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FROM POLLUTION PREVENTION TO WASTE REDUCTION: TOWARD A COMPREHENSIVE HAZARDOUS WASTE STRATEGY FOR ONTARIO

A discussion paper prepared for the Ontario Ministry of Environment Hazardous Waste Management Policy Forum, March 27, 28, 1989.

by

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"There is a hazardous waste problem in Ontario, and ... a comprehensive, province-wide strategy for solving the problem is necessary."

Dr. D.A. Chant to The Honourable Jim Bradley, letter of transmittal for the Ontario Waste Management Corporation Environmental Assessment, November, 1988

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

There are two distinct but related parts to the hazardous waste problem in Ontario. First, hazardous waste contaminants are released daily to the environment through air emissions and discharges to water courses and municipal sewer systems. This represents a pollution control problem. Second, when these contaminants are not released into the environment, but controlled on-site, the problem changes to a waste management issue. The central thesis of this paper is that there is a need for a comprehensive integrated approach which addresses both aspects of the hazardous waste problem and recognizes the link between them.

Hazardous Waste Pollution In the past three years the Provincial government has taken regulatory action on a number of fronts which, for the first time, calls on industries to significantly reduce and eventually eliminate the actual amounts of hazardous contaminants they are releasing to the environment. The Municipal Industrial Strategy for Abatement (MISA) sets the objective of virtual elimination of toxic contaminants released to Ontario water courses. The Clean Air Program (CAP) requires source reduction of emissions to air using the best available technology. The Countdown Acid Rain Program has put in place targets for percentage reduction in amounts of sulphur dioxide and nitrogen oxide entering the atmosphere.

This paper recommends that Ontario vigorously pursue these regulatory programs. Specifically, it recommends that the Ontario government: set strict targets and deadlines for meeting regulatory objectives; devote the resources necessary to ensure these objectives are set; take steps to ensure compliance with standards; and monitor and publicly report the actual progress made in controlling hazardous waste pollution.

If fully implemented, these regulatory programs will significantly advance the first half of the solution to Ontario's hazardous waste problem - transforming hazardous waste pollution into a waste management issue.

Hazardous Waste Management Since the Province's first effort to address hazardous waste management over ten years ago, there have been a number of significant advances in the field. The deployment of a manifesting and generator registration system to trace the generation and movement of hazardous waste in the Province has provided a data base with which to understand the extent of, and action needed to address, the waste management question. The establishment of a Crown Corporation to carry out an environmental assessment, develop, and operate a central treatment and disposal facility has focussed public attention and

resources on the need to treat and safely dispose of hazardous waste. These initial steps, however, are not adequate to address the hazardous waste problem in the 1990's.

This paper argues that tougher pollution control standards will significantly increase the amount of waste which requires safe management, while necessarily more rigorous approval requirements make it more difficult to put in place facilities to manage these increasing quantities. The paper supports, and advances recommendations which further both of these trends. Controlling hazardous waste pollution and ensuring safe management through rigorous approval requirements are the basis upon which a waste management strategy for the 1990's must be developed. These changing conditions, however, point to the need for a new approach.

A Comprehensive Approach The paper concludes that the major inadequacy of the current approach to the hazardous waste problem is the absence of a publicly developed, overall plan. Instead, progress in the area has come by way of isolated disjointed activities. The need for an integrated approach is suggested not only by the links between pollution and waste management, but by the relationship between economic environmental decision-making. Without proper planning, the hazardous waste problem is fast becoming a restraint to economic development. Current conditions point to a potential crisis for the Ontario environment, the Ontario economy or both. Tougher standards coupled with sufficient capacity will result in inadequate disposal, causing even further harm to the Ontario environment. The inability of Ontario companies to deal with the waste they generate would then become a barrier to industrial and economic development in Ontario.

The first recommendation of this paper, therefore, is that the Ontario government as a whole, not just the Ministry of the Environment, work to solve the problem by creating an inter-ministerial task force with the mandate to develop a comprehensive, integrated strategy for solving the environmental and economic problem posed by hazardous waste.

The paper recommends that the Premier and Cabinet make a commitment to solve the problem before the end of the century.

The new dimensions of the problem point to the need for a new focus. The only way to achieve the long term solution of sustainable development is to greatly reduce the quantities of hazardous wastes which are produced in the Province each year. It is recommended that this be done by:

- setting forth reduction as a policy objective with absolute priority;

- adopting a three point approach to reduction as follows:

  - regulation to be implemented in 1993 after MISA is in place and modelled on the MISA approach,

  - fiscal policy which creates a financial incentive to industry to reduce waste, and

  - the creation of new agency, the Waste Reduction Commission, with a clear mandate to provide financial and technical resources to assist industry in the reduction of waste.

At the same time, the paper recognizes that reduction will not solve the whole problem. The second focus of government action must be to address the need for environmentally sound on-site, and off-site treatment and disposal capacity. Specific recommendations advanced include:

- assisting the siting process by developing fair and consistent rules governing compensation;

- clarifying the approvals process by way of policies which:

  - require both Environmental Assessment Act and Environmental Protection Act approval for both on-site and off-site treatment and disposal facilities,

  - put in place guidelines to assist private sector proponents in determining a reasonable range of alternatives to be considered during private sector assessments, and

- make a commitment to double approval staff levels.

The final chapter provides a summary of the proposed hazardous waste strategy in timetable form, based on the objective of solving the hazardous waste problem in Ontario before the year 2000.

LIST OF RECOMMENDATIONS

1. The Ontario government should adopt a hazardous waste strategy which has the following objectives:

   - virtual elimination of hazardous waste pollution,
   - maximum possible reduction of hazardous waste,
   - proper treatment and disposal of what remains.

2. The Ontario government should publicly commit itself to development and implementation of hazardous waste policy in accordance with the following principles:

   - accountability and access
   - integration of hazardous waste policy and economic policy
   - commitment of sufficient staff and financial resources
   - uniformity and consistency of standards

3. The Premier should convene an Ontario government Task Force with representation from all relevant ministries including the Ministry of the Environment, Industry, Trade and Commerce, Health, Labour, Revenue, and Treasury and Economics. The mandate of this Task Force should be to develop a comprehensive, integrated hazardous waste strategy.

4. This strategy should be developed in consultation with all interested parties and with full consideration of alternatives.

5. This comprehensive strategy, once developed, should be presented by the Premier and Cabinet to the Ontario Legislature.

6. The comprehensive hazardous waste strategy should be designed to achieve the objective of solving the environmental and economic problem of hazardous waste by the year 2000.

7. The Ontario government should establish interim and final targets, to be met between now and the year 2000, for the following:

   - reduction of hazardous wastes discharged to the environment through the MISA and CAP initiatives;
   - reduction of amounts of hazardous waste generated through the waste reduction program recommended below.

8. The Ontario government should establish interim and final deadlines to be met between now and the year 2000 for implementation of all components of the hazardous waste strategy.

9. The Ontario government should report to the Legislature each year on progress made in meeting the final and interim deadlines of the hazardous waste comprehensive strategy.

10. The Ontario government should establish the Office of the Environmental Auditor.

11. The Office of the Environmental Auditor should be given the following mandate:

   - to review all publicly available information on implementation of Ontario government hazardous waste programs;
   - to evaluate such programs using as criteria the Ontario government's publicly stated principles, objectives, and timetables:
   - to include in that evaluation a comparison with progress made by other jurisdictions;
   - to provide the Ontario public with an annual report setting forth this evaluation.

12. The Ontario government should establish an endowment fund of $2,000,000 to finance the operations of the Office of Environmental Auditor.

13. The Ontario government should appoint a Board of Directors, with representation equally balanced amongst all relevant sectors, to manage the corporate affairs of the Office of the Environmental Auditor.

14. The Ontario government should explicitly state a commitment to giving waste reduction priority over any other waste management strategy.

15. Reduction should be achieved by implementation of programs in each of the three following areas:

    - legislative waste reduction standards,
    - fiscal incentives for waste reduction,
    - assistance to industry.

16. The Ontario government should amend the Environmental Protection Act in such a manner as to provide legislative authority for waste reduction regulation.

17. Planning should begin now for implementation in 1993 of a waste reduction regulatory program.

18. Such a program should include the following components:

    - a determination of the industrial sectors and industries to be regulated, in order of priority, based upon the criteria of waste quantities and toxicity;
    - implementation of regulatory requirements to conduct waste reduction audits within those designated sectors and to report the results to MOE;
    - based upon a review of data from these audits and information on reduction in other jurisdictions, establishment through a consultative process of reduction targets, both those which can be achieved immediately and those which can be achieved in the longer term, expressed as raw material percentages, which are technologically and economically feasible;
    - implementation of regulatory standards based upon those targets, both for existing and new industrial operations;
    - periodic review of standards in order to increase reduction quantities, based upon changes in available technology and processes.

19. The Ontario government should adopt a policy of putting in place both negative and positive financial incentives to waste reduction.

20. A decision on OWMC pricing should be made by the Ontario government as part of the public consultation process to develop a comprehensive strategy.

21. OWMC treatment and disposal pricing, if the facility is approved, should be used to encourage waste reduction.

22. If the OWMC facility is approved, MOE should use regulations to direct certain classes of waste to that facility and that these regulatory requirements be developed, through the public consultation, as part of the comprehensive strategy.

23. The Ontario government should enact a Waste Reduction Tax Act to provide legislative authority for taxing waste generation.

24. The Waste Reduction Tax Act should be administered by the Ministry of Revenue, with revenues going to the general revenues of the Ontario government.

25. The Ontario government should plan and implement a program of taxation of waste which exceeds waste reduction regulation standards but which the Ontario government deems to be capable of reduction.

26. The Ontario government should establish the Waste Reduction Commission.

27. The Waste Reduction Commission should be given the mandate to:

    - develop new reduction technology and processes, both through its own activity and by contributing to private sector risk venture capital;
    - providing technical assistance to industry;
    - acting as a clearinghouse for information.

28. The Ministry of the Environment should take immediate action to ensure that effluent limit regulations are in place for all industrial sectors and the municipal sector under the MISA program by December 31, 1992. In order to meet the deadline, the following steps should be taken:

- MOE establish new deadlines for the work of each joint technical committee;
- the proposed Environment Auditor report annually on progress;
- MOE establish a dispute resolution mechanism to decide on the standards to be recommended to the Minister when agreement cannot be reached within a sector.

29. Disposal of hazardous waste, as defined in Regulation 309, to sewers should be banned through incorporation of the prohibitions of the 1988 model sewer-use by-law into provincial regulations.

30. Standards governing discharge to sewers should be set by provincial legislation, rather than municipal by-laws, and they should be established and enforced in the same manner as other MISA standards. Municipalities may "opt in" as the enforcement agency for sewer-use standards.

31. Amendments to Regulation 308 should be implemented no later than December 31, 1990.

32. The Provincial government should amend Regulation 309, under the Environmental Protection Act, to require all operators of hazardous waste management facilities including generators who operate on-site facilities to:

- develop a regular monitoring and reporting program for wastes received by the facility, for waste discharged into receiving waters or emitted into air from the facility and, in the case of landfill, for ground water quality;
- report regularly, and in an annual report the Ministry of the Environment on monitoring results;
- set up a public liaison committee to oversee plant operation and report on compliance with operating requirements;

- develop a plan to deal with plant emergencies or accidents;

- develop a plan for closure and post-closure care.

33. The Ministry of the Environment should undertake a comprehensive review of all existing hazardous waste Certificates of Approval and implement a program designed to upgrade standards set by those Certificates.

34. The Provincial government should amend Regulation 309 to prohibit disposal of hazardous wastes on both private and municipal land fill sites by incorporating the prohibitions put in place under the U.S. Resource Conservation and Recovery Act into the Environmental Protection Act.

