Developing a Sunset Chemicals Protocol for the Great Lakes

PROGRESS REPORT

June 30, 1991 to July 1, 1992

Table of Contents

List of Attachments

1. Introduction

The Sunset Chemical Project, as envisioned by Pollution Probe and the George Washington University, has four objectives:

(1) Development of a methodology, including scientific criteria, for screening candidate chemicals, processes and products to be included in a Sunset Chemical Protocol;

(2) Identification, via the methodology developed in (1), of a set of Great Lakes chemicals, processes and products appropriate for control under sunset provisions (the "sunset list");

(3) Review of the existing legislative, economic and policy frameworks in place in Canada and the United States (both federally and at the state/provincial level) in order to assess the opportunities for -- and barriers to -- implementation of a Sunset Protocol for chemicals, processes and products selected in (2);

(4) Development and implementation of an outreach program to facilitate implementation of the Sunset Chemical Protocol, to make the public, government agencies, environmental groups, industry and other stakeholders in the Great Lakes region aware of the sunset process and to ensure implementation of the Sunset Chemical Protocol in the Great Lakes basin.

This progress report summarizes the achievements to fulfil these objectives, with particular emphasis on objectives (3) and (4). The project is proceeding very well, with several successes in promoting the sunset concept on the Canadian side of the Great Lakes. Deadlines and schedules are being met and, in general, it is fair to say that the sunset project is a productive one.

2. The ARETS Process

Pollution Probe's Executive Director is the Co-Chair of a unique consortium called the *New Directions Group*, which is comprised of the CEOs of Canada's largest industries, environmental groups and research institutes. The goal of the *New Directions Group* is to break down the traditional barriers between these stakeholders and provide new means to address societal issues.

In September or 1991, the *New Directions Group* issued an action plan for toxic substances (see attachment 1). The action plan contains several recommendations pertaining to sunsetting, including immediate action for the IJC's critical 11 list and the development of criteria to phase-out persistent, toxic and bioaccumulative substances.

The *New Directions Group* co-chairs presented the action plan to the Honourable Jean Charest, federal Minister of the Environment, who endorsed the recommendations of the action plan (see attachment 2). As a result, a multi-stakeholder consultative committee was organized to develop a sunset chemical protocol and to target other substances for reductions. This process is known as the **A**ccelerated **R**eduction and **E**limination of **T**oxic **S**ubstances (ARETS).

To date, the ARETS committee has met three times with the following achievements:

* developed a draft terms of reference (see attachment 3);

* initiated the START (**S**hort **T**erm **A**ction on **R**ealistic **T**argets) sub-group to determine which substances can be phased-out and/or banned immediately. The idea is to show some success of the ARETS process to the Minister of the Environment and to the public. Pollution Probe participates in the START group, which has met several times. By the end of July 1992, several substances slated for phase-out will be presented to the ARETS group;

* initiated an Ozone depleters sub-group to examine whether the ARETS group can contribute recommendations for a faster phase-out of ozone depleters. Pollution Probe coordinates this sub-group;

* initiated a criteria sub-group to develop a criteria system. Pollution Probe chairs this sub-group; and

* initiated a strategic plan paper, to be completed in August 1992. Pollution Probe is part of this writing team.

Although the ARETS process has been somewhat slow and difficult, due to the goal of achieving consensus results, we have great hopes that ARETS can deliver substantial progress in the virtual elimination of persistent toxic substances.

3. Ontario's Sunsetting Program

In September of 1991, the Provincial Minister of the Environment (MOE) announced the establishment of a zero discharge list to phase out and ban substances from industrial discharges. The list of 21 primary substances and 46 secondary substances was announced in April of 1992 (see attachment 4). In developing the sunset lists, Ontario used an approach similar to that developed by Dr. Jeffery Foran and Barbara Glenn of George Washington University.

The provincial government has submitted its criteria system and lists to the federal ARETS committee as an initial proposal for discussion. It is hoped that the federal government, in consultation with the ARETS committee, will complete the economic and technical studies required to develop a sunset protocol.

