry to present its case first (even though it is in effect the defendent) and give the apellant company the last word.

57. See, for example, P. S. Elder, editor, Environmental Management and Public Participation (Toronto, CELRF, 1975).

58. The general position of proponents of greater public participation is set out clearly by Prof. Ross H. Hall of McMaster University: "I do firmly believe that the public, and that includes experts and laypeople, should participate fully in the setting of standards, guidelines, objectives and administration of these standards. The issues are very complex and much of the time we are treading on ignorance. Only when the public is fully involved will their suspicion and mistrust be allayed." (correspondence with author, September, 1981).

59. Participation in the choice and setting of economic incentives would be similarly desirable. See above p. 128 - 129.

60. See Appendix III.

61. There might be an appropriate role for the proposed environmental audit companies. See footnote 43.

62. This would include reports prepared under EPA, s. 126.

63. More regularized contact between MOE staff and the affected public would increase report authors' awareness of public concerns.

64. See above, p. 47.

65. See above, pp. 70 - 71 and section 4.1.6.

66. One such device is the pollution control delay penalty advocated in J. A. Donnan and P.A. Victor, Alternative Policies for Pollution Abatement, The Ontario Pulp and Paper Industry: Volume III, Summary and Update, (Toronto MOE, October, 1976) pp. 68-79.

6.0 Conclusions and Recommendations

6.1 Major Findings

The effectiveness, efficiency and fairness of industrial pollution abatement efforts in the province would be improved by three major changes:

. Current legislation should be amended to allow for abatement requirements concerning discharges that pose uncertain but possibly significant environmental risks as well as discharges that can be shown beyond a reasonable doubt to be environmentally deleterious.

. Additional amendments should be made to provide for explicit consideration of technical, financial and socio-economic factors in abatement decision making.

. Legislative and policy changes should be made to ensure more open and participative deliberations on the setting of enforceable standards, guidelines, facility-specific abatement requirements and additional discharge reduction incentives.

6.2 Elements of a Revised Approach to Industrial Pollution Abatement

The main elements of the existing approach to industrial pollution abatement would not have to be altered drastically to accommodate these changes

. Enforceable standards set by regulation should be used to establish the basic legal criteria prohibiting discharges of pollutants which are known to threaten damages or believed to present risks that are intolerable no matter what technical, financial or socio-economic practicalities may apply, or at least risks that are less tolerable than the likely costs of required abatement.

. Guideline criteria, which would be applied with flexibility through voluntary abatement action and use of enforceable control orders, should be used to provide for more adequate environmental protection where the practical barriers to additional abatement efforts are not prohibitive.

. Control orders (or, in rare cases, facility specific special regulations) should be used to allow time for compliance with standards and to provide a vehicle for requiring maximum practical adherence to the guidelines.

. In addition, the most appropriate means of providing economic incentives to encourage abatement work beyond that required by standards and control orders should be identified and applied.

Both risk uncertainties and implementation practicalities should be recognized as valid considerations in setting standards, establishing guidelines, preparing control orders and designing economic incentives. Proper deliberations on all of these matters will involve assessment of known and risks of uncertain acceptability and uncertain risks of considerable importance as well as evaluation of debatable practical factors, including the socio-economic implications of abatement requirements. Because of the inevitably subjective element of such assessments and evaluations, because of needs to increase public understanding risk uncertainties and implementation practicalities, and because of desires to eliminate the bases for public distrust of pollution control decision making, greater openness and broader participation in this decision making is necessary. Legislative and policy changes should be made to ensure

timely and convenient public access to relevant information and effective involvement by interested and affected parties in the relevant deliberations.

6.3 Facing Uncertainties and Identifying Problems

Responsiveness to public complaints about visibly damaging or odourous discharges and to public concerns about well-publicized high profile pollution problems will continue to be important. But greater attention will have to be paid to contaminants which do or may have serious but relatively subtle effects. There is very limited current knowledge about the long term cumulative effects of single contaminants. Knowledge about the additive and synergistic effects of combinations of contaminants under various conditions, perhaps in association with other stresses, is even more limited. More research is needed. But given the multitude of potentially worrisome substances, the extent of present uncertainties, the costs of research and the inevitable severity of constraints on research funds and expertise, the additional research will have to be directed to priority concerns. It will also have to be carried out with greater cooperation among agencies and jurisdictions than is usually evident.

. The Ontario government should recognize needs for more attention to subtle contaminants by easing budgetary constraints on additional research efforts.

. It should also encourage concerted efforts by provincial and federal authorities to identify priority concerns and to coordinate research efforts to identify potential sources of contaminant discharges, and to uncover and evaluate subtle contaminant effects and risks.

Despite the most diligent of future research efforts, there will remain pervasive uncertainties about the subtle, cumulative, long term, additive and synergistic effects of the increasing multitude of known and potential contaminants.

. Facing this the Ontario Ministry of the Environment, in co-operation with other relevant authorities, should seek means of reducing potential hazards through a comprehensive set of actions that would discourage and limit use of known and potential contaminants and carefully restrict introduction of new ones. Control orders and industrial pollution abatement efforts generally should be considered part of a larger program to treat uncertainties reasons for caution.

. The Ministry should adopt, as a matter of policy, forthright determination to recognize and underline the limits to current knowledge about contaminant effects and associated risks. This determination should be evident in Ministry contributions to deliberations on standards, guidelines, control orders and abatement incentives. It should also be reflected in Ministry reports relevant to the identification and abatement decision making.

. The Ministry should encourage frank public discussion of the nature, limitations and implications of current knowledge about environmental risks as part of a program to facilitate greater public involvement in judgments about the acceptability of these risks.

6.4 Enforceable Standards

The approach set out in section 6 above entails some deviation from the current use of standard setting powers.

. Standards should continue to be used to prohibit intolerable contaminant discharges. But they should also be used to establish enforceable requirements for reducing to tolerable levels, discharges of contaminants that pose intolerably worrisome but uncertain risks.

. Decisions on what levels to set for individual contaminants (or combinations of contaminants, conditions, etc.) should be based on

(i) known effects,

(ii) suggested and potential but incompletely substantiated effects,

(iii) the limits of current information about subtle (long term, cumulative, additive, synergistic) effects,

(iv) the nature and resilience of technological barriers to abatement, and

(v) the significance of financial and socio-economic implications of implied requirements (recognizing that control orders can be used to allow reasonable time for compliance).

. Public and industry participation in the standard setting process should be ensured and criteria documents should be prepared setting out the rationale for each standard.

. A more detailed study should be undertaken to identify the most desireable means of providing for direct public and industry participation in the choice of criteria setting priorities and in deliberations on proposed individual standards (and guidelines), and the most desirable means of ensuring effective public review of proposed standards and guidelines and their rationales.

Amendment of the EPA to allow for control of significant but ill-defined hazards will make reliance on general prohibitions for enforcement purposes more problematic. Standards would then provide the most important basis for prohibiting unacceptably damaging or threatening discharges. This implies that standards, which now focus almost exclusively on local point of impingement concentrations of air pollutants, should be used to address a variety of air and water pollution concerns.

. A special study should be undertaken to identify the additional concerns which ought to be addressed through standards.

6.5 Guidelines

. Guidelines for ensuring protection of environmental quality should be established to set out targets that must be met wherever the presence of impassable technological barriers or of countervailing financial and socio-economic costs cannot be demonstrated.

These guidelines could be embodied in regulations as enforceable requirements similar to the standards described above (section 6.4), but subject to recognition of a right granted to those responsible for discharges to submit evidence of impassable barriers or countervailing costs. There would then be, in effect, two kinds of standards - one of which would be subject to incomplete application in the face of demonstrated practicalities in individual circumstances. While this is attractive on some grounds, it might entail an unnecessarily heavy reliance on legal judgments.

. The option of embodying these guidelines in regulations should therefore be kept open but only for use if a more informal approach is found to be insufficiently effective.

. Following the preferred, relatively informal approach, the guidelines should be applied with flexibility through voluntary abatement action and, where necessary to ensure prompt abatement or appropriate in light of the significance of discharges, through use of enforceable control orders.

. Control orders should generally be used wherever technical, financial or economic factors are presented as bases for proposals to perpetuate discharges that fail by a significant margin to meet guideline criteria.