35. The Ministry of the Environment should develop a list of recyclable wastes, and incorporate this list to a schedule of Regulation 309. Regulation 309 should be amended to prohibit waste management facilities from accepting these types of waste for purposes other than recycling.

36. The Ontario government should accept nothing less than 100% compliance with all legislative requirements.

37. The Ministry of the Environment should implement a permanent program to regularly inform industry of hazardous waste regulatory requirements.

38. A review of existing abatement programs should be undertaken, with a view to expanding the provision of information and technical assistance to industry.

39. The Ministry of the Environment should develop a policy which specifies cases in which compliance audits will be used in prosecutions.

40. MOE should establish a public communication program to encourage reporting of illegal activities.

41. MOE should implement a program which would require all holders of hazardous waste Certificates of Approval to provide the Ministry every two years with a report on compliance with conditions of that Certificate.

42. Tthe Ministry of the Environment should undertake in 1990 a study of the relative effectiveness of the different compliance achievement techniques used by the Ministry.

43. MOE should initiate a consultative process to establish criteria and procedures for compensation of those affected by siting of hazardous waste management facilities.

44. The Ministry of the Environment should require both Environmental Assessment Act and Environmental Protection Act approval of all public and private sector, on-site and off-site, hazardous waste management operations both for expansion of existing and establishment of new facilities.

45. The MOE Environmental Assessment Branch should move immediately to provide guidelines governing scope and range of alternatives to be considered during private sector hazardous waste assessments.

46. The Ontario government should double staffing levels in the various approvals branches.

47. The Ontario government should place no restrictions on import and export of waste other than

    . a requirement that Ontario waste not be exported to jurisdictions with lower treatment and disposal standards than pertain in Ontario;

    . a requirement that imported wastes not impede the ability of Ontario to treat and dispose of its own wastes in an environmentally secure manner.

48. MOE should undertake a study which would establish the cost and mechanics of a household hazardous waste collection system, based on municipal collection and provincial responsibility for treatment and disposal.

49. The Ontario government should implement such a household hazardous waste collection system.

1. INTRODUCTION

1.1 Background

The Canadian Institute for Environmental Law and Policy, formerly the Canadian Environmental Law Environmental Research Foundation, has been actively working to stimulate and contribute to environmental policy dialogue for the better part of two decades. Throughout that time, the organization has focused considerable attention of the subject of Ontario and Canadian hazardous waste policy.

In 1983 the then Research Foundation hosted the Round Table Discussion of Hazardous Waste Law Policy. In 1986 the Foundation convened at Bolton, Ontario, a two-day policy seminar titled "Ontario Hazardous Waste Policy: A Provincial Forum" and in 1987 the Foundation co-hosted with the Waste Management Branch of the Ministry of the Environment a further, more detailed policy discussion titled "Ontario Hazardous Waste Management Forum", held at the Nottawasaga Inn. For both the Bolton and Nottawasaga events, background papers, setting forth a range of policy options, were prepared and distributed to participants in advance of the discussion and proceedings were published after the event.

Early in 1988, CIELAP began planning a discussion paper which would be based upon work done over the past decade and in particular research and discussion at the Bolton and Nottawasaga events. Having prepared policy option papers and issued proceedings of discussion of those options, the Institute wished to issue a paper which would consist exclusively of recommendations for the next steps to be taken by the Ministry of the Environment and Ontario government in development of hazardous waste policy.

In discussion with officials of the MOE Waste Management Branch, it was agreed that this work would be done parallel to the more detailed and specific paper being prepared by the Branch on future amendments to waste management regulations and that both papers would be presented at a symposium, to be coordinated by the Branch.

1.2 Purpose

The purpose of this document is as follows:

- to provide a broad perspective on Ontario hazardous waste policy including both an evaluation of progress to date and a forecast of policy needs through to the end of the century;

- to provide specific recommendations for regulatory and non-regulatory action to be taken by the Ontario

government, within the context of a proposed comprehensive strategy.

1.3 Scope

Geographic scope is Ontario, bearing in mind that Ontario waste is managed within the Canadian and international contexts. Recommendations are directed exclusively to the Ontario government although attention is necessarily paid to action taken at the municipal and federal levels or by other jurisdictions.

The paper discusses a range of government activities, including planning and implementation of regulatory and non-regulatory programs, legislative enactment and amendment, and enforcement of legislative requirements.

The paper does not address all aspects of the problem. For example, clean-up and disposal of soil from previously contaminated sites is an important part of hazardous waste management. For reasons of time and space, however, it has not been addressed here, other than to note the increasing need for disposal capacity to accommodate contaminated soil. In the same manner radioactive waste is not included in the scope of this paper, nor are products such as pesticides whose use may cause environmental harm.

Given its purpose and scope, the paper does not include detailed comment upon proposed changes to hazardous waste regulations. The papers on that subject, prepared by the MOE Waste Management Branch, were not reviewed during preparation of this paper.

1.4 Format

This paper does not provide either the detailed background information or survey of policy options which were presented in both the Bolton and Nottawasaga discussion papers. The paper is intended for an audience already familiar with the Ontario system of hazardous waste management. Each section will provide a brief discussion followed by a specific recommendation set off in bold-face type.

2. THE NEED FOR A NEW APPROACH

2.1 Major policy initiatives, 1978 - 1989

2.1.1 The Seven Point Program - 1978

Until the late 1970's hazardous waste disposal was considered by the Ontario government to be a private sector responsibility. Landfilling of untreated hazardous waste was common.

The first clear enunciation of hazardous waste policy was the "Seven Point Program for the Disposal of Liquid Industrial Waste" in September, 1978, which included the following components:

1) a commitment to provide treatment facilities;

2) interim steps such as interim waste storage and prohibition of direct land filling of liquids;

3) automation of the Waybill system;

4) development of a waste classification system;

5) increased regulation, including registration of wastes by the generator, creation of a fund for perpetual care and direction of wastes to specific types of treatment and disposal;

6) requirements that perpetual care be a component of all waste disposal sites;

7) encouragement of transboundary movement of wastes.

Some of these measures, such as generator registration, have been implemented while others such as provision of treatment facilities or regulations specifying treatment and disposal for particular classes of wastes, have not.

In light of today's accepted wisdom concerning waste management, the Seven Point Program is most notable for its complete silence on the subject of waste reduction or recycling.

2.1.2 The Ontario Waste Management Corporation - 1980

During the 1970's the Ontario government attempted to provide hazardous waste treatment and disposal capacity by assisting commercial firms as they steered their way through the approvals process. None of these initiatives were successful, however, and Ontario then decided to accept direct government responsibility for treatment and disposal of hazardous waste.

In 1980 the Ontario government announced that it would discharge its newly accepted responsibility for hazardous waste management through establishment of a Crown corporation mandated by legislation to site and build a treatment and disposal facility and to encourage waste reduction activities.

By 1985 the Ontario Waste Management Corporation had chosen its preferred site for a treatment and disposal facility.

The environmental assessment of the proposed facility was completed and submitted to the Minister of the Environment in November, 1988 and it is likely that a hearing before the Environmental Assessment Board will begin before the end of 1989. The hearing is expected to take two years to complete and construction of the facility, if approved, will then commence. Thus, if approved, the OWMC facility may be in operation by 1995.

OWMC has absorbed a significant portion of total funds spent, by the Ontario government on environmental protection during the past decade. This money could have been spent, for instance, by implementing and enforcing hazardous waste standards which would provide sufficient incentive for development of private sector treatment and disposal facilities. Although the decision to establish the Corporation may have been sound, it was made in isolation of any integrated plan, other than the very general objectives of the Seven Point Program. The policy decision to move from reliance on private sector treatment and disposal to construction of a government-owned facility should have been made within the context of an over-all plan. Now, one decade later, it is still not too late to remedy that error. An over-all plan is needed now as much as it was then.

While the decision on approval, rejection or, modifications, of the OWMC facility is important, other key decisions must also be made. The relationship between OWMC and private sector treaters and disposers must be clarified. The Ontario government must decide whether prices charged for treatment and disposal will be based upon capital and operating costs of the plant or whether provincial subsidy will be used to reduce prices. It must also decide whether regulation will be used to direct certain types of waste to the OWMC facility. Such decisions should be made on the basis of public, consultative discussion, as part of development of a comprehensive, hazardous waste strategy.

This subject is discussed further in Chapter 5, following.

2.1.3 The Blueprint for Waste Management in Ontario - 1983

The Blueprint provided a more comprehensive plan for waste management than had the 1978 program. Among other provisions, it included the following:

1) waste classification system;

2) priority given to 4 R's management;

3) mechanisms for financing perpetual care;

4) changes to the manifest system to include all hazardous wastes.

Implementation of the Blueprint has been most successful in providing data on generation and transportation of hazardous waste, through amendment to Regulation 309 in 1985. This data is the essential basis for regulation.

Reflecting the evolution of hazardous waste management from 1978 to 1983, the Blueprint placed the 4R's at the top of the management hierarchy. It did not, however, provide a mechanism for implementation of reduction and recycling objectives, other than moral persuasion.

It should also be noted that the Blueprint did not provide either deadlines for implementation or requirements to report on progress.

2.1.4 Creation of Investigations and Enforcement Branch - 1985

Prior to 1985, enforcement was seen as part of the abatement program. Prosecution was rarely used as a tool to achieve compliance and then only after negotiation had failed.

Creation of the Investigations and Enforcement Branch in 1985 marked two significant policy shifts:

- separation of the abatement and enforcement functions;

- significantly increased spending on inspections and investigation staff.

The subject of compliance with environmental regulation is discussed in Chapter 7 following. It need only be noted here that the 1985 creation of the Branch and subsequent commitment of financial resources has, like the generator registration data referred to above, put in place one of the essential foundations for the next stage in the development of hazardous waste regulation.

2.1.5 Proposed amendments to EPA and Reg. 309

Potential amendments to Part V of the Environmental Protection Act which have been discussed in recent years include:

- removing the 25 year post-closure limit on other uses for former landfill sites and replacing it with a perpetuity clause;
- appointing permanent on-site inspectors to major hazardous waste treatment facilities and large municipal landfill sites;
- considering the past performance and environmental records of companies applying for Certificates of Approval; and
- adding a mandate to write future regulations for decommissioning of industrial facilities and recycling requirements.

These proposals have been subject to some public discussion over the past few years.

2.1.6 The Municipal Industrial Strategy for Abatement

The MISA program, announced by the Minister in June, 1986, is intended to impose regulatory standards upon direct discharges of pollution to water by industries and sewage treatment plants in Ontario. The plan is discussed in some detail in Chapter 6 following and it is only necessary to note here those aspects of the MISA program which demonstrate a further evolution of hazardous waste policy in the province. These are:

- the use of sector-wide regulatory standards to replace conditions in individual Certificates of Approval;
- the initial use of regulatory powers to gather data which is then used to establish standards;
- a clear statement of the time table for implementation and subsequent reporting on progress.

As will be seen, recommendations presented here follow the approach exemplified by these three characteristics of MISA.

2.2 Evaluation of Progress to Date

During the past two decades, significant progress has been made in meeting the challenge of environmental contamination by hazardous waste. The following sections set forth the most successful initiatives taken during the past decade and the need for integrated planning and increased public and private spending.

The most promising initiatives taken during the past decade, include:

- the use of manifesting and generation regulations to produce the data essential for further action;
- site selection and environmental assessment of a government-owned treatment and disposal facility;
- establishing programs to develop and implement water and air pollution standards; and
- putting in place mechanisms and resources to increase compliance with regulatory requirements.