4. The Scientific Criteria System

Dr. Jeffery Foran and Barbara Glenn of George Washington University have developed the first draft of the scientific screening system. The draft was circulated to a variety of scientists for comment, and Dr. Foran and Ms. Glenn are currently incorporating the comments. A subset of chemicals is currently being evaluated to assess the performance of the screening system.

On September 24 and 25, 1992, we expect to invite about 100 scientists and interested individuals from the U.S., Canada and Europe to a conference where the next draft of the criteria system will be presented and discussed. The final criteria system is expected to be completed by early 1993.

5. The Legal and Implementation Study

Pollution Probe and the George Washington University are undertaking a legal and implementation study to find ways to implement the Sunset Chemicals Protocol. The first draft of this study has been completed.

6. Design of Outreach Campaign

A draft of the design of the outreach campaign has been prepared, and it is currently being circulated for comments.

6.1. Outreach Activities

Pollution Probe staff have undertaken several activities to promote the sunset concept, including:

(a) in October of 1991, Pollution Probe participated in the biennial meeting of the International Joint Commission. Pollution Probe made two presentations to the Commission, one covering the sunset concept and the other presentation was about public participation in environmental decision-making.

(b) in October of 1991, Pollution Probe gave a presentation on the sunset concept

at the University of Toronto, as part of their Great Lakes day.

(c) in December of 1991, Pollution Probe held a meeting involving Great Lakes NGO leaders in Detroit to discuss strategies to further the sunset concept.

(d) in March of 1992, Pollution Probe held a caucus meeting for NGOs participating in the ARETS process.

(e) Burkhard Mausberg gave a presentation on the Sunset Protocol at the 39th Ontario Conference on the Environment held in Toronto in June, 1992.

(f) a first draft of a sunset pamphlet has been completed.

(g) a Sunset Chemicals information package has been completed and is currently being printed (available upon request).

7. Economic Feasibility Study

The first draft of the economic feasibility study to evaluate the economic costs is currently being completed. So far, Pollution Probe has been unable to raise additional funds to develop a more detailed economic analysis, therefore the feasibility study will be a modest one.

8. Other Activities

Other activities related to the sunset project includes:

(a) in August of 1991, Pollution Probe prepared a brief on the Canada-Ontario Agreement on Great Lakes Water Quality, which included a call for sunsetting (available upon request).

(b) since September 1991, Pollution Probe participated in meetings with industry and Environment Canada for the purposes of developing a "National Pollutant Release Inventory" for Canada, comparable to the Toxic Release Inventory in the United States;

(c) since June 1992, Pollution Probe has been writing a joint report with the Toxics Use Reduction Institute at the University of Massachusetts at Lowell on banning activities throughout the western world. A knowledge of sunset activities in several jurisdictions will provide valuable lessons for the Great Lakes basin;

(d) In April of 1992, Janine Ferretti, Pollution Probe's Executive Director, and Dr. Jeff Foran met with officials of Dow Chemical in Midland, Michigan to discuss sunsetting;

(e) a chapter on sunsetting in the Great Lakes, written by Paul Muldoon and Burkhard Mausberg, will be published within the next four months. The tentative title of the book is *Materials Use Policy*, and it will be published by the U.S. World Wildlife Fund;

(f) in December of 1991 and January of 1992, Pollution Probe participated in the UNCED preparatory work for NGOs to include the sunset concept in Agenda 21.

. . . . . .

We welcome any comments or questions you may have about the Sunset Chemicals Project. If you have any additional individuals that may be interested in the project, please let us know.

Best wishes,

Paul Muldoon
Counsel

Burkhard Mausberg
Researcher

Attachment 1

REDUCING AND ELIMINATING TOXIC SUBSTANCES EMISSIONS: AN ACTION PLAN FOR CANADA

CONTENTS

NEW DIRECTIONS GROUP

SEPTEMBER 1991

INTRODUCTION

This paper presents a plan for reducing and eliminating the emission of toxic substances - two central elements of the philosophy of zero discharge. The ultimate goal is to ensure no negative effect on the environment. The plan reflects the views of the New Directions Group, a voluntary network of concerned Canadians from industry, environmental groups and other non-government organizations (See Appendix 1).