. Decisions on the contents of guidelines concerning individual contaminants (or combinations of contaminants, conditions, etc.) should be based on consideration of

(i) known effects;

(ii) suggested or potential, but incompletely substantiated effects; and

(iii) the limits of current information about subtle effects.

. Like standards, the guidelines should be the product of an open and participative process and accompanied by background information on the bases for decisions.

6.6 Control Orders

Revision of the EPA (and the OWRA) to allow for control of uncertain risks and consideration of technological, financial and socio-economic practicalities will alter control order decision making. In particular,

(i) authorization to address uncertain risks broadens the scope of potential control order requirements;

(ii) it also entails changes to recognize the increased importance of subjective elements in control order decision making; and

(iii) explicit acceptance of needs to consider practicalities should reduce if not eliminate several problems posed by the silence of the current legislation on this issue, including Ministry hesitancy to require technical and financial studies by polluters and to address these practicalities before the Environmental Appeal Board.

6.6.1 The Role of Control Orders

. Following the recommendations above concerning standards and guidelines, control orders should be used to provide reasonable and enforceable deadlines for compliance with standards; to be a vehicle for enforceable requirements to meet guideline criteria; and to allow for continued failures to meet guideline criteria where such failures can be justified through evidence of overriding technological, financial and socio-economic costs.

. Where standards are involved practicalities should be considered only insofar as they are relevant to identification of reasonable compliance deadlines.

. Where guidelines are involved practicalities may also be considered as possible grounds for issuing requirements that fall somewhat short of ensuring compliance with guideline criteria.

6.6.2 Control Order Decision Making

. The burden of supplying reliable evidence concerning relevant technological, financial and socio-economic practicalities should fall on the polluter, with the Ministry given rights of access to company information needed to substantiate company claims.

. The general confidentiality of proprietary information should be protected; however, there should also be provision for independent third party evaluation of company judgments about information claimed to require confidentiality for commercial reasons,* and provision allowing representatives of the public interest to have access to the confidential material, under certain terms designed to preserve general confidentiality.

. Participation in control order decision making should not be limited, as it is now, to Ministry officials and company representatives with unsatisfactory public meetings held at the end of negotiations. Recognition of uncertain risks and implementation practicalities will add greatly to the subjective element in abatement decision making. This factor (in addition to others noted in section 6.2, above) should be accepted as a sufficient reason for ensuring opportunity and encouragement for direct participation by representatives of clearly interested and concerned parties in control order deliberations.

. Complicated problems are posed by the need to develop criteria for determining how and according to what criteria public representative are to be chosen and how their participation should be facilitated. This should be the subject of a specific study.

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* See above, Chapter 4, footnote 43.

. Special efforts should be made to provide for participation by labour representatives in control order decision making. This may entail legal provisions protecting labour participants from potential penalties which might discourage or constrain their involvement.

. Reports and reviews prepared by the company and the Ministry on environmental, technical and economic matters relevant to control order decision making should be released to the public (minus necessarily confidential material) when they are introduced in the control order deliberations.

. The Ministry should attempt to ensure that its information is comprehensible to the lay reader.

. It should also emphasize and clarify those aspects of the abatement issues (in particular the extent and nature of known damages, risk, uncertainties, and socio-economic implications) about which public concern is likely to be great and public opinion especially important.

. The Ministry currently responds favourably to requests from municipal officials and local residents' organizations for participation along with polluting companies on neighbourhood liaison committees established to facilitate public awareness of abatement problems and Ministry awareness of public concerns. The Ministry is not now but should in the future be willing to take the initiative to encourage establishment of such committees.

6.6.3 Control Order Appeals

Although it is not clear to what extent the current appeal process has led to a weakening of control order requirements, the present nature

of the appeal process does weaken the Ministry's hand in control order negotiations. Reforms are needed.

. While the right of appeal is important for companies and individuals subject to regulatory decisions by administrative authorities and should be protected, possible use of appeal processes to delay unnecessarily action in the public (and environmental) interest should be discouraged.

. The current provisions by which control orders do not apply until all appeals are exhausted should be modified to permit delay of control order implementation only to appeal of a newly issued order requiring action (i.e. no appeal of a refusal for extension of or other amendment to an existing order), only to the specified control order requirements under appeal and only to appealed requirements that entail immediate action.

. The government of Ontario should act to ensure that the Environmental Appeal Board is given sufficient resources to give prompt and thorough attention to any appeal.

. In cases where the Ministry denies a company's request for extensions or other revisions to an existing order, the company should be given a right to petition the Board for a hearing, which, if granted, would not affect the application of the order except insofar as the Board's decision at the end of the hearing required changes.

. Appeal rights should be allowed to the affected public as well as the affected company.

. Authoritarian use of the facility-specific regulation device as a means of foreclosing appeal rights and delays should be avoided.

. Presuming acceptance of recommendations in sections 6.4, 6.5, 6.6.1 and 6.6.2 above, the Environmental Appeal Board should be authorized to consider technological, financial and socio-economic factors to the same extent and in the circumstances as they are considered in standard and guideline setting and control order deliberations. In particular, the Board should not treat these factors as potential justifications for failure to comply with any standards (though they may affect assessment of the reasonableness of compliance deadlines).

6.7 Penalties and Incentives

. The EPA should be amended to allow the courts to impose penalties for non-compliance with pollution abatement requirements which at least match the economic incentives to avoid or postpone pollution abatement expenditures.

. Because heavy reliance on voluntary compliance with guideline criteria is unavoidable and because abatement efforts beyond those required to meet standards and guidelines should be encouraged, more positive incentives for abatement action should be introduced.

. Design of an ideal package of such incentives is a complex task which is beyond the scope of this study. It should be recognized, however, that decision making on positive incentives must face the same subjective factors as decision making on environmental quality criteria and abatement requirements. Openness and public involvement should therefore be emphasized in approaches to the choice and setting of incentives.

APPENDIX I

Ontario Ministry of the Environment Control Orders in Effect in Mid 1980

The following chart presents some of the more significant facts about, characteristics of, and background to, the industrial pollution control orders and requirements and directions that were in effect in mid 1980. All of the then current orders are (or at least are intended to be) covered.

Nearly all the information provided is drawn drom facts presented explicitly or implicitly in the relevant orders. Only in a few notable cases were additional information sources used. Consequently, the information provided is far from complete. (It should not be assumed that, for example, there was no company response to a given notice of intent merely because the chart fails to include any note about a response).

The purpose of the chart is merely to provide a somewhat more concrete context for the discussion in the text, without reproducing all the outstanding orders or subjecting them individually to detailed analysis.

APPENDIX I

ONTARIO MINISTRY OF THE ENVIRONMENT CONTROL ORDERS

REGION: Northwestern

COMPANY	PROBLEMS
Kimberley-Clark of Canada Ltd. Terrace Bay	- suspended solids and BOD_5 effluents into water - suspended particulates and sulphur compounds, sulphur dioxide and nitrogen oxides discharged into the air
James Richardson and Sons Ltd. Winnipeg (re Thunder Bay terminals)	- dust and suspended particulate matter discharged into the air
Industrial Grain Products Ltd. Thunder Bay	- BOD_5 effluents into the Kaministiquia River - particulates discharged into the air
Great Lakes Forest Products Ltd. Thunder Bay (re Dryden pulp and paper mill)	- air emissions: odour, H_2S, and suspended particulates - waste water effluent: suspended solids, BOD_5, toxic to fish, foam, bad taste odour
Great Lakes Forest Products Ltd. Thunder Bay (re Thunder Bay mill)	- waste water effluent: BOD_5, suspended solids, foaming, taste, odour

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
not mentioned		24 August 1979	
yes - no date given also previous Amending Control Order 12 March 1976			company request for Amending Control Order due to closure of one terminal and construction/delivery problems with second terminal
not mentioned	completed 23 May 1979	24 May 1979	
1) Requirement and Direction 3 Dec 1970 deadline 31 Oct 1974 2) Control Order 28 Oct 1974 deadline 31 Dec 1976		13 May 1980	
not mentioned		mentioned: no date given	presumably some discussions took place and delay in issuing the Requirement and Direction results (some R & D deadlines precede the issue date)

EFFECT OF RESPONSE	CONTROL ORDER ISSUED	APPEAL	AMENDMENT REQUEST(S)
	18 Sept 1979		
granted	Amending Control Order 21 Dec 1977		(is on Amending Control Order)
	26 June 1979		
	5 June 1980		
	Requirement and Direction 24 June 1977 (with reasons)		- more time requested to allow for investigation of Rapson-Reeve process improvements before installation in "A" mill - expectation of greater efficiency and cost reduction