Even here, however, success has been limited. Data on waste types and quantities, pathways to the environment and environmental and human health effects is incomplete and uncertain. Compliance is less than full, while the OWMC undertaking and air and water standards are still in the planning stages.

The most detailed and comprehensive review of waste management in Ontario which is currently available is that set forth in the OWMC environmental assessment. The assessment establishes that, despite the advances made during the past decade, Ontario has still not solved its hazardous waste problem.

> Through an analysis of the volume of wastes which are currently and which are likely to be generated in Ontario, OWMC has determined that there is a deficiency in the Province's waste management capabilities. Currently, some wastes are being managed through practices and techniques which are less than environmentally optimal, such as storage, landfilling and direct discharge to sewers. Specific deficiencies identified include: a limited capacity of incineration and physical/chemical treatment; Ontario is heavily dependent upon one commercial facility for final treatment and disposal; landfill capacity does not provide assurances for the future; and there exists no "treater for last resort" to whom generators can turn.[1]

In considering this assessment of the current state of Ontario hazardous waste management, it must be remembered that the problem is inherently complex and difficult and we are still grappling with what is a very new challenge. Ontario has not yet solved the problem, but nor yet has any other industrialized jurisdiction in the world.

Until very recently, political support for required action and expenditure of public funds was not present. In the past five years, however, that political will has clearly demonstrated itself and governments are taking action, for instance with respect to acid rain and CFCs which would have been politically impossible ten years ago. In the same manner, government must inevitably act in the area of hazardous waste. It is argued here that such action will necessarily entail considerably increased spending and that this spending can only achieve its desired objective if done within the context of an over-all plan.

2.2.1. Planning

The initiatives taken during the past decade, as listed above, are interconnected. The OWMC facility can only do its job if regulations are in place closing off improper disposal options. Regulations can only do their job if they are enforced.

Action taken in one area of hazardous waste management has clear implications for action to be taken in another and yet, surprising as it may seem, the Ontario government has never undertaken a comprehensive public planning exercise. The most detailed planning exercise taken to date, the OWMC environmental assessment, is limited to the subject of off-site waste treatment and disposal. Other planning exercises, such as the air and water pollution control standard-setting programs, are in the same manner limited in scope.

The Blueprint deals with only one part of the problem, as does the present planning initiative, the Nottawasaga discussions to be held in March, 1989. The government discussion papers are limited to specific areas which, while important, are only part of the larger picture.

There is no administrative unit, either in the Ministry of the Environment or elsewhere in the Ontario government, charged with the mandate of developing a comprehensive plan to prevent environmental contamination by hazardous waste. And yet, we are embarking on a variety of isolated actions which will entail the spending of billions of dollars of public and private money.

All of us in Ontario have embarked on a journey, but none of us has a map.

2.2.2 Spending

Table 2-1 following provides information on some aspects of government and industry spending on hazardous waste management. The total annual budget of the Ministry of the Environment, $440 million, is only 1.14% of total annual Ontario government spending. It is difficult to see how the Ontario government can meet its stated environmental objectives without committing a greater share of total spending to environmental protection.

In the same manner, industry spending is clearly out of proportion with the magnitude of the task. Following the 10:1 ratio which can be applied to most comparisons between America and Canada, one would expect that industry spending on environmental protection would be 10% of that spent by American industry. Data on industry spending is virtually non-existant. One study, however, has estimated for the period 1978-1984 industry capital spending on hazardous waste management was 2.5% of comparable spending by American industry. This discrepancy is attributed to different regulatory climates in the two countries.[2]

The study goes on to estimate present annual operating expenditures in hazardous waste management for all Canada, to be in the neighbourhood of $100 million.[3] They assume Ontario industry would account for approximately half of that figure, which leads to an estimated Ontario annual industry operating expenditure of $40 to $60 million.

It is useful to compare this figure with the $100 million which is the estimated cost to industry of meeting the MISA monitoring regulation requirements.[4] No estimate is yet available of the cost to industry of meeting the effluent limitation requirements which MISA will impose, or the cost of meeting new standards imposed by amendments to Regulation 308 and 309.

Some idea of the magnitude of such changes is given, however, by the cost to Ontario Hydro of complying with the regulatory requirements of the 1985 Ontario acid rain program. The cost of installing and operating air pollution scrubbers between 1994 and 2000 is estimated at $2.9 billion.[5]

Thus, it can be concluded that during the coming decade the cost of hazardous waste management will increase by several orders of magnitude - moving from the millions to the billions of dollars. Political realities dictate that this money will be spent. Whether or not it is spent effectively depends on the policy planning which is done today.

Table 2 - 1 SOME ASPECTS OF HAZARDOUS WASTE SPENDING

(Figures represent millions)

1.	MOE Budget, 1988 - 89	$440,000,000
2.	Selected aspects of MOE spending, 1988-89	
	. MISA	$13,500,000
	. Approvals	$9,400,000
	. Environmental Assessment Branch	$2,400,000
	. Environmental Assessment Board	$1,400,000
	. Investigations and Enforcement Branch	$4,500,000
	. Legal Services Branch	$1,900,000
	. Waste Reduction Unit	$2,500,000
	. Household hazardous waste	$250,000
3.	OWMC, including $800,000 intervenor funding 1988-89	$14,300,000
4.	Estimated annual capital expenditure for industry in Canada (all provinces) 1978-1984:	
	. Water pollution control	$62,000,000
	. Air pollution contriol	$46,000,000
	. Hazardous waste management	$5,600,000
5.	Estimated annual operating expenditure by industry for hazardous waste management in Canada (all provinces) 1988	$100,000,000
6.	Estimated cost to Ontario industry of MISA monitoring regulations for one year	$100,000,000

Sources

. MOE and OWMC Spending: The Honourable Jim Bradley, "Opening remarks on 1988-89 estmiates", November 10, 1988 and personal communication, Mr. Dan Atkinson, MOE Policy and Planning Branch, March, 1989.

. Estimated Industry Capital and Operating Spending: Environment Canada, Report on the Economic Profile of the Hazardous Waste Management Service Subsector in Canada, an unpublished report of the Environmental Protection Service, August, 1988.

. Cost to industry of MISA monitoring regulations: Statement by The Honourable Jim Bradley, November 17, 1988.

2.3 Policy for the changing conditions of the 1990's

Policy planning must attempt to anticipate and take into account the significantly different conditions which are likely to pertain by the mid-1990's. If present trends continue, Ontario is likely to face greatly increased quantities of waste adequate treatment and disposal capacity.

The analogy with our present difficulties in the area of solid waste disposal is clear. As regulatory standards governing solid waste landfills are made stricter and are better enforced, and new landfill siting becomes increasingly difficult, available disposal capacity is constrained. At the same time, because we have relied upon persuasion and encouragement rather than legislative or fiscal action to achieve reduction and recycling objectives, solid waste quantities increase each year. The word "crisis" is commonly applied to the present state of Ontario solid waste management.

In the same manner, existing industry practices with respect to hazardous waste, such as landfilling and discharge to water and sewers, will be foreclosed by enforcement of new regulatory standards and gaining approval for new capacity will become increasingly difficult.

A 1988 unpublished study done for the Environmental Protection Service, Environment Canada, lends support to this thesis.

> There is general agreement that further steps are needed to protect the environment from contaminants currently released in wastewater discharges and atmospheric emissions. These actions will lead to the capture of contaminants from these sources and will result in and increase in hazardous quantities generated. Other policy initiatives, such as site decommissioning, site cleanup and household hazardous waste programs have broad support at all government levels and will also result in increased quantities of hazardous waste requiring management.[6]

Reference is made in this study to a similar 1988 American study which predicted "inadequate capacity of existing treatment and disposal technologies, specifically, the incineration of solids and sludges and inadequate landfill capacity"[7] in that country.

These predicted conditions represent a potential crisis for the Ontario environment, the Ontario economy or both. Insufficient capacity will result in inadequate disposal, thus causing even further harm to the Ontario environment. To the

extent that newly developed standards and their enforcement prevent such disposal, insufficient capacity will act as a constraint upon Ontario industry and economic development. The OWMC facility is not intended to, nor can it, solve the problem by itself.

It is clear that hazardous waste policy planning for the 1990's must focus upon two objectives - reduction of quantities and increase in capacity.

2.3.1 Waste quantities

Table 2-2 summarizes information presented in the OWMC environmental assessment respecting annual on-site and off-site disposal of "special waste" generated in Ontario each year.

The OWMC environmental assessment includes a projection of increases in the demand for off-site treatment and disposal in the 1990's. The only factors taken into account, however, are economic growth, discounted by 50% to account for reduction, MISA and relatively insignificant amounts resulting from household hazardous waste disposal and remediation of contaminated sites. An estimate is also given of increased quantities resulting from a landfill ban, modeled on American legislation.

The statement in the assessment that these predicted future increases are "conservative estimates"[8] is very clearly correct. Potential changes in Regulations 309, 308 or to increased enforcement are not accounted for in the estimates. Nor does the estimate take into account the fact that new waste is still being registered by generators at the rate of approximately 3,000 registrations per year.[9] Finally, the assessment does not take into account changes in waste classification which may result from such things as incinerator fly ash, or as yet unthought of contaminants being required, through changes in regulatory classifications, to go to hazardous waste treatment and disposal.

Knowing its projection would be subject to hostile scrutiny during the assessment hearing, OWMC has understandably erred on the side of caution. It can be confidently stated that quantities requiring off and on-site treatment and disposal will increase at a rate much higher than projected by OWMC. In addition, a ban on sewer disposal, recommended in this paper and very likely to be implemented during the next ten years, will have an impact on quantities requiring treatment and disposal equal to or greater than the sum of all the other factors cited above.

Table 2 - 2 CURRENT WASTE MANAGEMENT IN ONTARIO

FATE	QUANTITY (Annual tonnes)
Discharge to water	
. Ontario Water Resources Act facilities	919,000
. Water pollution control plants	292,000
. Sewer Discharge	1,045,000
Deposit on land	
. Landfill	243,000
. Dust suppression and landfarming	110,000
. Household hazardous waste to landfill	86,000
	439,000
Incineration	385,000
Reclamation	133,000
Export	42,000
Other	82,000
	3,338,000

Source: OWMC

2.3.2 Treatment and Disposal Capacity

At present Ontario does not have sufficient capacity to adequately treat and dispose of wastes generated each year.[10] The environment is suffering as a result of improper waste disposal.

This environmental problem is being addressed, however, through development of standards such as MISA, CAP and waste management standards and increased enforcement. As argued above, disposal to the environment will decrease, thus increasing the demand for acceptable means of on-site and off-site treatment and disposal.

The OWMC facility, if approved, will make a major contribution to provision of treatment and disposal capacity; however, there is no guarantee that approval will be given and in any case, as OWMC itself has stated, the proposed facility is only one portion of total required capacity; other on-site and off-site capacity will be required.[11]

Another possible source of capacity, export to other jurisdictions for treatment and disposal, is unlikely to significantly alleviate the problem due to the move toward regulations which require that export does not result in harm to the environment of the receiving jurisdiction.

Higher standards and enforcement will make it profitable for the private sector to supply this capacity, either as part of its own industrial operations (on-site) or through commercial treatment and disposal (off-site). There is likely to be a significant time delay, however, before private sector facilities are inplace to meet this new demand for waste management services.

Chapter 8 following addresses this issue of treatment and disposal capacity.

3. PROPOSALS FOR A NEW APPROACH

3.1 From pollution prevention to waste management

The major thesis of this paper is that hazardous waste pollution can only be eliminated through development and implementation of a comprehensive, integrated strategy. This strategy must include related action on two fronts, pollution prevention and waste management.