It is time to act in new ways. Good science and common sense are essential to ensure that the most significant pollutants are dealt with first. These substances need to be prioritized for action based on toxicity[1], persistence[1], bioaccumulation[1], exposure, risk and within the framework of the four principles below.

The New Directions Group recognizes that good work is underway in all sectors. However, more needs to be done. This plan is intended to help focus and promote action and is designed to complement federal and provincial/territorial government initiatives, as well as those of industry. The plan is not intended to supplant any regulatory initiatives currently underway by the federal or provincial governments.

FOUR PRINCIPLES

There are four principles that guide this action plan: sustainable development; pollution prevention; a crossmedia approach; and public participation.

Sustainable Development

The World Commission on Environment and Development has defined sustainable development as:

> *meeting the needs of the present without compromising the ability of future generations to meet their own needs.*

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[1] Definitions for these terms are provided in Appendix II.

Economic activity and environmental protection, often viewed as conflicting goals, can be mutually supportive. Canadians can only expect to maintain economic prosperity if we protect the environment and our resource base, the building blocks of development. Correspondingly, economic prosperity enables us to support wise resource management and protect environmental quality. To achieve sustainable development, we need both a strong economy and a healthy environment. The two are inseparable.

Pollution Prevention

Preventing a problem is always better than trying to react to one. Priority must be given to pollution prevention that eliminates or reduces toxic substance emissions. This may mean a change in raw materials, processes, product formulations or management systems.

A pollution prevention approach requires a shift in focus from "react and cure" to "anticipate and prevent." Minimizing the generation of pollution must be given priority over controlling discharges by end-of-pipe treatment.

Crossmedia Approach

Since toxins move through air, water, land, and biota, reduction programs must aim to reduce these substances in all media, not merely shift them from one medium to another.

Public Participation

Public participation is crucial in environmental matters because it allows for fuller and more informed discussion. It also provides the support and understanding for management decisions in both the public and private sectors. Public participation is most effective when resources, including technical and scientific expertise, are accessible. Processes in which timely and effective public involvement takes place are fairer to all concerned and will result in better decisions that have support throughout society.

The New Directions Group recommends that:

> The principles of sustainable development, pollution prevention, the crossmedia approach and public participation should guide the action plan for the reduction or elimination of toxic substance emissions.

ACTION PLAN

The two steps for action are: emission inventories; and targeted reductions/eliminations.

Emission Inventories

Reducing or eliminating the emission of toxic substances calls for detailed knowledge about the nature and quantities of the substances being released into the Canadian environment. A national emissions inventory would provide:

- a quantitative measure to assess progress in reducing the emission of pollutants into the environment; and
- information that will assist both industry and government to prioritize action and to set targets.

The intent of this inventory is to include all emissions for all sectors, using the same protocol on a national basis. In December 1990, the federal Green Plan committed the federal government to a national emissions inventory. It promised a national release protocol by the end of 1992, with the first reports to be issued in 1994. The development of this inventory must commence immediately.

The New Directions Group recommends that:

> A national emission inventory protocol should be established no later than the end of 1992, with the first report to be publicly available in 1994.
>
> The federal Minister of the Environment should establish immediately a working group of industry, environmental groups, and federal and provincial governments to develop the inventory protocols.

Targeted Reductions/Eliminations

Targeting reductions involves both the phasing out ("sunsetting") of selected substances and a reduction of emissions from all sources. There are five main steps involved in this process:

- developing scientific criteria and data to identify the substances of most concern;
- identifying the substances that fit the criteria together with their uses;
- assessing reduction/elimination constraints and opportunities (i.e. availability and development of alternatives, old plants versus new plants, commercial products versus by-products, and quantities);
- establishing target levels for reduction; and
- setting timetables for achieving these levels or sunsetting.