REQUEST RESULTS	EXPIRY	NOTES
	31 Dec. 1980 (last requirement)	- Control Order includes provision intended to ensure acceptable testing methodology, water quality
	31 Dec. 1979	
	30 June 1983 (last requirement)	
	31 December 1983 (but includes reports required on 31 March 1984 & 30 June 1985 and air pollution controls to be in normal operation by 30 June 1984	- for background see report of the Legislature of Ontario Standing Committee on Resources Development, October 1979 - requires by 31 December 1980 a report on compliance options to satisfy "the toxicity requirements of the pulp and paper effluent regulations made under the federal Fisheries Act" as well as those relating to BOD control under the Provincial Water Quality Objectives (PWQO) - exceptional case PWQO non-compliance policy stated: "the Director, with input from the public, will consider the proposed alternatives" (presumably this does not apply to the requirements of the federal regulations) - conditions for possible extensions set out: (a) acts of God, (b) industrial disturbance, (c) inability to obtain materials and equipment
15 month extension granted 9 Feb. 1979	31 Dec. 1980 (last requirement) after extension 31 Mar. 1982	- includes study to identify problem sources and to report on any "which can be practicably eliminated" (item 10) - required action not expected to be sufficient

REGION: Northwestern (con't)

COMPANY	PROBLEMS
Domtar Inc. Red Rock	- waste water effluent: suspended solids and toxic compounds into Lake Superior - air emissions: suspended particulates and sulphur compounds (H_2S, etc.)
Boise Cascade Canada Ltd. Fort Frances	- waste water effluent: BOD_5, suspended solids, fish toxicity and tainting, foam - air emissions: wood fires, salt cake, dustfall, total reduced sulphur compounds (odour)
Boise Cascade Canada Ltd. Kenora	- waste water effluent (into the Winnipeg River): total suspended solids, fish toxicity - air emissions: particulates
Steep Rock Iron Mines Ltd. Atikokan	- soil contamination: transformer oil with PCBs
American Can of Canada Ltd. Marathon	- waste water effluent (into Lake Superior): toxic to fish, suspended solids.
Abitibi Forest Products Ltd. (later Abitibi Paper Co.) Thunder Bay (re Thunder Bay Division)	- waste water effluent: suspended solids, BOD_5
Abitibi Paper Company Ltd. Thunder Bay (re Fort William Division)	- waste water effluent: suspended solids, BOD_5
Abitibi Forest Products Ltd. (later Abitibi Paper Co.) Thunder Bay (re Provincial Paper Division)	- waste water effluent: suspended solids, BOD_5

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
not mentioned	no date given	31 Jan 1980	
not mentioned	several	25 Apr 1980	apparently extended pre-notice negotiations (some deadlines precede the control order issue dated)
original Control Order issued to the Ontario-Minnesota Pulp & Paper Co. Ltd. 27 Apr 1978			Amending Control Order requested because of a 171 day strike by Machinists and Papermakers union
yes, but no date mentioned	17 Jan 1978		in writing 24 Jan 1979
original Requirement and Direction 23 June 1977	not mentioned		Amendment requested to allows domestic water to be added to municipal sewage and to recognize decision to rebuilt the bleach plant (fibre reduction system allegedly not needed)
	no date given	31 Oct 1977	
	no date given	31 Oct 1977	
	no date given	31 Oct 1966	

EFFECT OF RESPONSE	CONTROL ORDER ISSUED	APPEAL	AMENDMENT REQUESTED(S)
	21 Feb 1980		
	16 May 1980		
granted	Amending Control Order 14 Aug 1980		(is an Amending Control Order
"certain changes were made in the Control Order and the Provincial Offider's Report in accordance with your submission"	control order issued with reasons 20 Mar 1979		
apparently granted	Amending Requirement and Direction 12 June 1978		(is an Amending Requirement and Direction)
	29 Nov 1977		-plans regarding BOD_5 objective to 39 tons per day alleged to be not practicable due to nature of paper machine -clarifier proposed -transfer of requirements to Fort William division below)
	24 Nov 1977		-rquest contained with above
	24 Nov 1977		(related to above but no amendment needed)

REQUEST RESULTS	EXPIRY	NOTES
	31 Dec 1984 (last requirement: study re further work)	- required to meet "the toxicity requirements for new or expanded kraft mills according to the pulp and paper effluent regulations made under the federal Fisheries Act"
	30 June 1984	- item 8 notes that BOD_5 loadings have never complied with the terms of a Certificate of Approval issued in late 1970 - reference made to need to meet federal Fisheries Act regulation requirements - public comment at public meeting on proposed order led to inclusion of requirement concerning control of blowing foam
	31 Dec 1983	- final requirement is for a report on plans if regulated requirements under the federal Fisheries Act are not met
	in force until revoked or replaced last requirement 31 Mar 1984	- requires isolation and warning of contaminated soil - also required ground and surface water testing
	31 Dec 1980 (last requirement)	
-requested amendments granted, Amending Control Order issued 6 Sept 1979 after public meetings 20 June 1979 -BOD_5 objective for Thunder Bay area plants retained	31 Dec 1982	- last requirement a report on results - public meeting reported to "be generally favourable to your request" - goal set at "approximately 39 tons per day BOD_5 from the 3 sulphite mills in question
as above	31 Dec 1982	- closely related to above
	31 Dec 1982	- closely related to above

REGION: Northeastern

COMPANY	PROBLEMS
Abitibi Forest Products Ltd. (later Abitibi Paper Co. Ltd., Abitibi Building Products Div.) Sturgeon Falls	- waste water effluent: suspended solids, BOD_5, phenols
Abitibi Paper Co. Ltd. Iroquois Falls	- waste water effluent: spent sulphite liquor, wood fibre, dye and paper products (i.e., suspended solids and BOD_5) - interuption of flow of Abitibi River (dams) - air emissions: soot and particulates
Abitibi Paper Co. Ltd. Smooth Rock Falls	- waste water effluent (into Mattagami River) suspended solids, dissolved solids, BOD_5, pH, taste and odour, tainting of fish flesh - air emissions: particulates, hydrogen sulphide, chlorine dioxide, odour
Spruce Falls Power and Paper Co. Ltd. Kapuskasing	- waste water effluent: suspended solids and BOD_5

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
	no date given	28 Mar 1977	not mentioned but likely in light of the delay between the notice and the order
	27 Mar 1977	28 Mar 1977	not mentioned but likely in light of the delay between the notice and the order
	28 Mar 1977	28 Mar 1977	not mentioned but apparently significant given delay and changes
	26 Jan 1977	26 Jan 1977	

EFFECT OF RESPONSE	CONTROL ORDER ISSUED	APPEAL	AMENDMENT REQUEST(S)
	3 Nov 1977		18 June 1979 company requested higher suspended solids limit
	20 Dec 1977		
deadline extensions of 6 months to 2 years on specific items	24 Oct 1977		16 Oct 1979 letter (to MOE and the Ministry of Industry & Tourism) proposing additional work on environmental control if government funds granted
	28 Mar 1977		

REQUEST RESULTS	EXPIRY	NOTES
-public meeting 19 July 1979 -proposed revision of suspended solids limit to 9.3 kg per mg of product on monthly average -granted 19 Nov 1979	21 Dec 1982	- the initial objective for suspended solids was 50 ppm and for phenols was 8.5 lbs/day - amendment changes approach to measurement of suspended solids to production related measure apparently based more on technological capacity and practicability than on effects - BOD_5 loadings to be determined by modelling and chart with tolerable BOD_5 related to variable water flow, temperature and dissolved oxygen
	30 June 1988	- maintenance of mimimum river flows rates required - river capacity (re BOD_5) study required - backup clarifier capacity mentioned - objective re total suspended solids is 20,000 lbs/day - final requirement is a report on results and needed extra work
notice of intent issued 19 Feb 1980 -Amending Control Order issued 27 May 1980 -same as initial Control Order plus 3 additional systems for BOD_5 and suspended solids reduction	31 Dec 1982	- amendment includes additional work (presumably funded in part by a government assistance grant) that was apparently necessary to achieve compliance with Provincial Water Quality Objectives - this indicates that the initial control order requirements were not adequate - negotiations on notice of intent contents evident in differences between notice and control order
	31 Dec 1983	- includes requirement of a consultant's water quality modelling report covering BOD_5 loadings and flow rates - suspended solids objective, 28,000 lbs/day (30 operating day average) and 150 ppm maximum at any time - only requirement for final year is a study of remaining problems and possible solutions - i.e., control order requirements not expected to be adequate