Pollution prevention is to be achieved through completion of the programs already initiated for implementation and enforcement of water and air pollution standards. Doing so will significantly increase the quantities of hazardous waste requiring management. The waste management strategy proposed here is to first reduce these quantities as far as possible and to then ensure proper treatment and disposal of what is left.

Recommendation 1: The Ontario government should adopt a hazardous waste strategy which has the following objectives:

- **virtual elimination of hazardous waste pollution;**
- **maximum possible reduction of hazardous waste;**
- **proper treatment and disposal of what remains.**

3.2 Principles of hazardous waste policy

Existing Ontario hazardous waste policy is based upon a number of implicitly and explicitly stated principles. A distinction is made here between "objectives", defined as goals and "principles", defined as guiding rules of behaviour, for achieving those goals.

From the evaluation of progress to date and discussion at the Bolton seminars[1] it is concluded that Ontario hazardous waste policy should be based upon explicit and publicly stated principles.

Recommendation 2: **The Ontario government should publicly commit itself to development and implementation of hazardous waste policy in accordance with the following principles:**

- **accountability and access**

It is essential that all parties, including not only government and industry but also the individual faced with the task of disposing of a can of unused paint, be held accountable for their actions. This is achieved through regular reporting, both by actors themselves and by an

independent auditing agency. This accountability through annual reporting is the major mechanism proposed here for achievement of the goal of resolution of the problem by the year 2000.

The principle of access dictates that as much as possible, while still maintaining the confidentiality of proprietorial information, the various hazardous waste management processes be fully open to public participation and scrutiny.

. **integration of Ontario hazardous waste policy and economic policy**

The principle of integration of environmental and economic planning has already been adopted by the Ontario government. As set out above, hazardous waste policy has a number of major economic implications which reinforces the need for explicit statement of this principle and leads to the recommendation that a hazardous waste comprehensive strategy be developed by all relevant government ministries and not just the Ministry of the Environment.

. **commitment of sufficient financial and staff resources**

As is discussed above, hazardous waste management in both the public and private sectors has been hampered to date by a failure to provide the necessary resources. The gravity of the problem and clearly stated desire of the Ontario public both dictate that in the competition for allocation of finite government dollars, hazardous waste management be given a much higher priority than at present. In the same manner, in order to meet the regulatory requirements proposed here, Ontario industry will need to spend significantly more on hazardous waste management than has been the case to date.

. **uniformity and consistency of standards**

Until now, legally enforceable standards have almost all been in the form of conditions attached to individual Certificates of Approval. These conditions in turn are based upon guidelines of the Ministry of the Environment.

At the Bolton seminar, considerable discussion centred on the need to improve environmental regulation by imparting greater consistency and predicability to the process.[2] As was noted earlier, MOE is moving in this direction through development of the MISA standards. Accordingly, it is recommended that while recognizing the need for flexibility in individual cases, the Ministry must adopt the guiding of moving toward uniform standards.

3.3 Development of a Comprehensive Strategy by the Ontario Government

As set out above, hazardous waste is as much an economic as environmental issue. As such, it must be developed not only by the Ministry of the Environment but with full participation by all relevant ministries.

As is also set out above, successful resolution of the hazardous waste problem is dependant on significantly increased allocation of staffing and financial resources to the Ministry of the Environment. Decisions surrounding such spending require consideration of trade-offs in other areas of government activity, decisions which cannot be made by the Ministry of the Environment alone.

Finally, hazardous waste policy is of sufficient importance to the province to require the full participation and support of the Premier and Cabinet. All of these factors lead to the suggestion that a comprehensive hazardous waste strategy be developed by a specially created inter-ministerial Task Force.

Recommendation 3: The Premier should convene an Ontario government Task Force with representation from all relevant ministries including the Ministry of the Environment, Industry, Trade and Commerce, Health, Labour, Revenue, and Treasury and Economics. The mandate of this Task Force develop a comprehensive, integrated hazardous waste strategy.

Obviously such a strategy will build upon the initiatives already in place, such as existing compliance activities or the MISA standard-setting program and will go on to consider and recommend other initiatives complementary to them. What is essential is that for the first time in Ontario an integrated plan including all aspects of the hazardous waste issue, be developed and implemented.

In accordance with the principles of accountability and access, such a plan should be developed in consultation with all interested parties. It is suggested that elements of the environmental assessment process, such as presubmission consultation and consideration of alternatives, be incorporated into this planning process.

Recommendation 4: This strategy should be developed in consultation with all interested parties and with full consideration of alternatives.

Recommendation 5: This comprehensive strategy, once developed, should be presented by the Premier and Cabinet to the Ontario Legislature.

4. TARGETS AND DEADLINES

The only way to ensure regulatory objectives are being met is to set interim and final targets, and deadlines for meeting those targets. Specifically, targets must be set for reducing both the amounts of contaminants generated, and released into the environment. For example, the Province has an objective of virtual elimination of toxic contaminants entering the environment. There are, however, no specific targets and deadlines accompanying this general goal and no regulatory measurements of how far away the Province is from achieving its objective. What is missing is a set of interim targets leading to the final objective, and specific deadlines for each of these targets. Such targets would force regulator and regulated industries to be accountable for environmental protection efforts. They would provide a basis from which to measure the success of the regulatory program, and to make alterations to the program where necessary. Without specific targets, government, industry and the public will have no assurances that the massive resources and efforts directed to the hazardous waste problem will lead to protection for human health and the environment.

It is suggested here that deadlines are required both for implementing regulatory programs, and for achieving actual results. These targets and government success in meeting deadlines must be subject to regular public scrutiny. Regular reporting will ensure public visibility and political pressure which in turn will encourage the allocation of sufficient staffing and resources to meet the goals the government sets.

The following discussion and recommendations reflect a trend toward increased use of deadlines and reporting by both the Ministry of the Environment and other agencies. An example of the former is the Countdown Acid Rain Program which sets targets for industry reduction of sulphur dioxide and nitrogen oxide emissions, and a deadline for meeting the targets. An example of the latter is the renegotiation of the Great Lakes Water Quality Agreement, 1987, which included a requirement that both the Canadian and American governments regularly report on the achievement of objectives set out in the agreement.

4.1 Setting Targets and Deadlines

To solve the problem, the Ontario government must work toward a final deadline from which interim progress can be measured. December 31, 1999 is a symbolically significant, a yet feasible date for achieving a solution to the environmental and economic problem of hazardous waste contamination. A timetable based on this deadline would serve to focus government efforts and resources. Chapter 10 following, provides such timetables for the targets and deadlines of the comprehensive strategy proposed in this paper.

Recommendation 6: The comprehensive hazardous waste strategy should be designed to achieve the objective of solving the environmental and economic problem of hazardous waste by the year 2000.

The development of specific interim targets for meeting this objective is beyond the scope of this paper. Targets for actual reduction of waste released to the environment must be developed as part of the standard-setting exercise under the various regulatory programs. Targets have already been set for the Province's Countdown Acid Rain Program. Publicly stated targets and deadlines have yet to be expressed for the MISA and CAP programs. In addition, this paper proposes a new program for achieving reduction of amounts of waste generated. The standards for generating industries would be in the form of a percentage reduction of waste. Interim and final targets should also be set for this new program. These targets should be consistent with the final deadline for solving the problem identified above.

Recommendation 7: The Ontario government should establish interim and final targets, to be met between now and the year 2000, for the following:

- **reduction of hazardous wastes discharged to the environment through the MISA and CAP initiatives;**
- **reduction of amounts of hazardous waste generated through the waste reduction program recommended below.**

The Ministry has now committed the Government of Ontario to the following deadlines for implementing existing initiatives. These include the following:

- MISA regulations to be in place by 1992
- regulation 308 draft amendment, under the CAP program, released for public comment in 1989 and amendments to the regulation to be in place by 1990;
- review of the Environmental Assessment Act, with short term legislative changes released in the form of draft legislation in 1990 and draft legislation for longer-term legislative change in the following year;
- Additional staffing in the Investigations and Enforcement Branch in 1988-89.[1]

In addition to the deadline commitments already given, it is suggested that the Ontario government publicly commit to final and interim deadlines for implementation all components of the

proposed comprehensive hazardous waste strategy,including reduction regulations.

Recommendation 8: The Ontario government should establish interim and final deadlines to be met between now and the year 2000 for implementation of all components of the hazardous waste strategy.

4.2 Annual reporting

Adherence to the timetable adopted for hazardous waste management can best be ensured through annual public reporting. It is suggested here that such reporting be done both by the relevant government agencies and by an independent organization.

Primary reliance should be placed upon independent reporting. It would not be productive if government reporting were to either duplicate that effort or divert resources from implementation of the various hazardous waste programs. For that reason, it is suggested that annual reporting by government agencies be done with minimal expenditure of time and money.

Recommendation 9 : The Ontario government should report to the Legislature each year on progress made in meeting the final and interim deadlines of the hazardous waste comprehensive strategy.

4.3 Independent Auditing of Progress

In accordance with the principle of accountability and access, it is essential that Ontario government hazardous waste programs be subjected to ongoing public scrutiny and review. This function is performed now by the various public-interest environmental organizations in the province. Their ability to perform this function with respect to Ontario hazardous waste programs is hampered by limited resources which must be applied across a wide spectrum of environmental issues. It is suggested that their efforts be supplemented by establishment of a new agency with a mandate to prepare an annual review and evaluation of Ontario hazardous waste management.

This concept of an independent, annual review of progress is based upon the well-established principle of annual auditing of financial management of public and private sector organizations. In recent years, the Office of the Provincial Auditor has commented upon activities of the Ministry of the Environment. Such independent comment is of value but the Provincial Auditor does not have the resources or mandate to provide anything other than sporadic and limited comment. It is for this reason that a new agency, with a specific mandate to perform such a task, is suggested.

Recommendation 10: The Ontario government should establish the Office of the Environmental Auditor.

To be effective, the mandate of the Environmental Auditor should be limited and clearly defined. It should not include reporting on the physical state of the environment, since this is a function already being performed, in a limited manner, by Environment Canada.

The Environmental Auditor can function effectively without requiring access to either proprietry information held by industry or confidential information held by government. Although it is expected that the Auditor would continue to press for an expansion of what is considered publicly available information, the Auditor should not be burdened with time-consuming and expensive battles over access to information. It is suggested that only publicly available information be used in preparation of the annual report.

Recommendation 11: The Office of the Environmental Auditor should be given the following mandate:

- **to review all publicly available information on implementation of Ontario government hazardous waste programs;**
- **to evaluate such programs using as criteria the Ontario government's publicly stated principles, objectives, and timetables:**
- **to include in that evaluation a comparison with progress made by other jurisdictions;**
- **to provide the Ontario public with an annual report setting forth this evaluation.**

Independence and credibility of this proposed office can only be ensured if it is not in any way dependent upon MOE or any other government agency for financial support. This can best be provided by endowment funding which would generate sufficient revenue each year to pay operating costs of the office. It is suggested that total annual cost for the Office of the Environmental Auditor, including salary of the Auditor and research and support staff, office space and printing costs need not exceed $200,000. This amount could be provided annually with endowment funding of $2,000,000.

The Office of the Environmental Auditor should be established as an independent corporate body, managed by a Board of Directors appointed by the Ontario cabinet with representation

from government, business, labour and the environmental public-interest sector.

Recommendation 12: The Ontario government should establish an endowment fund of $2,000,000 to finance the operations of the Office of Environmental Auditor.

Recommendation 13: the Ontario government should appoint a Board of Directors, with representation equally balanced amongst all relevant sectors, to manage the corporate affairs of the Office of the Environmental Auditor.