The process of phasing out and reducing emissions is just that - a process involving the five steps described above. If this process is to work, it must include all stakeholders.

The New Directions Group recommends that:

> Before the end of 1991, the federal Minister of the Environment should establish a multi-stakeholder group to develop the five-step reductions/eliminations process as set out in this paper. The process should be fully implemented before the end of 1992.

Sunsetting of Selected Substances

"Sunsetting" refers to a comprehensive and scientifically based program designed to identify those substances that are to be phased out and banned from generation, use and release. The initial focus needs to be on substances which are persistent and toxic and which bioaccumulate.

Action can take place now on a short list of substances. The International Joint Commission's list of 11 critical pollutants (See Appendix III) is one starting point.

The New Directions Group recommends that:

> Some substances should be immediately identified for phase-out, with first priority given to those that are persistent and toxic and which bioaccumulate.

Reduction of Emissions from all Sources

The sunsetting process is designed to address and eliminate the worst pollutants. A similar process using a different approach is needed for other substances which are of concern. In this instance, a preventative approach must be entrenched to reduce emissions to the environment. Clear reduction goals on an industry-by-industry basis must be set. Data must be made public so that progress towards the goal can be measured. This kind of targeted reduction is central to the kind of pollution prevention planning necessary for all Canadians in the 1990's.

The New Directions Group recommends that:

> Sector by sector, before the end of 1994 Canadian industry should develop and publish pollution prevention action plans to achieve targeted levels set by the multi-stakeholder group for reduction of toxic emissions by the year 2000. The goal is to ensure no negative effect on the environment.

SUMMARY CONCLUSION:

The two steps proposed in this action plan include a national emissions inventory and a process for targeted reductions, including the phasing-out of some substances. Together, these would represent a major advance in an effective and coordinated toxic chemical program for Canada. The use of a multi-stakeholder process ensures that the views of all interests will be represented. This process will only be effective, however, if there are strict timelines with clearly established goals and targets. We believe these are possible, and all are necessary for meaningful progress.

In summary, the New Directions Group makes the following recommendations.

- The principles of sustainable development, pollution prevention, the crossmedia approach and public participation should guide the action plan for the reduction or elimination of toxic substance emissions.

- A national emissions inventory protocol should be established no later than the end of 1992, with the first report to be publicly available in 1994.

- The federal Minister of the Environment should establish immediately a working group of industry, environmental groups, and federal and provincial governments to develop the inventory protocols.

- Before the end of 1991, the federal Minister of the Environment should establish a multi-stakeholder group to develop the five-step reductions/eliminations process as set out in this paper. The process should be fully implemented before the end of 1992.

- Some substances should be immediately identified for phase-out, with first priority given to those that are persistent and toxic and which bioaccumulate.

- Sector by sector, before the end of 1994 Canadian industry should develop and publish pollution prevention action plans to achieve targeted levels set by the multi-stakeholder group for the reduction of toxic emissions by the year 2000. The goal is to ensure no negative effect on the environment.

APPENDIX I

Members of the New Directions Group

Firman Bentley*
Senior Vice President
Nova Corporation of Alberta

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CPCU Coordinator
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* Members of the New Directions Group Steering Committee.

Assisting the New Directions Group during the preparation of this paper were Don Hames and Paul Muldoon.

APPENDIX II

Definitions of Terms

When addressing issues such as toxicity, persistence, bioaccumulation, exposure and risk it should be recognized that there is no single number which defines a substance of concern. For example, numbers like eight weeks for a half-life are meant to be used for screening purposes. The intent is for the substances with the highest numbers to be addressed first.

Toxicity

The Canadian Environmental Protection Act defines a substance as toxic if it enters the environment in a quantity or concentration or under conditions such that it has an immediate or long-term harmful effect on the environment or human health.

Persistence

Any substance with a half-life in water greater than eight weeks is considered persistent.

Bioaccumulation

If a substance accumulates to levels that produce adverse toxic or aesthetic effects in humans or wildlife, it is considered bioaccumulative.