REGION: Northeastern (con't)

COMPANY	PROBLEMS
E. B. Eddy Forest Products Ltd. Expanola	- waste water effluent: suspended solids, BOD_5, fibre mats, odour - air emissions: hydrogen sulphide, etc., particulates
Levesque Plywood Ltd. Hearst	- air emissions: particulates, etc. smoke
Falconbridge Nickel Mines Ltd. Toronto (re Falconbridge works)	- air emissions: sulphur dioxide
Inco Ltd. Toronto (re Sudbury smelter)	- air emissions: sulphur dioxide, nickel
Rio Algom Ltd Toronto (re Elliot Lake mines)	- waste water effluent (into Serpent River flowing in Lake Huron): radium, low pH, metals (iron), ammonia and total nitrogen compounds, dissolved solids and sulphates, toxic to fish
Denison Mines Ltd. Toronto (re Elliot Lake mines)	- as above

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
	no date given	28 Mar 1977	
		21 Aug 1979	submission and meeting 9 Oct 1979
Minister's Order 24 Nov 1969			1973 (?) request for review of 31 Dec 1975 compliance date on grounds of economic difficulties and failure of Nickel Iron Pellet Refinery
13 July 1970, amended 17 July 1971 2 Jan 1973	21 June 1970	27 June 1978	
	not mentioned but reasons accompaying Requirement & Direction indicate studies done	21 Nov 1977	submissions
Requirement and Direction 19 Aug 1977	as above	21 Nov 1966	submissions

EFFECT OF RESPONSE	CONTROL ORDER ISSUED	APPEAL	AMENDMENT REQUEST(S)
	28 Feb 1978		
not mentioned or apparent	26 Nov 1979		
MOE agrees date "no longer practicable"	Amending Control Order issued 20 Aug 1973		6 Dec 1976 request for further extension on grounds of economic constraints and revised construction plan
	27 July 1978		
not mentioned or apparent	8 Dec 1977 Requirement and Direction with reasons		
as above	8 Dec 1977 Requirement and Direction with reasons		

REQUEST RESULTS	EXPIRY	NOTES
	30 June 1984 (last requirement air control)	- initial control order requirements to be followed by studies of additional work needed to meet objectives of i) BOD_5 8,000 lbs per day and ii) compliance with federal toxicity guidelines (regulations under the Fisheries Act) - studies due 31 Dec 1982
	31 Dec 1980 (last requirement)	
"discussions leading by Falconbridge to the terms of (a new order" 8 July 1977 -main work requirements not changed -alteration of interim emission reduction levels -additional 3 yrs. for extra work to meet point of impingement air standard	i) initial Minister's Order: 31 Dec 1975 ii) first Amending Control Order: 31 Dec 1980 iii) second Amending Control Order 31 Dec 1983	- staged reduction of SO_2 emissions to 465 tons per day by 31 May 1979 - study of means to meet provincial standard (.3 ppm point of impingement ½ hour average) by reducing aggregate emissions from complex to be completed by 31 Dec 1980 - final compliance date (31 Dec 1983) for enactment of study findings
	30 June 1982	- see Legislature of Ontario, Standing Committee on Resources Development, report, October 1979 - subsequent Notice of Intent for an Amending Control Order would have reduced emission limit from 3600 to 2500 tons per day immediately and to 1950 T/d by mid 1983 - public meeting held 4 June 1980 - Inco objected to proposal, mentioned appeal right - order-in-council issued 2 Sept. 1980
	lasted dated requirement: 31 Dec 1979 several open-ended "proceed with..." requirements	- open-ended requirements - company to identify and report on alternative pollution control options and to proceed with implementation, no completion date given - re radium 226 - compliance with the federal regulatory standard (Fisheries Act, Metal Mining Liquid Effluent Regulations) considered "interimly acceptable" (the MOE Objective is tougher)
	as above	- as above - new Requirement and Direction replaced one issued only 4 months earlier, no explanation given

REGION: Northeastern (con't)

COMPANY	PROBLEMS
Algoma Steel Corp. Ltd. Sault Ste. Marie (re Sault Ste. Marie steel works)	- waste water effluent (into St. Mary's River): napthalene, cyanide ammonia, sulphide, phenol, oily wastes, suspended solids - air emissions: particulates and malodorous gases
Algoma Steel Corp. Ltd. Sault Ste. Marie (re Wawa sintering plant)	- air emissions: sulphur dioxide

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
i) initial Requirement and Direction 12 Mar 1974 ii) initial Control Order (air only) 16 Oct 1975	air: 11 July 1975 water: 27 July 1977	Control Order Amendment requested 29 Oct 1975 Notice of Intent issued 17 Aug 1977	- extensive negotiations from time of amendment request (Oct 1975) to Notice of Intent - Amending Control Order refers to negotiations
Minister's Order 4 Jan 1971 Amended 11 Dec 1978	not mentioned studies part of initial order	not mentioned	- amendment requested 21 May 1975

EFFECT OF RESPONSE	CONTROL ORDER ISSUED	APPEAL	AMENDMENT REQUEST(S)
?	30 May 1978		
not mentioned long delay	4 July 1978		

REQUEST RESULTS	EXPIRY	NOTES
	i) initial Requirement and Direction deadline 1 June 1975 ii) initial Control Order deadline 31 Dec 1979 iii) Amending Control Order deadline not clear - depends on appeals - not before end of 1981	- detailed reports on efficiencies and practicability of alternatives required - will include process application information (possibly involving proprietary info) - information on "the availability of practicable technology" required as part of data gathering and reports requirements
	no expiry date	- apparently open-ended Control Order - required abatement proposals to be "in terms of total hours of curtailment and tons of production lost" - emission curtailment program allowed until practicable abatement method (emission control) becomes available

REGION: Southeast

COMPANY	PROBLEMS
William R. Barnes Co. Ltd. Waterdown (re Lanark County marble crushing facility)	- air emissions: particulates, white dust noise (resulting in material discomfort and loss of enjoyment)
Canadian International Paper Co. Hawkesbury	- air emissions: sulphur dioxide, steam, particulates - waste water effluents: spent sulphite liquer, bleaching effluent
Courtaulds (Canada) Ltd. Cornwall (viscose plant)	- waste water effluents (into bay of St. Lawrence River): including zinc, suspended solids, BOD_5, sulphuric acid, viscose
E. B. Eddy Forest Products Ltd. Ottawa	- waste water effluents (into Ottawa River) suspended solids, sanitary waste
Erickson Construction Co. Ltd. Ottawa (re Old DeLoro Smelting facility on Moira River)	- arsenic into surface and ground water

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
	28 June 1978	17 July 1978	not mentioned, but possible in light of delay between Notice and Control Order
	12 Dec 1974	31 Dec 1974	not mentioned
	2 Aug 1977 (?)	2 Aug 1977	
	21 Oct 1977	28 Oct 1977	oral submissions 5 Jan 1978
	3 Oct 1977 also later "Biological Survey of Moira River"	9 Dec 1977	oral submissions 13 Feb 1978

EFFECT OF RESPONSE	CONTROL ORDER ISSUED	APPEAL	AMENDMENT REQUEST(S)
	6 Feb 1979	Yes -unrequested (?) amendment made 22 August 1979 in light of EAB appeal -deadline extended to 90 days after date by which all requirements ordered by EAB to be completed -EAB hearing Sept 1979 (after initial Control Order deadline)	
	21 Jan 1975		i) 5 August 1975: request for 3 month extension re stack increase requirement ii) 3 June 1976: request for 4 month extension re sulphur dioxide control (old deadline 30 June)
	3 Oct 1977		i) Feb (?) 1979 extension request due to late deliveries of equipment re viscose filtration facility ii) 10 July 1979 further extension request due to supplier failure to provide instrumentation for viscose filtration facility
?	23 May 1978		June (?) 1978 extension request first major deadline (re sanitary wastes)
?	21 Feb 1978	Yes EAB hearing 10 May 1978: Control Order upheld	