5. REDUCTION

Throughout the industrialized jurisdictions during the past two decades, the focus of hazardous waste management has expanded from prevention of air, water, and land pollution to include reduction of quantities of wastes initially generated.[1] In 1984 the U.S. Congress amended the Resource Conservation and Recovery Act to include an explicit statement that waste reduction was national policy of the United States. Regulatory and non-regulatory programs intended to achieve waste reduction objectives have been implemented in the United States and a number of European jurisdictions.[2]

In Ontario, discussion of waste reduction has almost always been within the context of the 4 R's. The 1983 Blueprint put reduction at the top of the waste management hierarchy but advanced no specific recommendations for driving waste up the hierarchy.

Since 1983, recommendations have been made for action to reduce waste quantities. The CIELAP study titled Zero Discharge, in 1987 recommended that governments in the Great Lakes Basin set regulatory standards for "source reduction" and that reduction techniques be reviewed during granting of permits for new facilities.[3] In November, 1988, a paper prepared by the Canadian Environmental Law Association recommended a number of actions, including a legislative requirement to conduct waste reduction audits, to be taken by the Ontario government.[4]

Although MOE has considered the possibility of amending the Environmental Protection Act to provide legislative authority for 4 R's activity, no such action has been taken. Ontario government activity to achieve 4 R's objectives has been limited to establishment of the Waste Reduction Unit within the Waste Management Branch the primary mandate of which is financial assistance for development of new waste reduction technology.

The Ontario Waste Management Corporation also operates a waste reduction program intended to provide assistance to industry. In 1987 OWMC published the Industrial Waste Audit and Reduction Manual. The manual provides detailed instructions, illustrated by case-studies, for conducting a waste reduction audit through analysis of production inputs and outputs, undertaking cost/benefit analysis of various waste reduction alternatives and for designing and implementing a waste reduction plan.

To date, there has been no indication that the Ontario government is considering the use of regulatory programs to achieve reduction objectives. The 1987 Nottawasaga discussion, however, canvassed a number of regulatory steps which might be taken, including such things as mandatory reduction audits and

the extent to which pretreatment requirements to meet pollution standards will result in reduction.[5]

Nor yet has there been serious consideration of the use of negative financial incentives, such as generation taxes or disposal pricing as a means of stimulating waste reduction. The subject was discussed at both the Bolton and Nottawasaga seminars, largely within the context of the decision which must soon be made by the Ontario government on prices charged by OWMC for treatment and disposal.

Implementation of waste reduction policy is more advanced in Europe than in North America, most notably in West Germany which requires evidence of waste reduction measures as part of the approvals process for new facilities, which has adopted a specific policy to increase treatment and disposal costs as an incentive for reduction and which provides assistance to industries which are working to reduce waste quantities. A 1987 study of European practices has recommended that any waste reduction policy implemented in North America should be "comprehensive, creative and multi-faceted"[6] which is defined as including regulatory action, positive and negative financial incentives and provision of assistance to industry.

Recommendation 14: The Ontario government should explicitly state a commitment to giving waste reduction priority over any other waste management strategy.

Recommendation 15: Reduction achieved by implementation of programs in each of the three following areas:

- **legislative waste reduction standards;**
- **fiscal incentives for waste reduction;**
- **assistance to industry .**

5.1 Setting Waste Reduction Standards

Some participants at the Bolton and Nottawasaga seminars were reluctant to see the Ontario government regulate waste reduction. However, given the example of other industrialized jurisdictions, coupled with the gravity of the hazardous waste problem in this province, it seems almost inevitable that Ontario will do so in the near future. Indeed, it would be surprising if this social objective, unlike virtually every other ranging from child-care through to defense policy, should not be pursued through the use of law.

Given the premise that regulations will soon be enacted, it would seem prudent to begin planning such regulatory action now in order that it may achieve its objectives in the most cost-

effective and least disruptive manner. As a guiding principle, waste reduction regulation should as much as possible be patterned upon and complementary to the existing environmental regulatory system used in Ontario.

Recommendation 16: The Ontario Government should amend the Environmental Protection Act in such a manner as to provide legislative authority for waste reduction regulation.

An excellent model for a waste reduction regulatory program, which provides the attendant benefit of an existing institutional structure which can easily be adapted and used, is the MISA program. Technology-based standards are developed under MISA in two stages: first, monitoring regulations are used to gather necessary data and, secondly, standards are established through a consultative process, based upon the best technology economically achievable.

Recommendation: a similar approach be used to establish waste reduction standards. Waste reduction is achieved through modification of plant processes and use of alternative raw materials. The necessary first step is a waste reduction audit which is used to establish for a given industrial operation the "mass balance" between raw materials, finished products and waste. This audit would also process changes and raw material substitutions which will reduce the amount of waste generated. The audit also allows expression of current waste quantities and potential reductions as a percentage of raw materials. It is this percentage which can be used as the basis for establishment of targets and standards in the same way that a total loading per unit of production can be used in the MISA program.

MISA is intended to implement standards by 1992 which will reduce the quantity of waste discharged to Ontario waters. MISA standards will presumably be met through a combination of reduction and diversion of waste streams from discharge to water to other means of treatment and disposal. Waste reduction regulation, however, concentrates solely upon the objective of reducing quantities of waste initially generated.

It is likely that the staffing and financial resources needed to develop a waste reduction regulatory program will be on the same order of magnitude as MISA. Although possibly preferable, it seems unlikely that both regulatory programs can be designed and implemented concurrently. For that reason, it is suggested that the waste reduction regulatory program proposed here be planned now but implemented only upon completion of MISA. Some spending allocated to MISA would be shifted to this new program after 1992. Staff and institutional structures used in development of MISA could be shifted directly to this proposed program.

Recommendation 17: Planning should begin now for implementation in 1993 of a waste reduction regulatory program.

Recommendation 18: Such a program should include the following components:

- **a determination of the industrial sectors and industries to be regulated, in order of priority, based upon the criteria of waste quantities and toxicity;**
- **implementation of regulatory requirements to conduct waste reduction audits within those designated sectors and to report the results to MOE;**
- **based upon a review of data from these audits and information on reduction in other jurisdictions, establishment through a consultative process of reduction targets, both those which can be achieved immediately and those which can be achieved in the longer term, expressed as raw material percentages, which are technologically and economically feasible;**
- **implementation of regulatory standards based upon those targets, both for existing and new industrial operations;**
- **periodic review of standards in order to increase reduction quantities, based upon changes in available technology and processes.**

5.2 Fiscal Policy

In the 1970's, industry acted in response to sudden increases in energy prices by significantly reducing energy needs. The major factor influencing energy conservation by industry was cost.[7] In the same manner, waste quantities will only be reduced when the cost of waste generation and disposal is high in comparison with cost of potentially available waste reduction measures.

The 1988 Environment Canada report on the hazardous waste industry states that hazardous waste management cost to industry is:

> ...minor for the manufacturing sector generally, and trivial for many of its sub-sectors....The effect of hazardous waste regulations have typically been to simply alter how hazardous waste is disposed of, rather than to stimulate widespread re-evaluation of hazardous waste generation and waste minimization in manufacturing facilities. When hazardous waste

management costs are only a few percentage points or less of sales, there is not a pressing economic need for industry to devote capital and other resources to major investments to reduce hazardous waste management costs.[8]

For this reason, it is suggested that the Ontario government follow the lead of other industrialized jurisdictions by adopting a fiscal policy which would complement and reinforce the regulatory action recommended above.

Fiscal policy can be both positive, providing assistance to industry and thereby reducing the cost of waste reduction, or negative, taking action to increase costs of waste generation and disposal, thereby making reduction a more economically attractive alternative. Both policies can be pursued simultaneously. Some jurisdictions, most notably West Germany have adopted an explicit policy of providing negative financial incentives for waste reduction.

Negative financial incentives can take a number of forms: requirements that certain wastes be treated and disposed only at certain facilities which, because of the standard of care, charge higher treatment and disposal prices; requirement of liability assurances which increase disposal and treatment prices; and taxes or surcharges on raw materials, wastes generated or treatment and disposal.

The objective of waste reduction fiscal policy is <u>not</u> to generate revenue through a "polluter pay" approach. Rather, the objective is to influence industrial behaviour by making the generation of waste more expensive. Thus, the policy proposed here should not be confused with such things as the U.S. Superfund tax on raw materials, intended to provide funding for remediation, or the various surcharge policies proposed during the 1988 federal election which, again, were intended to generate revenue from a particular source, rather than to influence industrial behaviour. Although funds generated by taxation or surcharge measures may be used for hazardous waste management activities, that decision is irrelevant to the design of waste reduction fiscal policy.

A secondary objective, in this case achieved as much through positive assistance as through negative incentives, is stimulation of development of technological and process changes which will allow increased waste reduction.

Recommendation 19: The Ontario Government should adopt a policy of putting in place both negative and positive financial incentives to waste reduction.

Positive incentives, in the form of assistance to industry, are discussed in Section 5.3 following. Negative incentives, first through the use of OWMC pricing policy and, second, through imposition of a waste generation tax, are discussed in Sections 5.2.1 and 5.2.2 immediately following.

5.2.1 OWMC Pricing Policy

OWMC pricing policy can be designed to achieve either of two alternative objectives:

- provincial subsidy of OWMC capital and operating costs to allow low price for treatment and disposal as a means of attracting waste away from less environmentally sound disposal methods

- full recovery of operating and capital costs through disposal pricing, in order that resulting high prices will act as an incentive to reduction

Since the OWMC facility, if approved, will be by far the largest treatment and disposal facility operating in the province, this decision has major implications for waste reduction policy. For that reason, it was the subject of detailed discussion at the Bolton seminar. Although opinion was divided on the course which ultimately should be taken, there was general agreement that a question of this importance should be decided through an open, consultative process.[9]

It is not clear to what extent OWMC pricing policy will be subject to review during the environmental assessment hearing. The stated position of OWMC, in its environmental assessment is:

> "The principle of OWMC is to ensure that the fees charged for any of its off-site services properly reflect the off-site costs. This will provide the correct economic incentives for waste generators to pursue efficient on-site measures ...
>
> The enhanced use of 4R's is also a matter for generators and private recyclers to pursue. Again, OWMC's role is in the proper pricing of off-site services and assisting in information exchange."[10]

Recommendation 20: A decision on OWMC pricing should be made by the Ontario government as part of the public consultation process to develop a comprehensive strategy.

This paper argues for the use of strong negative financial incentives to reduce waste quantities and as such high OWMC

treatment and disposal prices form an essential part of that policy.

Recommendation 21: OWMC treatment and disposal pricing, if the facility is approved, should be used to encourage waste reduction.

This incentive will only be effective in reducing waste quantities if other treatment and disposal options are foreclosed. For instance, it has been argued that high treatment and disposal pricing will encourage illegal activity.[11] It is for this reason that enforcement activity, discussed in Chapter 7 following, is so essential to the proposed hazardous waste strategy.

High OWMC prices will not provide an incentive for reduction if lower priced commercial off-site treatment and disposal is available. In addition, the environment will suffer if some wastes are sent to such lower-priced commercial facilities which offer a lower standard of care. This raises the issue, referred to earlier, of the need to clarify the relationship between the government-owned treatment facility and the private sector treatment and disposal market. It is suggested that this be done by explicitly dividing the market between them through a regulatory requirement that wastes which pose the greatest environmental threat, and which are the most difficult to successfully treat and dispose of, go to the OWMC facility.

Recommendation 22: If the OWMC facility is approved, MOE should use regulations to direct certain classes of waste to that facility and that these regulatory requirements be developed, through the public consultation, as part of the comprehensive strategy.