APPENDIX III

Critical Pollutants Identified by the Water Quality Board

- Total polychlorinated biphenyls (PCBs)
- DDT and metabolites
- Dieldren
- Toxaphene
- 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin (2, 3, 7, 8-TCDD)
- 2, 3, 7, 8-tetrachlorodibenzofuran (2, 3, 7, 8-TCDF)
- Mirex
- Mercury
- Alkylated lead
- Benzo(a)pyrene
- Hexachlorobenzene

Attachment 2

Minister Environment Canada | Ministre Environnement Canada

This information was released to the wire services on the date indicated. Despite the delay some releases and speeches are mailed to out-of-town media because the content is not time-dependent or because it will be useful for background files

FOR IMMEDIATE RELEASE

FEDERAL GOVERNMENT TO SET TARGETS FOR PERSISTENT TOXIC SUBSTANCES

OTTAWA -- 27 September 1991 -- Environment Minister Jean Charest has indicated that the federal government will work in partnership with environmental groups and industry to set targets for phasing out persistent toxic substances. Mr. Charest made the commitment today in response to a report just issued by New Directions, a group of Canadian industry leaders, environmentalists and others.

The group has been working since May 1991 to develop a consensus document that will prompt faster action on reducing and eliminating the release of toxic substances.

One main recommendation made by New Directions is that the federal government establish a multi-stakeholder group to develop a process, including targets and timetables, for "sunsetting" or phasing out the use of persistent toxic substances.

"I welcome the involvement of environmental groups and industry in establishing a process and timetable for sunsetting persistent toxic substances," said Mr. Charest. "I will also invite the provinces to become involved. This co-operative effort will help us create the partnerships necessary to meet our Green Plan goals and address the critical environmental issues of our time."

Environment Canada's newly established Office of Pollution Prevention will encourage and work with industry, business and environmental groups to develop a strategy for sunsetting persistent toxic substances. Any new federal regulations that may be proposed in this process will be developed in line with the federal government's Citizen's Code of Regulatory Fairness.

.../2

Canada

New initiatives will complement actions being taken under the Canadian Environmental Protection Act (CEPA). CEPA gives the government the authority to phase out or ban any substance that poses a significant threat to human health and the environment. A decision to ban or phase out a substance is based on a scientific assessment of the threat it poses.

The New Directions report also urges the government to move ahead with the development of a Hazardous Pollutants Release Inventory as outlined in the Green Plan, and recommends public involvement in its design. The purpose of the Inventory will be to gather and publish information on releases of hazardous substances in Canada.

"We know the Hazardous Pollutants Release Inventory will become a powerful motivator for industry to reduce releases of pollutants into the environment," said Mr. Charest. "It is encouraging that the New Directions group has endorsed this initiative. I am pleased to say we have started work with a multi-stakeholder group of experts who will help us design the protocols to be followed by industry."

- 30 -

Further information:

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(819) 953-1114

(Également disponible en français)