REQUEST RESULTS	EXPIRY	NOTES
	i) initially: 1 Sept 1979 ii) extended (see under APPEAL)	- appeal to EAB in Feb 1979 not heard until Sept 1979, after Control Order deadline
i) granted 12 Sept 1975 ii) granted 13 July 1976	31 Dec 1981	
i) granted 15 Mar 1979 ii) granted 15 Aug 1979	i) initial deadline 31 July 1979 ii) after second extension, 31 Jan 1980	- contaminant discharge allowed; required reduction related to production rate - water pollution only, but EPA used rather than OWRA
granted (extra year) 27 July 1978	last requirement 15 Dec 1983	- 4 years allowed for a report on means of reducing suspended solids in board mill effluent - allowable discharge related to production rate - water pollution only, but EPA used
	? most requirements 1978	- required work was not done (for financial reasons) - Stop Order issued with reasons 2 April 1979 - Minister's Order issued 2 April 1979: work to be done by MOE at company's cost if company failed to comply with Stop Order - Minister's Order issued 24 March 1980: work to be done by MOE - likelihood of cost recovery very questionable

REGION: Southeast (con't)

COMPANY	PROBLEMS
Genstar Chemical Ltd. Maitland (nitrogen fertilizer complex)	- waste water effluent (into St. Lawrence River): suspended solids, nitrogen pH, ammonia, chromium
Masterloy Products Ltd. Ottawa	- air emissions: arsenic, vanadium (foliage effects) - soil contamination - effects on surface and ground water quality
TCF of Canada Ltd. Cornwall	- waste water effluents (into St. Lawrence River): associated with Courtault's waste waters - solids, viscose, sulphuric acid, BOD_5 - wastes to municipal sewer

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
		17 July 1979	
	16 Mar 1976 amended 4 May 1976	5 Apr 1976	28 April 1976 representations, "oral submissions"
	16 Sept 1977 (?)	16 Sept 1977	

REQUEST RESULTS	EXPIRY	NOTES
	30 April 1983	- Requirement and Direction: OWRA used - requirements involve both studies and abatement projects
	31 Aug 1977 last requirement: 31 Dec 1976	- reference to "immediate danger to human life and health" but Stop Order not used - two somewhat different orders provided by MOE
	31 May 1981	- water pollution only, but EPA used (unlike Genstar)

CONTROL ORDER			
EFFECT OF RESPONSE	ISSUED	APPEAL	AMENDMENT REQUEST(S)
	Requirement and Direction 2 August 1979		
amendment of Provincial Officer's Reprort amendment of notice (?)	18 May 1976		
	9 Nov 1977		

REGION: Central

COMPANY	PROBLEMS
Hidden Valley Reports Ltd. Hidden Valley (Huntsville)	- sanitary sewage
Anchor Cap and Closure Corp. of Canada Ltd. Toronto	- air emissions: various contaminants, smoke and odour (including xylenes in concentrations beyond standards set in Reg. 15 s.5(3) under EPA)
Bishop Building Materials Ltd. Toronto	- waste water effluent: oil and suspended solids - air emissions: hydrogen sulphide, odour and particulates
Canadian Johns-Manville Co. Ltd. Scarborough	- air emissions: odour
James Sabiston Ltd. Unionville	- contaminants from landfill site: gas (methane, etc.) - perpetual control required
St. Lawrence Cement Co	- air emissions: particulates
Canada Metal Co. Ltd. Toronto	- air emissions: lead

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
Requirement & Direction 7 Jan 1977 (stated to be unaffected by the R & D)		29 Feb 1980	
	27 July 1977	7 Oct 1977	
	1 June 1978	6 Dec 1978	verbal and written submissions
	1 June 1978	4 July 1978	meeting apparently requested
	not mentioned	mentioned, no date given	submissions from lawyer
	4 May 1978	5 May 1978	letter 15 May 1978
i) Control Order 11 Sept 1978 ii) Stop Order 26 Oct 1973 -set aside by Supreme Court of Ont. 30 Oct 1973 iii) Control Order 5 Apr 1976	1 Oct 1979	29 Oct 1979	meetings before Notice of Intent issued - feasibility of proposed deadlines discussed

EFFECT OF RESPONSE	CONTROL ORDER ISSUED	APPEAL	AMENDMENT REQUEST(S)
	Requirement and Direction 2 Apr 1980		
	31 Oct 1977	appeal of MOE refusal to grant company request for Amending Control Order (see notes)	i) letter: 31 July 1978 extra time requested to study new technological developments ii) formal request 8 Aug '7 for amendment due to changes in company operations
-reference to hydrogen sulphite and odour emissions from cupola removed -to be dealt with later	7 June 1979		extensions requested 2 May 1980, due to delays caused by MOE review of particulates control proposal
-meeting 12 July 1978 -"The compliance dates for the control order were established by mutual agreement"	20 July 1978		
dates changed (not necessarily due to submissions)	10 Aug 1979		
none	24 May 1978		
	15 Nov 1979		Nov 1980: request for 2 month extension due to problems with contractor

REQUEST RESULTS	EXPIRY	NOTES
	target for completion 31 Oct 1980	
i) 5 Dec 1978 Amending Control Order issued ii) rejected 27 Sept 1979 as unlikely to satisfy abatement needs re odorous emissions	30 Sept 1980	- 12 Oct. 1979: company requested Environmental Appeal Board (EAB) hearing re MOE rejection of amendment request - EAB granted company request for hearing, despite MOE objections, 27 Feb. 1980 - MOE appealed EAB decision: failed - 6 Nov. 1981, EAB revokes Amending Control Order orders Approval for single 20-30 metre exhaust stack
granted 27 May 1980 -particulate control deadline extended from 30 June 1980 to 30 Aug 1980 -order expiry extended from 30 Apr to 30 Oct 1980	30 Oct 1980	- order expiry date changed to provide protection from prosecution for 2 months after final control deadline
	1 June 1980	- see effect of response to Notice of Intent
	-31 Dec 1979 (last task) - some procedures required in perpetuity	- not a conventional industrial Control Order - Order includes reference to ownership of lands reverting to the Crown if company fails to comply with requirement to fund control system
	1 May 1982	- many fugitive sources - possible extension mentioned re one requirement
4 Dec 1980: public meeting -public opposition to extension -reference made to Minister's commitment to enforce deadline 15 Dec '80 extension request denied - no prosecution 19 Dec 1980: -company appeals MOE refusal to extend order (See Anchor Cap case)	last requirement 15 Dec 1980 expiry 30 June 1981	- subject of major public concern and attention - Ministry officials pressed by this to resist company requests for extension - public liaison committee established - enforcement difficulties and company resistance because of uncertainties re lead health effects - EAB appeal similar to Anchor Cap case

REGION: West Central

COMPANY	PROBLEMS
Abitibi Forest Products Ltd. Thorold	- waste water effluent: BOD_5, suspended solids
Atlas Steels Division of Rio Algoma Ltd. Welland	- waste water effluent: solvents, iron, pH, suspended solids
Cyanamid of Canada Ltd. Niagara Falls	- waste water effluent: chromium, phosphorous, sulphuric acid, ammonia, urea, nitrate, nitrogen, xanthate run off: ammonium nitrate air emission: suspended particulates, biological drug wastes
Culverhouse Foods Incorporated Vineland Station	- waste water effluent with unacceptable pH into creek emptying into Lake Ontario
Dominion Foundries and Steel Co. Ltd. Hamilton	- air emissions: particulates and odours
Holiday Farms Ltd. Niagara Falls	- waste water effluent (into Niagara River) BOD_5, coliforms, solvents
Archie McCoy (Hamilton) Ltd. Troy (foundry)	- air emissions (not specified)
Ontario Paper Co. Ltd. Thorold	- waste water effluent: BOD_5, suspended solids, toxic to fish, foaming, discolouration - run off
Wabasso Ltd. Welland	- cotton mill waste water including chromium