5.2.2 Taxation of reducible waste

The purpose of a tax on reducible waste is to:

- provide an incentive for waste reduction
- provide an incentive for development of new processes and technologies for reduction

It would be necessary to enact new legislation to establish the authority for imposition of a tax on reducible waste.

Recommendation 23: The Ontario Government should enact a Waste Reduction Tax Act to provide legislative authority for taxing waste generation.

As set out above, the purpose of the proposed tax is not to generate revenue but instead to influence industrial behaviour. Ideally, revenue generated by the tax would be very low, due to successful reduction of waste by industry. There seems little purpose, therefore, in imposing the additional administrative complexities of funnelling waste reduction tax revenues to a special fund which would be used for some environmental purpose. Instead, it is suggested that revenues simply be added to the general revenues of the Ontario government.

Recommendation 24: The Waste Reduction Tax Act should be administered by the Ministry of Revenue, with revenues going to the general revenues of the Ontario government.

It is not suggested that the tax apply to all waste or to that portion of waste which is required, under the regulatory program proposed above, to be reduced. It is suggested that during the proposed regulatory standard-setting process, based upon waste reduction audits, two targets be established. One, which is considered to be immediately achievable, would then be incorporated as a standard into regulation. The other, which is considered to be potentially achievable at a future date, would define the quantity of waste to be taxed.

The way in which both set enforcible standards and taxes would be employed is illustrated by the following example.

1. The reduction standard setting determines an immediately achievable reduction target of 15%, and a potentially achievable target of 20%. (expressed as a percentage of raw materials)

2. Regulatory standards requiring reduction to 15% are implemented and enforced in the same manner as other environmental legislation.

3. A per tonne tax is imposed on 5% of the waste generated; that tax can be reduced by action taken to reduce waste quantities beyond the 15% regulatory requirement.

4. At some future date, a consultative process is again used to review reducible wastes in that sector, in light of changes in processes and technologies; based on that review both new standards and quantities subject to tax may be established.

5. This review and tightening of reduction standards is repeated at periodic intervals.

A graduated scale of taxation, could be used based upon toxicity of waste. This, and many other details of the proposed program, would be decided during the planning process.

Recommendation 25: The Ontario Government should plan and implement a program of taxation of waste which exceeds waste reduction regulation standards but which the Ontario government deems to be capable of reduction.

5.3 Establishment of the Waste Reduction Commission

As set out above, to significantly reduce quantities governments must use not only the sticks of regulation and negative financial incentives but also the carrots of assistance to industry. At the present time, Ontario waste reduction policy consists solely of carrots. It is suggested that in addition to the measures recommended above, far more should be done to provide assistance and that the urgency and priority of the task dictate establishment of a new agency with a specific mandate to assist in the waste reduction process.

Recommendation 26: The Ontario Government should establish the Waste Reduction Commission.

Existing waste reduction, financial and staffing resources of MOE and OWMC should be transferred to this agency and other resources provided as necessary. The mandate of the proposed Commission would be similar to the programs presently operated by MOE and OWMC, but with a significant increase in allocated funding.

Recommendation 27: The Waste Reduction Commission should be given the following mandate to:

- **develop new reduction technology and processes, both through its own activity and by contributing to private sector risk venture capital;**
- **provide technical assistance to industry;**
- **act as a clearinghouse for information**

Various aspects of the proposed Commission, such as funding sources and reporting relationship would need to be decided.

6. STANDARDS

6.1 Pollution Control Standards

As suggested above, the hazardous waste problem in Ontario has two distinct but related aspects. Toxic contaminants which are entering the environment through air emissions and discharges to water represent a pollution control problem. Contaminants which are not discharged into the environment, but are contained and directed to fates such as storage, treatment and disposal, re-use or recycling, represent a waste management problem.

Two major initiatives aimed at developing new pollution control standards for the province are now underway. The Municipal Industrial Strategy for Abatement (MISA), will regulate the discharge of contaminants to water and The Clean Air Program (CAP) will set new air pollution standards. Both programs are intended to significantly reduce the actual amount of hazardous contaminants released to the environment by controlling these pollutants at their source. If fully implemented, they will represent a significant step toward achievement of the first half of the hazardous waste strategy outlined above - transforming the hazardous waste pollution problem into a waste management issue.

6.1.1 MISA

The Ontario government's MISA initiative represents an important component of the solution to the hazardous waste problem. MISA is a significant advancement over previous regulatory efforts to control the discharge of hazardous contaminants to water:

- the program has a clear regulatory objective, that is "the virtual elimination of toxic contaminants in municipal and industrial discharges into Ontario waterways";
- in order to achieve this objective, effluent limits are to be put in place which will reduce the total loading of toxic contaminants into receiving waters;
- these standards will be set in regulation and applied uniformly across industrial sectors, a significant improvement over the current approach whereby standards are applied on a case-by-case basis with individual dischargers as part of conditions of approval, control orders or abatement agreements;
- in cases where BATEA standards prove insufficient to ensure environmental protection, water quality standards will be developed based on detailed assessment of receiving water bodies.

While a detailed review of the MISA program is beyond the scope of this paper, two areas of concern have been identified. First, there is no mechanism by which to measure the success of the regulatory program in meeting its stated objective. Initially, standards will be set on the basis of the "best available technology economically achievable". These may not be sufficient to meet this objective. As discussed in Chapter 4 above, interim targets and deadlines should be established to measure the program's progress.

Second, progress in implementing standards under the program has fallen far behind schedule. The 1986 MISA White Paper called for monitoring regulations to be in place in mid-1988 and effluent limit regulations in place by mid-1989. Now, almost three years later, only one monitoring regulation has been put in place. The 1989 deadline has been revised to 1992, putting the program three years behind schedule. There is reason to fear that unless changes are made the program will continue to fall behind schedule, with final implementation not achieved until the mid or late 1990's.

It is difficult to assess the reasons for these delays. However, one factor may be the lack of a generally agreed upon definition of "economically achievable". A second potential problem is a lack of a dispute resolution mechanism to be used when regulators and industry cannot agree upon approaches or specific standards.

The Provincial government must set and adhere to deadlines for finalizing MISA regulations. If parties to the standard-setting process fail to meet the deadline for recommending standards to the Minister, these recommendations should be determined by means of arbitration.

Recommendation 28: The Ministry of the Environment should take immediate action to ensure that effluent limit regulations are in place for all industrial sectors and the municipal sector under the MISA program by December 31, 1992. In order to meet the deadline, the following steps should be taken:

- **MOE establish new deadlines for the work of each joint technical committee;**
- **the proposed Environment Auditor report annually on progress;**
- **MOE establish a dispute resolution mechanism to decide on the standards to be recommended to the Minister when agreement cannot be reached within a sector.**

6.1.2 Sewer-use Standards

The second major problem associated with implementation of the MISA program is that of regulating discharges of hazardous wastes to municipal sewer systems. According to data from the Regulation 309 generator registration program, over one million tonnes of hazardous waste are discharged into municipal sewer systems each year from over 15,000 commercial and industrial sources. This represents almost one-third of the total amount of waste generated in the province. Moreover, the total does not include the unknown quantities of liquid industrial waste which are discharged to sewers each year, since generators are not required to register these wastes under Regulation 309.

The need to develop a strategy for regulating discharges to sewers was one of the most significant issues arising from the public review of the MISA White Paper. It was pointed out that sewage treatment plants are not designed to provide adequate treatment for hazardous waste. As a result, contaminants discharged to sewers may pollute water in effluent from sewage treatment plants; may pollute land, as contaminated sludges generated during the sewage treatment process are disposed of in land fills or on agricultural lands; or may pollute the air, by way of volatization prior to or during treatment, or emission from sludge incinerators. In addition to these routes of exposure, some contaminants never reach the sewage treatment plant, but are discharged directly into receiving water bodies, when high volume storm run-off requires combined storm and sanitary systems to bypass the sewage treatment plant.

Currently, the regulation of industrial sewer-use is the responsibility of local and regional municipalities, using municipal by-laws. A recent report by the Canadian Institute for Environmental Law and Policy concluded that current standards are not strict or comprehensive enough to provide adequate environmental protection and vary from municipality to municipality.[1] MOE has recognized the need to develop a strategy to regulate industrial sewer-use and in February, 1987, the MISA municipal sector joint technical committee began to study the problem. In September, 1988, it put forward a proposal for regulation, based on the following three features:

- technology-based standards would be set for identified categories of sewer-users;
- municipalities would be required by the Ontario government to implement the standards, using their municipal by-laws, with an option for municipalities to set more stringent standards if they could demonstrate a need based on local conditions;

- enforcement these municipal by-law standards would be done by the local or regional municipality, with provincial auditing, unless the local municipality did not have the capability to carry out this function, in which case the province would become the enforcing agency.

As an interim measure, while standards for industrial sewer use are being developed, the province has introduced a new model sewer-use by-law, developed in consultation with municipal and federal representatives. A key feature of this by-law is that it expressly prohibits the discharge of severely toxic materials and hazardous waste, as defined by regulation 309. This by-law, however, has no force or effect unless it is passed by a local or regional municipality.

As suggested by the model sewer-use by-law, disposal of hazardous waste to sewers should not be a waste management option available to generating industries. The CIELAP study recommends that Ontario move quickly to establish a province-wide prohibition of hazardous waste discharge to sewers, relying not on municipal by-laws but on provincial legislation, enforced by MOE. Municipalities with sewer-use enforcement programs which meet provincially set standards may elect to continue to enforce sewer-use standards.

Recommendation 29: Disposal of hazardous waste, as defined in Regulation 309, to sewers should be banned through incorporation of the prohibitions of the 1988 model sewer-use by-law into provincial regulations.

Recommendation 30: Standards governing discharge to sewers be set by provincial legislation, rather than municipal by-laws, and they should be established and enforced in the same manner as other MISA standards. Municipalities may "opt in" as the enforcement agency for sewer-use standards.

6.1.3 Air Pollution Control Standards

Since 1983, the Ministry of the Environment has been working to put in place better air pollution standards through amendments to Regulation 308. A Ministry of the Environment discussion paper released in 1987 proposes that existing point-of-impingement control methods be replaced by, in the case of high hazard contaminants Lowest Achievable Emission Rate controls and for lower hazard contaminants, best available technology economically achievable controls. The Ministry discussion paper suggests that Certificates issued under the revised regulation include requirements for monitoring, compliance testing and reporting.[2]

As set out above, the Minister has stated that a draft regulation will be released for comment in 1989 and the revised regulation implemented in 1990.

Recommendation 31: Amendments to Regulation 308 should be implemented no later than December 31, 1990.

6.2 Waste Management Standards

This paper is intended to provide a context for detailed discussion of proposals for changes to waste management standards placed on the table for discussion by the Waste Management Branch. As such, the paper does not advance specific recommendations in this area but instead limits itself to three broad recommendations. These are the need to move toward greater uniformity of standards, the need to upgrade standards in existing Certificates of Approval and bans on landfilling of hazardous waste and disposal of recyclable materials.

6.2.1 Uniformity of Standards

Currently, standards for the design, operation, monitoring, maintenance and contingency plans for hazardous waste treatment, storage and disposal facilities are determined on a case-by-case basis pursuant to the approvals process established under Part V of the Environmental Protection Act. Standards for each facility are set by detailed conditions attached to Certificates of Approval. The case-by-case method provides no assurances of uniform standards for similar types of waste facilities.

This lack of uniformity is unfair to both companies which generate and manage hazardous waste and members of the public. Companies which compete in the same market may have to meet different pollution control standards based on the terms of the conditions attached to their Certificate of Approval. For operators of waste disposal sites there is currently uncertainty regarding the pollution control standards that are required of them and inconsistency across the waste services industry because there are not minimum standards. Further, since standards vary from facility to facility, members of a community surrounding one facility may have to bear a greater level of risk. Some existing certificates may not contain a mechanism by which members of the community can monitor the operation of a facility.