Attachment 3

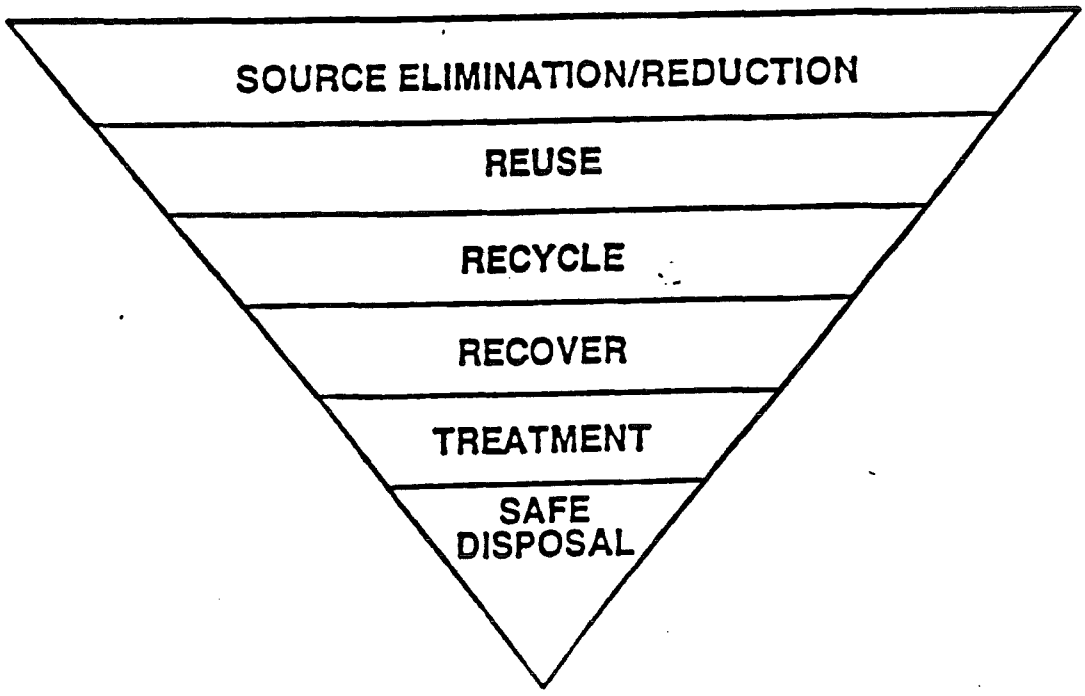
Draft Terms of Reference dated July 8, 1992 for the ARET[1] Initiative Multi-stakeholder Consultative Committee

Introduction

Accelerating the reduction or phasing out of releases of persistent toxic substances is necessary to reduce the threats to human health and the natural environment caused by pollution.

Preventing pollution at its source, whether by changes in production or by reducing reliance on environmentally harmful materials, has been advocated by leaders of/in industry, labour, the provinces and territories, environmental groups, and the federal government as a cost-effective approach to achieving these goals. This initiative is designed to build on cooperation between all parties towards this end (prevention of pollution at source). Pollution prevention is defined as eliminating or reducing at source the release of toxic substances. The environmental protection hierarchy should be taken into account (see following diagram, developed by the Manitoba Hazardous Waste Management Corporation).

ENVIRONMENTAL PROTECTION HIERARCHY



[1] ARET stands for Accelerated Reduction or Elimination of Toxics in Canada

The ARET program builds on past work from many sources, including provincial and federal governments, NGOs, and industry.

The work of the New Directions Group played a catalytic role in the development of ARET.

Objective of the Consultative Committee

A multi-stakeholder Consultative Committee will be charged with meeting the objectives, as described below. The key objective is the development of an action plan with specific milestones that
Rev. 1 will result in accelerated and substantial and measurable targeted reductions/elimination of selected persistent toxic substances entering the natural environment from significant sources by the year 2000.

Initiatives may involve both the reduction of releases of selected substances into the environment (reduction initiatives) and the phase-out (or sunsetting) of selected substances (phase-out initiatives). The Committee may perform the tasks directly or by the creation of working groups or subcommittees that report to it.

More specifically, objectives are

- to develop scientific and technical criteria and a decision-making process in order to identify specific substances for initiatives;
- to identify substances that fit the criteria as well as their major sources and general uses; such criteria and substance selection will build on existing work, adapted for Canada's situation;
- to identify the policy, economic and technical issues and opportunities related to the reduction or phase-out
Rev. 1 initiatives;
- to provide recommendations for minimizing constraints or barriers identified;
- to provide clear definitions of all relevant terms;
- to recommend target levels for reductions of releases to the environment using developed processes and criteria;
- to recommend timetables for the reduction and phase-out of releases to the environment; attention should be paid to achieving visible results in the short term and developing a more substantive long term program. Where a Pollution

Prevention approach is feasible, sufficient time should be allowed for its implementation by industry;

- to recommend strategies and a general path forward that will encourage the optimum mix of voluntary and regulatory effort by significant emitters to meet these targets and timetables; and

- to provide "products" that can be distributed to members of the constituencies represented on the Committee and to the broader public.