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
	yes, but no date given	28 Mar 1977	probable, in light of delay between Notice & Control Order
	6 June 1975	9 Sept 1975	
	15 Sept 1975 1 Nov 1976	1 Nov 1977	yes
	mentioned, no date given	12 July 1978	
31 Mar 1970 (under Air Pollution Control Act) amended 18 Aug 1972 15 Aug 1974 16 Feb 1976		not applicable	15 Dec 1977 company request for extension "due to delays in the development of practicable technology for the control of certain sources of emissions"
30 Apr 1976 amended 31 May 1977	15 Dec 1975	not applicable	19 Oct 1978 extension request financial constraints and primary treatment costs greater than estimated
	25 Oct 1979	3 Jan 1980	
		28 Mar 1977	not mentioned, probable in light of delay between Notice and Control Order
	2 Aug 1978	2 Feb 1979	

CONTROL ORDERS

EFFECT OF RESPONSE	ISSUED	APPEAL	ADMENDMENT REQUEST(S)
?	10 Nov 1977		
	24 Sept 1975		7 July 1978 - requested amendment re new information, production changes and additional treatment needs
meetings/negotiations -mutual agreemnt or changes to Notice of Intent 19 Jan 1978	10 Feb 1978		
	28 July 1978		
request granted 21 Feb 1978 "Recognizing that control techniques at the present time are still largely theoretical or experimental	21 Feb 1978		(order is product of the 4th amendment)
request granted 7 Aug 1979 new deadline 7 June 1980 (initial deadline 31 Oct 1978)	7 Aug 1979		
	18 Jan 1980		
	10 Nov 1977		8 Jan 1979 - requested deletion of certain requirements
	19 Feb 1979		

REQUEST RESULTS	EXPIRY	NOTES
	31 Dec 1982	- absolute maximum level for suspended solids: no reference to production rates
revision granted 12 Jan 1979	i) 31 Mar 1980 but facility startup 30 June - 31 Dec 1980 ii) amended to 31 Dec 1981	- specific dated interim requirements - apparently tight scheduling - 1st requirement for report 6 days after order issued - probably extensive pre-notice negotiations
	30 Sept 1984	- Best Practicable Technology (BPT) required re dissolved solids - special effluent objectives for wastes entering Welland River listed, required - charges laid and convictions gained in private prosecution under Fisheries Act 1981: EPA Control Order not complete protection against prosecution
	open-ended, dependant on timing of municipal sewer connection	- required to meet MOE objectives for industrial waste discharges into Lake Ontario
	30 June 1979 -last requirement: 31 Dec 1978	- adequate control not expected to be achieved through compliance with the order - some studies and reports required - some requirements vague: e.g. "shall implement all changes necessary to improve emissions from the Hot Metal Transfer Station."
	7 June 1980	- financial constraints accepted as legitimate basis for delay
	31 Dec 1980	- apparently tight schedule
31 July 1979 granted	31 Dec 1982	- tons per day maxima set re BOD_5, etc. - study requirements include evaluation of final effluent quality - final clause requires report on why 5.5 (vs. 7.5) per day of suspended solids and 15 (vs. 20) tons per day of BOD_5 cannot be achieved: implies requirements would be tougher if practicable
	31 July 1980	- chromium waste at 5 ppm to go into sanitary sewer

REGION: Southwest

COMPANY	
Allied Chemical Canada Ltd. Amherstburg	- air emissions, fluoride (foliage effects)
Polysar Ltd. Sarnia	- liquid industrial waste into St. Clair River - chemical oxygen demand, phenols, suspended solids, solvent, extractibles
Hiram Walker and Sons Ltd. Windsor	- air emissions from spent grain driers

PREVIOUS CONTROL ORDER	MOE STUDY	NOTICE OF INTENT	COMPANY RESPONSE TO NOTICE OF INTENT
26 Apr 1974	30 May 1975	15 July 1975 (served 21 July 1975)	
		19 Oct 1976 (with reasons)	

EFFECT OF RESPONSE	CONTROL ORDER ISSUED	APPEAL	AMENDMENT REQUEST(S)
	15 July 1975 (served 7 Aug 1975		
	2 Dec 1976 Requirement & Direction		(amending letter dated 5 March 1980 noted in margin of Requirement and Direction, but letter not attached)
	17 May 1973		i) early 1975: extension requested - dates not practicable due to labour dispute ii) July/Aug ? 1976, further extension requested
			iii) Feb/Mar 1978: change in required system requested
			iv) Nov 1978: change requested due to cessation of alcohol production

REQUEST RESULTS	EXPIRY	NOTES
	31 Oct 1977 or in perpetuity 2 differed orders supplied by MOE	- required operation halt if nearby fluoride levels exceed specified levels in summer forage or silver maple leaves (leaves expected to exhibit injury at set levels) - see under EXPIRY
	1 Jan 1982 (last require- ment)	- sampling and testing required - final abatement plans to be negotiated, new order if no agreement
i) granted: 20 Feb 1975) 4 month extension	initial deadline 30 Mar 1976 after 1st amendment 30 Dec 1979	- extensive and explicit reliance on company information
ii) granted 18 Aug 1976: "relying on the information you have provided re technical matters & alter- native possibilities		
iii) granted 30 Mar 1978: -again relying on company informa- tion - no extension		
iv) 5 Dec 1978: delay to apply if alcohol pro- duction resumed	after 4th amendment 31 May 1980	

APPENDIX II

Abitibi Paper Company, Smooth Rock Falls

(1) Notice of Intent 28 March 1977

(2) Control Order 24 October 1977

(3) Amending Control Order 24 May 1980

Ontario

MINISTRY OF THE ENVIRONMENT

05-77-02

(NOTICE OF INTENT)

ORDER

TO: Abitibi Paper Company Ltd.,
Smooth Rock Falls, Ontario.

TAKE NOTICE that pursuant to the authority vested in me by section 6 of the Environmental Protection Act, 1971, and for the reasons set out below, I intend to issue a Control Order directed to you in relation to the discharge of contaminants from your pulp and paper mill located in the Town of Smooth Rock Falls, into the natural environment.

I intend to issue this Control Order because the report of P. I. Williams and M. G. McKenney, enclosed herewith, filed with the Ministry contains the following findings:

1. Discharge of mill effluent, woodroom effluent, bleachery effluent and like materials into the Mattagami River have caused and are likely to continue to cause impairment of water quality and the tainting of fish flesh, contrary to section 14(1)(a) of The Environmental Protection Act, 1971.

2. Air emissions from the operation exceed those standards prescribed in Schedule 1 of Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971, in the amount of hydrogen sulfide, chlorine dioxide and particulate matter emitted. Air emissions of chlorine dioxide from the chlorine dioxide generator and emissions from the recovery furnace of particulate and hydrogen sulfide cause, or are likely to cause, material discomfort to persons, contrary to section 14(1)(c) of The Environmental Protection Act, 1971.

3. odour from the recovery furnace and other sources causes loss of enjoyment of normal use of property and causes discomfort to persons. Particulate from the chips and stud mill is causing material discomfort to persons and is likely to cause loss of enjoyment of normal use of property, contrary to section 6, Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971 and section 14(1)(c) of The Environmental Protection Act, 1971.

THEREFORE, I hereby give notice in accordance with section 73(1) of The Environmental Protection Act, 1971, of my intention to issue a Control Order, directing you:

1. On or before October 31, 1978, separate all sanitary sewage from process waste and either

   (a) treat the said sanitary sewage by means of a treatment facility at the mill approved by the Director pursuant to section 42 of The Ontario Water Resources Act, or

   (b) transport the said sanitary sewage by means of a pumping system and system of connecting sewers approved by the Director under section 42 of The Ontario Water Resources Act to the sewage treatment plant in the Town of Smooth Rock Falls.

2. On or before December 31, 1977, install and operate flow recorders and sewer samplers acceptable to the Director on the sewers known as the digester sewer, new bleach plant sewer, old bleach plant sewer, chlorine dioxide sewer, evaporator and recovery boiler sewer, recausticizing sewer, clarifier outlet and foam lagoon inlet sewers. The daily results from the said recorders and samplers on the said sewers and outfalls shall be forwarded to the local district office of the Ministry of the Environment monthly. The said results shall indicate the concentration of suspended solids, dissolved solids, BOD and levels of pH and flow rate in these sewers and outfalls.

3. On or before June 30, 1980, reduce the BOD load in your total mill effluent by 70% by

   (a) installing additional brown stock washing facilities; and/or

   (b) installing facilities to prevent spills of black liquor from entering the Mattagami River; and /or

   (c) constructing an aerated lagoon; and/or

   (d) any alternate proposal approved by the Director pursuant to section 42 of The Ontario Water Resources Act.