In general, the protection afforded by the case-by-case approach will depend in part on accepted practice and standards for environmental protection, but in part on other variables such as the composition of the decision making board, the skill of legal counsel, and the resources and level of organization of rate payer groups another parties in the process.

The Ministry of the Environment should take steps to facilitate the implementation of uniform operating standards for facilities which treat hazardous wastes. Some requirements could be incorporated into provincial regulation. While it is recognized that many operating conditions must be decided on a site specific basis, all facilities which deal with hazardous waste, both on-site and off, should have a number of basic conditions attached to their operation. These include:

- a self-monitoring and reporting program which includes:
  - regular monitoring of relevant contaminants and waste received by the facility,
  - regular monitoring of air emissions and discharges to surface waters from a facility to ensure compliance with standards,
  - for land fill sites, regular monitoring to ensure that there is no impact on ground water quality,
  - regular reporting of monitoring results to both the public liaison committee and the Ministry of the Environment, and
  - submission of an annual report by the proponent to the Ministry of the Environment which must include all monitoring program results, a list of waste received and their sources;
- a plan to deal with plant emergencies or accidents;
- a public liaison committee to oversee plant operations and report on compliance;
- financial assurances for closure and post-closure care.

Many newer facilities already are required to meet some or all of these conditions. Most Certificates of Approval for waste management facilities, however, were put in place at a time when the approvals process was less rigorous, and conditions imposed less stringent. Regulations which impose some minimum requirements should automatically apply to the older facilities.

Recommendation 32: The Provincial government should amend Regulation 309, under the Environmental Protection Act, to require all operators of hazardous waste management facilities including generators who operate on-site facilities to:

- **develop a regular monitoring and reporting program for wastes received by the facility, for waste discharged**

into receiving waters or emitted into air from the facility, and in the case of landfill, for ground water quality;

- **report regularly, and in an annual report the Ministry of the Environment on monitoring results;**
- **set up a public liaison committee to oversee plant operation and report on compliance with operating requirements;**
- **develop a plan to deal with plant emergencies or accidents;**
- **develop a plan for closure and post-closure care.**

6.2.2 Upgrading Existing Standards

The proposed regulation would not solve the problem of varying standards. Many discrepancies will continue to exist between older facilities and those more recently approved. This problem arises in part from the fact that Certificates of Approval do not normally include a mechanism for reviewing and updating standards. Certificates usually apply for the life of a facility and thus there are no automatic mechanisms for reviewing their conditions in light of changing technological capabilities or new knowledge of the effects of environmental contaminants. There are no regulations specifically requiring best available technology standards for treatment and disposal facilities. As noted above, standards vary from facility to facility.

Recommendation: the Ministry of the Environment undertake a comprehensive review of all existing hazardous waste Certificates of Approval and implement a program designed to upgrade standards set by those Certificates.

6.2.3. Bans

In 1984, the U.S. Environmental Protection Agency amended its Resource Conservation and Recovery Act (RCRA) to include requirements which move industrial generators away from landfilling of hazardous and liquid industrial wastes. One of the bases for this regulatory scheme is general acceptance of the view that untreated liquid industrial hazardous wastes cannot be safely and permanently disposed of in an engineered land fill site.

If limits are to be placed on certain waste management activities, these restrictions must be equally applicable to both on-site and off-site facilities. The province should take steps to ensure that municipal as well as both on-site and off-site

private land fills are not receiving these types of wastes, without adequate prior treatment.

Recommendation 34: The Provincial government should amend Regulation 309 to prohibit disposal of hazardous wastes on both private and municipal land fill sites by incorporating the prohibitions put in place under the U.S. Resource Conservation and Recovery Act into the Environmental Protection Act.

Many wastes across the province which could be recycled or re-used are instead being disposed of by various less desirable means. Many generators are either not aware of the market for such wastes or do not view recycling as a viable alternative to disposal.

Recommendation 35: the Ministry of the Environment should develop a list of recyclable wastes, and incorporate this list to a schedule of Regulation 309. Regulation 309 should be amended to prohibit waste management facilities from accepting these types of waste for purposes other than recycling.

7. ENFORCEMENT

Full compliance with legislative requirements is an essential component of hazardous waste policy. Government can only successfully design and implement regulatory policy if it is confident that regulated industry will fully comply. In the same manner, business must be confident that all competitors are playing by the same rules.

During the 1970's and early 1980's compliance with legislative requirements was sought through negotiated abatement programs and only rarely by means of prosecution. In 1985 abatement and enforcement functions were separated through establishment of the Investigations and Enforcement Branch. Since that time, as shown on table 7-1 following, the number of prosecutions and convictions have increased. MOE is now in the process of implementing a commitment made by Premier Peterson to double the size of the Investigations and Enforcement Branch.

It is not possible to estimate the existing extent of non-compliance with hazardous waste regulatory requirements. However, it can be stated that compliance is less than 100%. The annual report on compliance with discharge to water requirements each year documents the failure of a significant portion of the regulated industry to fully comply. Each year the Minister publicly states that this is unacceptable and that full compliance is expected. The following yearly report again documents non-compliance and the Minister again states that this is unacceptable.[1] This yearly ritual sends a message to regulated industries that less than full compliance will be condoned by the Ontario government.

Recommendation 36: The Ontario Government should accept nothing less than 100% compliance with all legislative requirements.

What follows is a series of recommendations for steps which may assist in achieving this objective. The most important is the suggestion that, for the first time, MOE evaluate the various compliance tools available to it in order that it may better decide how to spend limited enforcement dollars.

7.1 Voluntary compliance

Compliance results more from voluntary action than anything else. Such voluntary compliance comes about not from altruism but from awareness of regulatory requirements and from the sure knowledge that illegal behaviour will be detected and that prosecution, conviction and significant sanctions will ensue.

7.1.1 Information and assistance

Although ultimate responsibility for awareness of regulatory requirements rests with regulated industry, more can be done by the Ministry of the Environment to inform industry of such requirements. An example of such action is the series of seminars for industry convened across Ontario by the Ministry in 1986 to inform industry of new requirements to register hazardous wastes. Such programs are developed by the Ministry as required, but there is no on-going program.

Recommendation 37: the Ministry of the Environment should implement a permanent program to regularly inform industry of hazardous waste regulatory requirements.

Just as the proposed Waste Reduction Commission is intended to actively assist industry in meeting hazardous waste reduction objectives, it is recommended that MOE not only inform industry of regulations but also assist in bringing operations into compliance.

Recommendation 38: A review of existing abatement programs should be undertaken, with a view to expanding the provision of information and technical assistance to industry.

7.1.2 Compliance audits

Ontario industry is increasingly undertaking formal audits of operations to identify areas of non-compliance and to then take remedial steps. Industry has argued that there is little incentive to voluntarily undertake compliance audits if they may later be used as evidence in a prosecution. Accordingly, industry has asked the Ministry to adopt a policy of not seizing such audits during an investigation and not using them as evidence in a prosecution. The Ministry has publicly stated its commitment to encouraging compliance audits by restricting their use in prosecutions but is not willing to allow information respecting non-compliance to be sheltered through the auditing procedure. To date, this position has not been set forth as formal policy of the Ministry.

Recommendation 39: The Ministry of the Environment should develop a policy which specifies cases in which compliance audits will be used in prosecutions.

TABLE 7 - 1 ENFORCEMENT ACTIVITY

	1985/86	1986/87	1988/89
Prosecutions initiated	86	179	211
Convictions (includes those initiated in previous years	71	138	170
Total fines	$605,665	$785,770	$1,056,038
Average fines	$8,530	$5,694	$6,212

7.2 Monitoring and detection

Monitoring and detection programs are intended to achieve two objectives:

a) to encourage voluntary compliance through industry self-reporting which ensures that management is aware of out-of-compliance operations
b) to detect illegal behaviour.

7.2.1 MOE Inspections

MOE is in the process of adding inspections staff and it would seem premature to advance recommendations for any further changes in inspections staffing levels before that process is completed. It is suggested that a review of inspections be included in the over-all review of science techniques amended below.

The issue of permanent, on-site inspectors at municipal landfills or other locations has been discussed repeatedly. Again, it is suggested that this question be reviewed in detail.

7.2.2 Public and employee reporting

It is suggested that permanent programs intended to encourage public and employee reporting of illegal behaviour would benefit the detection abilities of the Investigations and Enforcement Branch.

Recommendation: MOE should establish a public communication program to encourage reporting of illegal activities.

7.2.3 Industry reporting on compliance

It is assumed that a significant portion of failure to comply with hazardous waste regulatory requirements is due not to deliberate action but to lack of attention within the regulated industry. This would be remedied to some extent by a requirement to provide on-going reports on compliance with the specific conditions of Certificates of Approval.

Recommendation 41: MOE should implement a program which would require all holders of hazardous waste Certificates of Approval to provide the Ministry every two years with a report on compliance with conditions of that Certificate.

7.3 Effectiveness of compliance methods

During the past decade, the methods used by MOE to secure compliance with recommendations have dramatically moved from a primary reliance on negotiated abatement through to prosecution, including the laying of charges against individuals as well as corporate bodies. In 1990 the commitment to double the staffing level of Investigations and Enforcement branch will have been implemented and it would seem opportune at that time to review the various methods used by MOE in order to evaluate their relative effectiveness as a basis for planning the next stage of compliance policy.

Recommendation 42: The Ministry of the Environment should undertake in 1990 a study of the relative effectiveness of the different compliance achievement techniques used by the Ministry.

8. ENSURING SUFFICIENT TREATMENT AND DISPOSAL CAPACITY

At the present time, Ontario does not have sufficient on-site and off-site capacity to treat and dispose of the hazardous waste generated each year in an environmentally acceptable manner. It has been argued above that annual quantities requiring treatment and disposal will increase significantly during the coming decade, unless meaningful action is taken to reduce waste quantities. It is recognized however, that even with successful action to reduce quantities sufficient treatment and disposal capacity must be in place to ensure environmental protection.

Construction of the OWMC facility, if approved, with an initial capacity of 150,000-300,000 tonnes per year may not, by itself, ensure sufficient capacity. Nor yet is OWMC intended to, by itself, provide all the capacity needed.

The major barrier to providing sufficient treatment and disposal capacity is the environmental approval process. Action must be taken to improve three aspects of the process: siting of new or expanded facilities in the face of legitimate and understandable local opposition; clarification of the rules governing approvals; and provision of adequate staffing resources to allow approval applications to be processed in an efficient manner.

8.1 Approvals

8.1.1 Siting hazardous waste management facilities

During the past decade, Ontario, like every other jurisdiction, has gained experience in the difficulty of siting facilities - be they airports, group homes, municipal landfills or hazardous waste treatment and disposal facilities - in the face of understandable opposition from those living in the immediate vicinity whose lives will be affected by the proposed undertaking. The initial response of those seeking such approvals was to refer to such opposition as a "syndrome," implying that it is without rational basis. More recently, however, there has been a growing awareness of the legitimacy of such opinion and the need to respond to it in an appropriate manner.

Local opposition to siting facilities is usually based on two kinds of concerns:

- potential human health impacts, and
- various other impacts ranging from noise and sight nuisance to a lowering of property values.

Responses to the first kind include regulatory design and operating standards which ensure protection of the environment and human health. The response to the second is compensation by the proponent for the adverse impacts which, after all possible mitigation, will still be felt. At present, there are no clearly established procedures for measuring adverse impacts and deciding upon suitable levels of compensation. Establishment of such procedures is necessary.