4. On or before December 31, 1977, submit a report to the Director concerning the facilities to be installed to steam strip your foul condensates of components of taste and odour and compounds toxic to fish including foul condensates from the following sources:

   (a) the digester vent condenser, also known as the digester flash steam condenser;

   (b) the multiple effect evaporator, including the steam ejector, surface condenser and condensate from the multiple effect evaporator.

5. On or before December 31, 1978, submit to the Director application for certificates of approval pursuant to section 8 of The Environmental Protection Act, 1971, for the facilities mentioned in 4. above.

6. On or before June 30, 1980, construct, install and have in operation the facilities for which approval was granted pursuant to 5. above.

7. On or before June 30, 1980, install facilities on your steam stripping equipment, digester relief and blow tank to incinerate the off gases.

8. On or before December 31, 1980, submit to the local district office of the Ministry of the Environment a water quality report evaluating the toxicity of the treated mill effluent discharged to the Mattagami River.

9. On or before June 30, 1978, install a cyclone or other equipment approved by the Director pursuant to section 8 of The Environmental Protection Act, 1971, on the chip blowing lines to the storage piles to reduce fugitive

suspended particulate matter to 100 micrograms per cubic meter of air at a point of impingement as prescribed by Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971.

10. On or before December 31, 1978, install and operate a scrubber or other equipment approved by the Director pursuant to section 8 of The Environmental Protection Act, 1971, on your recovery boiler and direct contact evaporator so that the measured or calculated concentrations of suspended particulate matter and hydrogen sulphide do not exceed the levels prescribed in Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971: In the case of suspended solids - 100 micrograms per cubic meter of air at a point of impingement and in the case of hydrogen sulphide - 30 micrograms per cubic meter of air at a point of impingement.

11. On or before December 31, 1978, make the necessary process changes and/or install the necessary equipment to reduce the level of chlorine dioxide emissions from your chlorine dioxide scrubber and bleach plant so that the measured or calculated concentration of chlorine dioxide does not exceed 85 micrograms per cubic meter of air at a point of impingement as prescribed by Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971.

12. On or before December 31, 1980, submit to the Director a report of stack sampling results on your recovery furnace, direct contact evaporator, refuse boiler, bleach plant and chlorine dioxide scrubber.

13. On or before September 30, 1978, grade and cover your existing landfill site.

14. On or before November 30, 1978, drain the area known as the bark ravine and seal the said area against runoff to a ditch which drains to the Mattagami River.

As provided by law, you may make submissions to the Director at any time before the making, giving or issuing of the Control Order and the Control Order may not be issued until fifteen (15) days after the service of this Notice;

Written submissions may be sent to:

The Regional Director,
Northeastern Region,
469 Bouchard Street,
Regency Mall,
Sudbury, Ontario.
P3E 2K8.

Dated at Sudbury this

28th day of March 1977.

R. E. MOORE,
Director,
Northeastern Region

Ontario

05-77-02

MINISTRY OF THE ENVIRONMENT

CONTROL

ORDER

TO: ABITIBI PAPER COMPANY LIMITED
SMOOTH ROCK FALLS, ONTARIO

WHEREAS the report made pursuant to section 83 of The Environmental Protection Act, 1971, of Messrs. P. I. Williams and M. G. McKenney, Provincial Officers, filed with the Ministry on March 28, 1977, contains findings that the discharge of mill effluent, woodroom effluent, bleachery effluent and like materials into the Mattagami River from your pulp and paper mill at Smooth Rock Falls, Ontario, contravene section 14 of The Environmental Protection Act, 1971.

AND WHEREAS air emissions from the said pulp and paper mill exceed those standards prescribed in Schedule 1 of Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971, and contravene section 14 of The Environmental Protection Act, 1971;

AND WHEREAS odour emissions from the said pulp and paper mill and particulate emissions from the adjacent stud mill and chip storage system contravene section 6 of Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971 and section 14 of The Environmental Protection Act, 1971;

AND WHEREAS Notice of Intention to issue this Control Order was issued to Abitibi Paper Company Limited on the 28th day of March 1977 and served upon Abitibi Paper Company Limited on the 29th day of March 1977;

THEREFORE, pursuant to the powers vested in me by section 6 of The Environmental Protection Act, 1971, I hereby direct you to do the following:

1. On or before October 31, 1978, separate all sanitary sewage from process waste and either

   (a) treat the said sanitary sewage by means of a treatment facility at the mill approved by the Director pursuant to section 42 of The Ontario Water Resources Act, or

(b) transport the said sanitary sewage by means of a pumping system and system of connecting sewers approved by the Director under section 42 of The Ontario Water Resources Act to the sewage treatment plant in the Town of Smooth Rock Falls.

2. On or before December 31, 1977, install and operate flow recorders and sewer samplers acceptable to the Director on all sewers to provide an adequate data base of effluent quality information to the Director. The results shall indicate the concentration of suspended solids and dissolved solids and levels of pH and flow rate daily and concentration of BOD_5 weekly or as varied from time to time by the Director. This information shall be forwarded to the local district office of the Ministry of the Environment monthly.

3. On or before December 31, 1978, install additional brown stock washing facilities and associated wash water recycle equipment to reduce the BOD_5 load to the Mattagami River.

4. On or before June 30, 1978, submit a report to the Director concerning the facilities to be installed to steam strip your foul condensates of components of taste and odour and compounds toxic to fish including foul condensates from the following sources:

(a) the digester vent condenser, also known as the digester flash steam condenser

(b) condensate from multiple effect evaporator not presently recycled.

5. On or before June 30, 1979, submit to the Director application for certificates of approval pursuant to section 8 of The Environmental Protection Act, 1971 for the facilities mentioned in 4. above.

6. On or before June 30, 1981, construct, install and have in operation the facilities for which approval was granted pursuant to 5. above.

7. On or before June 30, 1981, install facilites on your steam stripping equipment, digester relief and blow tank to incinerate the off-gases.

8. Six months following the mutually agreed upon satisfactory operation of the steam stripping installation submit to the local district office of the Ministry of the Environment a water quality report evaluating the toxicity of the treated effluent discharged to the Mattagami River.

9. On or before December 31, 1979, install a cyclone or other equipment approved by the Director pursuant to section 8 of The Environmental Protection Act, 1971 on the chip blowing, storage and reclamation system to reduce fugitive suspended particulate matter to 100 micrograms per standard cubic meter of air at a point of impingement as prescribed by Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971.

10. On or before December 31, 1977, submit a report to the Director concerning the facilities to be installed to wet scrub the emissions from the recovery boiler and direct contact evaporator so that the measured or calculated concentration of suspended particulate matter and hydrogen sulphide do not exceed the levels prescribed in Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971. In the case of suspended solids - 100 micrograms per standard cubic meter of air at a point of impingement and in the case of a hydrogen sulphide - 30 micrograms per standard cubic meter of air at a point of impingement.

11. On or before June 30, 1978, submit to the Director applications for certificates of approval pursuant to section 8 of The Environmental Protection Act, 1971, for the facilities mentioned in 10. above.

12. On or before December 31, 1980, construct, install and have in operation the facilities for which approval was granted pursuant to 11. above.

13. On or before December 31, 1978, make the necessary process changes and/or install the necessary equipment to reduce the level of chlorine dioxide emissions from your chlorine dioxide scrubber and bleach plant so that the measured or calculated concentration of chlorine dioxide does not exceed 85 micrograms per standard cubic meter of air at a point of impingement as prescribed by Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971.

14. On or before December 31, 1981, submit to the Director a report of stack sampling resultes on your (a) recovery furnace and direct contact evaporator, (b) refuse boiler, (c) bleach plant and chlorine dioxide scrubber.

15. On or before September 30, 1978, grade and cover your existing landfill site.

16. On or before November 30, 1978, drain and grade the area known as the bark ravine.

17. On or before December 31, 1982, submit to the local district office of the Ministry of the Environment a report evaluating

(a) the water quality of the Mattagami River;

(b) the effects of the mill's effluent on the water quality of the Mattagami River;

(c) the mill's effluent quality, as of December 31, 1982.

This Order applies from the date on which it becomes enforceable pursuant to section 79(2) of The Environmental Protection Act, 1971 until December 31, 1982.

Under section 79 of The Environmental Protection Act, 1971, you may require a hearing before the Environmental Appeal Board if, within fifteen (15) days after service upon you of a copy of this Order, you serve written notice upon the Environmental Appeal Board and the Director.

Notice requiring a hearing should be served upon:

Secretary
Environmental Appeal Board
5th Floor, 1 St. Clair Ave. West
TORONTO, Ontario
M4V 1K6.

and

The Regional Director
Northeastern Region
469 Bouchard Street
Regency Mall
SUDBURY, Ontario
P3E 2K8.

DATED at Kingston
this 26th day of October
1977.

R. E. MOORE
Director

Ontario

MINISTRY OF THE ENVIRONMENT

AMENDING CONTROL ORDER

TO: Abitibi-Price Inc.,
Smooth Rock Falls, Ontario.

WHEREAS on November 8, 1977, the Abitibi Paper Company Limited, now known as Abitibi-Price Inc., and hereinafter referred to as "Abitibi", was served with a Control Order designed;

i) to control the emissions of suspended particulate matter and certain reduced sulphur compounds,
ii) to control the discharge of sanitary sewage, foul condensates and biological oxygen demanding substances and;
iii) to effect improvements to the landfill site and bark ravine

with respect to its pulp and paper mill at Smooth Rock Falls, Ontario.

AND WHEREAS Abitibi in a letter dated October 16, 1979 to Mr. George More of the Ministry of Industry and Tourism and Mr. W. Bidell of the Ministry of the Environment, proposed to carry out some additional environmental control measures namely;

i) the installation of a black liquor spill control system;
ii) the installation of a fibre reclaim system and;
iii) the installation of a bark fines and sludge system at the Smooth Rock Falls mill.

AND WHEREAS Notice of Intention to issue this Control Order was issued to Abitibi on the 19th day of February 1980 and served upon Abitibi on the 25th day of February 1980.

THEREFORE pursuant to the powers vested in me by Section 6 of The Environmental Protection Act, 1971, I hereby amend the original Control Order and hereby direct you to do the following:

1. On or before October 31, 1978, separate all sanitary sewage from process waste and either

a) treat the said sanitary sewage by means of a treatment facility at the mill approved by the Director pursuant to section 42 of The Ontario Water Resources Act, or

b) transport the said sanitary sewage by means of a pumping system and system of connecting sewers approved by the Director under section 42 of The Ontario Water Resources Act to the sewage treatment plant in the Town of Smooth Rock Falls.

2. On or before December 31, 1977, install and operate flow recorders and sewer samplers acceptable to the Director on all sewers to provide an adequate data base of effluent quality information to the Director. The results shall indicate the concentration of suspended solids and dissolved solids and levels of pH and flow rate daily and concentration of BOD_5 weekly or as varied from time to time by the Director. This information shall be forwarded to the local district office of the Ministry of the Environment monthly.

3. On or before December 31, 1978, install additional brown stock washing facilities and associated wash water recycle equipment to reduce the BOD_5 load to the Mattagami River.

4. On or before June 30, 1978, submit a report to the Director concerning the facilities to be installed to steam strip your foul condensates of components of taste and odour and compounds toxic to fish including foul condensates from the following sources:

   a) the digester vent condenser, also known as the digester flash steam condenser
   b) condensate from multiple effect evaporator not presently recycled.

5. On or before June 30, 1979, submit to the Director application for certificates of approval pursuant to section 8 of The Environmental Protection Act, 1971 for the facilities mentioned in 4 above.

6. On or before June 30, 1981, construct, install and have in operation the facilities for which approval was granted pursuant to 5 above.

7. On or before June 30, 1981, install facilities on your steam stripping equipment, digester relief and blow tank to incinerate the off-gases.

8. Six months following the mutually agreed upon satisfactory operation of the steam stripping installation submit to the local district office of the Ministry of the Environment a water quality report evaluating the toxicity of the treated effluent discharged to the Mattagami River.

9. On or before December 31, 1979, install a cyclone or other equipment approved by the Director pursuant to section 8 of The Environmental Protection Act, 1971 on the chip blowing, storage and reclamation system to reduce fugitive suspended particulate matter to 100 micrograms per standard cubic meter of air at a point of impingement as prescribed by Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971.

10. On or before December 31, 1977, submit a report to the Director concerning the facilities to be installed to wet scrub the emissions from the recovery boiler and direct contact evaporator so that the measured or calculated concentration of suspended particulate matter and hydrogen sulphide do not exceed the levels prescribed in Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971. In the case of suspended solids - 100 micrograms per standard cubic meter of air at a point of impingement and in the case of hydrogen sulphide - 30 micrograms per standard cubic meter of air at a point of impingement.

11. On or before June 30, 1978, submit to the Director applications for certificates of approval pursuant to section 8 of The Environmental Protection Act, 1971, for the facilities mentioned in 10 above.

12. Or or before December 31, 1980, construct, install and have in operation the facilities for which approval was granted pursuant to 11 above.

13. On or before December 31, 1978, make the necessary process changes and/or install the necessary equipment to reduce the level of chlorine dioxide emissions from your chlorine dioxide scrubber and bleach plant so that the measured or calculated concentration of chlorine dioxide does not exceed 85 micrograms per standard cubic meter of air at a point of impingement as prescribed by Regulation 15, R.R.O. 1970, made pursuant to The Environmental Protection Act, 1971.

14. On or before December 31, 1981, submit to the Director a report of stack sampling results on your (a) recovery furnace and direct contact evaporator, (b) refuse boiler, (c) bleach plant and chlorine dioxide scrubber.

15. On or before September 30, 1978, grade and cover your existing landfill site.

16. On or before November 30, 1978, drain and grade the area known as the bark ravine.

17. On or before December 31, 1982, submit to the local district office of the Ministry of the Environment a report evaluating

    a) the water quality of the Mattagami River;
    b) the effects of the mill's effluent on the water quality of the Mattagami River;
    c) the mill's effluent quality, as of December 31, 1982.

18. On or before December 31, 1980 submit to the Director an application(s) for a certificate(s) of approval pursuant to section 8 of The Environmental Protection Act, 1971 for a black liquor spill control system. The aforementioned system will also include the control of spills of related alkali materials originating in the chemical preparation areas (recausticizing area etc.).

19. On or before December 31, 1981 construct, install, and have in permanent operation the facilities for which approval was granted pursuant to 18 above.

20. On or before April 30, 1980 submit to the Director an application(s) for a certificate(s) of approval, pursuant to section 8 of The Environmental Protection Act, 1971 for a fibre reclaim system. Such a system will include any collection equipment, sumps, piping and pumping equipment necessary to reduce or eliminate fibre spills from the bleach plant, brown stock washer area, and the pulp sheet forming area.

21. On or before January 31, 1981 construct, install and have in permanent operation the facilities for which approval was granted pursuant to 20 above.

22. On or before December 31, 1980 submit to the Director an application(s) for a certificate(s) of approval, pursuant to section 8 of The Environmental Protection Act, 1971 for bark fines and sludge handling improvements. Such facilities are to be designed to reduce bark fines loadings from the woodroom as well as to improve the operation of sludge handling equipment.

23. On or before December 31, 1981 construct, install and have in permanent operation the facilities for which approval was granted pursuant to 22 above.

Under section 79 of The Environmental Protection Act, 1971, you may require a hearing before the Environmental Appeal Board if, within fifteen (15) days after service upon you of a copy of this Order, you serve written notice upon the Environmental Appeal Board and the Director.

Notice requiring a hearing should be served upon:

Secretary
Environmental Appeal Board
5th Floor, 1 St. Clair Ave. West,
Toronto, Ontario M4V 1K6.

and

The Regional Director
Ministry of the Environment
Northeastern Region
469 Bouchard Street
Sudbury, Ontario, P3E 2K8

DATED at Sudbury

this 27th day of May

1980

C. E. McIntyre
Director

APPENDIX III

Acknowledgements

Preparation and revision of this report benefited from the comments of many people. These comments were used as a bases for some generalizations about the perceptions and preferences of the various interested parties. It remains, however, that none of the individuals listed below is responsible for inaccuracies in any of the contents of this report.

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CELRF/FCRDE

SEMINAR ON THE USE OF CONTROL ORDERS IN ONTARIO

January 10, 1983

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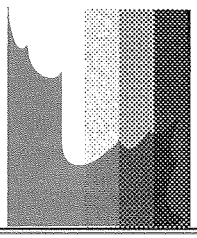

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