Recommendation 43: MOE should initiate a consultative process to establish criteria and procedures for compensation of those affected by siting of hazardous waste management facilities.

8.1.2 Environmental assessment of all hazardous waste management facilities

In 1987, the Minister of the Environment extended the Environmental Assessment Act to include all private sector waste incineration operations. It is likely that any off-site hazardous waste treatment and disposal facilities would today require approval under the Environmental Assessment Act although there is no clearly stated Ministry policy to that effect. It is less clear which on-site hazardous waste initiatives would require Environmental Assessment Act approval. Clarification of policy is required and it is suggested that full environmental assessment be required in all cases.

Recommendation 44: The Ministry of the Environment should require both Environmental Assessment Act and Environmental Protection Act approval of all public and private sector, on-site and off-site, hazardous waste management operations both for expansion of existing and establishment of new facilities.

It is widely recognized that changes must be made to administration of the Environmental Assessment Act before it can be efficiently applied to private sector undertakings. Uncertainties regarding such things as the scope of alternatives which require consideration must be eliminated. Rather than waiting for the completion of the existing EA Program Improvement Project, it is proposed that a determination of this particular aspect of the process be made immediately.

Recommendation 45: The MOE Environmental Assessment Branch move immediately to provide guidelines governing scope and range of alternatives to be considered during private sector hazardous waste assessments.

8.1.3 Increased Staffing

There is general agreement that inadequate staffing levels in approvals and assessments branches and in the regional offices is preventing the timely and efficient processing of applications for approval. It is recommended above that the Ontario government commit itself to the principle of providing staffing and financial resources as required. It is suggested that this be done by giving a commitment to double staffing levels, as was done in the case of enforcement.

Recommendation 46: The Ontario Government should double staffing levels in the various approvals branches.

8.2 Import and Export

During discussion of transboundary movement of hazardous waste at the Nottawasaga symposium, there was general agreement that at a regional approach to the provision of treatment and disposal capacity was preferable. It was pointed out, however, that Ontario should not rely on export to solve its capacity problems, since political pressures could in future lead to sealing of borders. It was also pointed out that Ontario should not export its environmental problems by sending wastes to jurisdictions which impose a lower standard of care than would be required under Ontario law. At the same time, imported wastes must not be allowed to preclude environmentally secure treatment and disposal of Ontario waste by using up scarce capacity.[1]

Recommendation 47: The Ontario Government should place no restrictions on import and export of waste other than:

- **a requirement that Ontario waste not be exported to jurisdictions with lower treatment and disposal standards than pertain in Ontario;**
- **a requirement that imported wastes not impede the ability of Ontario to treat and dispose of its own wastes in an environmentally secure manner.**

9. HOUSEHOLD HAZARDOUS WASTE

9.1 Activity to Date

OWMC estimates that approximately 86,000 tonnes of household hazardous waste is disposed of, primarily in municipal solid waste landfills, each year. Paint wastes, used oils, antifreeze, and pesticide wastes constitute the majority of this waste.[1]

The MOE Household Hazardous Waste Collection Program was introduced in 1986 with the objective of assisting municipalities in providing an environmentally acceptable method of disposing of household hazardous wastes. Under the program, MOE will provide a grant of 50% of costs of a municipal program up to a maximum of $10,000 per year, per project. In the first year of the program, 9 municipal projects were completed. In 1988 35 municipalities held hazardous waste days and 8 permanent depots, mostly located at landfills, have been established to which householders can bring hazardous wastes.[2]

Public participation in all programs to date has been a enthusiastic, demonstrating public support for establishment of a greater effort in this area.

Just as municipal solid waste recycling is moving toward collection, through the Blue Box program, a permanent household hazardous waste program must be established on the basis of collection at curbside.

9.2 Permanent Program

It would seem most feasible to operate a permanent program on the basis of curbside collection done jointly with solid waste collection by municipalities, with responsibility for transportation from transfer stations to ultimate disposal resting with the provincial government. The objective should be management of household hazardous waste in the same manner as is recommended for industrial waste - maximum reduction of quantities followed by environmentally secure treatment and disposal.

Recommendation 48: MOE should undertake a study which would establish the cost and mechanics of a household hazardous waste collection system, based on municipal collection and provincial responsibility for treatment and disposal.

Recommendation 49: The Ontario Government should implement such a household hazardous waste collection system.

10. TIMETABLE FOR ACTION

As a basis for discussion of a comprehensive hazardous waste strategy, Figure 10-1 provides a proposed timetable for implementation of the strategy.

FIGURE 10-1 TIMETABLE FOR ACTION

Action	Jan. 1 1990	Jan. 1 1991	Jan. 1 1992	Jan. 1 1993	Jan. 1 1995	Jan. 1 1997	Dec.31 1999
MISA BATEA standards in place				X*			
CAP air pollution standards in place		X*					
OWMC in operation					X		
Comprehensive strategy finalized		X					
Office of the Environmental Auditor established	X						
Waste Reduction Commission established		X					
Waste Reduction Standard Setting process begins				X			
Waste Reduction Tax imposed				X			
EAA clarified and applied to all private sector haz. waste management			X				
Approvals staffing levels increased			X				
Household hazardous waste programs in place		X					
Hazardous Waste problem solved							X

* Minister has already announced deadline

DEFINITIONS

To avoid ambiguity, and because a number of terms are used here in a manner different from their use in other contexts, the following definitions of terms, as used in this paper, are provided.

Compliance Audit -	A review of industrial operations, done to ensure compliance with regulatory requirements.
Comprehensive Strategy -	A detailed plan for achieving one or one more policy objectives.
Hazardous waste -	Pollution which meets the definition of "special waste" as the phrase is defined by the Ontario Waste Management Corporation, which is "subject waste" as defined by Regulation 309, plus small quantity exemption waste and household hazardous waste. The term "waste" as used in this paper refers to "hazardous waste".
Hazardous Waste Certificate of Approval -	Authorization to manage hazardous waste in accordance with the conditions of the Certificate.
Hazardous Waste Management -	Lessening pollution by containing contaminants in order that they may be recycled, reused, stored, treated to reduce toxicity or disposed of in an environmentally acceptable manner.
Policy -	A broadly stated governmental objective and means of achieving it; not used in the manner that it is used in the phrase "MOE policies and guidelines".
Pollution -	Emission, discharge, spill or deposit of a contaminant to air, water or land.

Waste Recycling-	Reclaiming all or a portion of a waste in order that it may be used again.
Waste Reduction* -	In-plant practices that reduce, avoid, or eliminate the generation of hazardous waste so as to reduce risks to health and environment. Actions taken away from the waste generating activity, including waste recycling or treatment of wastes after they are generated, are not considered waste reduction. Also, an action that merely concentrates the hazardous content of a waste to reduce waste volume or dilutes it to reduce degree of hazard is not considered waste reduction. This definition is meant to be consistent with the goal of preventing the generation of waste at its source rather than controlling, treating, or managing waste after its generation.
Waste Reduction Audit -	A review of industrial operations, done to identify opportunities for reduction of generation of waste.
Waste Treatment and Disposal -	Reduction of the toxicity of the waste, followed by movement of the waste to its final resting place.

* the definition of waste reduction contained in the Office of Technology Assessment, Serious Reduction of Hazardous Waste, Summary, September, 1986, page 9.

FOOTNOTES

Chapter 2. THE NEED FOR A NEW APPROACH

1. The Ontario Waste Management Corporation, Environmental Assessment for a Waste Management System, Volume I, The OWMC Undertaking, November, 1988, page 6.

2. Environment Canada, Report on the Economic Profile of the Hazardous Waste Management Service Subsector in Canada, unpublished report, Environmental Protection Service, August, 1988, page 4-21.

3. IBID, 4-27

4. Statement by the Honourable James Bradley, Minister of Environment, to the Standing Committee on General Government, November 17, 1988, Handsard, G-155.

5. Ontario Hydro, Flue Gas Desulphurization Program Environmental Assessment, Summary, February, 1988, page 5.

6. Environment Canada, page 5-3

7. Environment Canada, page 3-22.

8. OWMC, page 5-31.

9. "According to Ministry staff, registrations continue to be submitted at the rate of about 60 per week. ... as of February, 1988. OWMC, page 3-8. New registrations were still being received as of January, 1989; personal communication, Stephen Radcliff, MOE Waste Management Branch, January, 1989.

10. "Ontario does not currently have the capability to properly treat all of the waste it generates.", OWMC, page 4-56.

11. OWMC, page 7.

Chapter 3. PROPOSALS FOR A NEW APPROACH

1. Participants agreed that "opportunities must be provided for discussion of both the underlying philosophy and broad sweep of hazardous waste policy." Canadian Environmental Law Research Foundation, Ontario Hazardous Waste Policy: A Provincial Forum, November 30 - December 2, 1986. page 4-1.

2. IBID, page 4-3.

Chapter 4. TARGETS AND DEADLINES

1. Statements by The Honourable James Bradley, November 17, 1988.

Chapter 5. REDUCTION

1. Dr. S. W. Pirages, "Legislative Directions in Hazardous Waste Management", paper presented to the 9th Canadian Waste Management Conference, 1987.

2. Alan C. Williams, "A Study of Hazardous Waste Minimization in Europe: Public and Private Strategies to Reduce Production of Hazardous Waste", Environmental Affairs, Vol 14:165.

3. Paul Muldoon and Marcia Valiante, Canadian Environmental Law Research Foundation, Zero Discharge: A strategy for the Regulation of Toxic Substances in the Great Lakes Ecosystem, 1987, page 52.

4. R. Lingren, 1988.

5. Ministry of the Environment and Canadian Environmental Law Research Foundation, Ontario Hazardous Waste Management Forum, August 30 - September 1, 1987, pages 20-22.

6. Williams, page 240.

7. Christopher Flavin and Alan During, "Raising Energy Efficiency" State of the World, 1988, Worldwatch Institute, 1988. Page 41.

8. Environment Canada, 4-29.

9. "Actions Proposed at the Forum - #8. Clarify the role of OWMC. Establish policy for OWMC pricing of services and decide if operations will be subsidized. Ensure public participation in this decision-making process." CELRF, Provincial Forum, 1986, page 3-1.

10. OWMC, page 6-31.

11. Robert W. Hahn, "An Evaluation of Options for Reducing Hazardous Waste", Harvard Environmental Law Review, Vol. 12:201, 1988, page 214.

Chapter 6. STANDARDS

1. Peter Pickfield, Canadian Institute for Environmental Law and Policy, Control at Source: Regulating Industrial Sewer-Use in Ontario, 1988.

2. Ontario Ministry of the Environment, Stopping Pollution at its Source: A Discussion Paper, November, 1987.

Chapter 7. ENFORCEMENT

1. As an example, Ontario Ministry of the Environment, Report on the 1987 Industrial Direct Discharges in Ontario, October, 1988 and the statement by the Minister, Mr. Bradley, that "The performance of the industrial dischargers, while slightly improved, is still unacceptable. I am determined to have these industries comply. . ."; "Industrial pollution still unacceptable, report says", The Globe and Mail, November 18, 1988. The article stated that "only 105 out of 157 industries met annual discharge limits" and that "fewer than 10 charges" had been laid against companies out of compliance.

Chapter 8. ENSURING SUFFICIENT TREAMENT AND DISPOSAL CAPACITY

1. MOE and CELRF, Waste Management Forum, 1987, pages 58-60.

Chapter 9. HOUSEHOLD HAZARDOUS WASTE

1. OWMC, page 5-11 and 5-14.

2. Draft Fact Sheet: re: Household Hazardous Waste Collection PRogram, MOE, undated.