This group should draw on, not duplicate, work being done by related initiatives such as CEPA, the Fraser River Action Plan, and especially the NPRI.

Scope

Initially, activities will

- focus on significant releases (from both point and non-point sources); and

- focus primarily on substances that are persistent, toxic and that bioaccumulate (but are not limited to substances that meet all three criteria).

Releases to all media (air, water and land) will be taken into account.

A substance's entire life cycle-its production, use, transportation and disposal-should be considered.

The tools available to the Committee for inclusion in the action plan include voluntary action, market forces and regulations.

Roles of the Consultative Committee Members

Each member of the Consultative Committee will bring to the table the perspectives of that constituency and will speak for his/her association and communicate back to his/her constituency to the extent practicable.

Consultative Committee Process and Organization

The approach of the Consultative Committee will be:

- to prepare strategic and business plans;

- to identify issues and options where consensus agreement clearly exists;

- to clearly identify issues where consensus agreement was not reached, and report on the nature and rationale for the stakeholders' differing views;

- to produce one or more reports summarizing the committee's findings and recommendations for submission to the Ministers of the Environment; and

- to develop a plan to create public awareness of the Committee's activities.

Deliberations will be guided by principles set out in the following section (Proposed Guiding Principles for the Consultative Committee).

The consultation process itself, including external communications, will be guided by the Principles and Protocol of Meaningful Consultations, developed by the Niagara Institute.

Observers or technical specialists may, with the agreement of the Committee, be invited to participate or make presentations.

An early task of the Consultative Committee will be to develop an organizational structure, a draft budget and a work plan.

Environment Canada will provide the secretariat for the Committee.

Termination

All Committee activities will be terminated by the end of 1994, at which time the Consultative Committee will be "sunsetted".

Attachment 2

Proposed Guiding Principles for the Consultative Committee

To achieve sustainable development, we need both a strong economy and a healthy environment; the two are inseparable.

Preventing a problem is always better than reacting to one. Priority must be given to pollution prevention opportunities that eliminate or reduce toxic substance emissions at source. Minimizing the generation of pollution must be given priority over controlling discharges by end-of-pipe treatment; when setting objectives, sufficient time should be allowed to enable the process changes required to minimize generation of pollutants, as this typically takes more time than end-of-pipe solutions.

Pollution prevention programs must aim at reducing the presence of persistent toxic substances in all media; e.g., air, land, water, not merely shifting them from one medium to another.

To be credible, the results of any initiative must be measurable. This implies developing a national emission inventory and periodically updating it.

Targeted initiatives should be identified on the basis of agreed-to processes and criteria developed by the Consultation Committee.

All *significant* emitters must be included in any initiative.

Canadian initiatives for phasing out ("sunsetting") substances should recognize comparable and concurrent international efforts; e.g., OECD and UNEP.

Targeted initiatives should be consistent with and complement the regulatory and permit requirements of all levels of government.

Incentives and safeguards should be developed and accepted by all stakeholders to maximize industry's voluntary participation in any initiatives.

Credit must be given to industry for significant recent reductions of releases in order to avoid penalizing emitters that have acted responsibly in the past. Similarly, the ability of existing plants to meet new standards must be considered.

For key decisions, members should inform the Committee of the level of commitment they are able to make on behalf of their constituency.

Attachment 4

Ontario

news release

Ministry
of the
Environment

April 27, 1992

FOR FURTHER INFORMATION:

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THE TOXIC TWENTY-ONE:
CANDIDATE LIST OF SUBSTANCES PROPOSED FOR BAN OR PHASE-OUT

Today Environment Minister Ruth Grier released a list of 21 hazardous substances as candidates for possible ban or phase-out in Ontario. This list includes contaminants that are present or discharged to the Ontario environment and are inherently hazardous based on three criteria: persistence, bioaccumulation potential and toxicity.

Ministry scientists also developed a secondary list of 46 substances. The secondary list of candidate substances includes substances that are toxic and either persistent or bioaccumulative, or are both persistent and bioaccumulative but less toxic than those on the primary list. The secondary list will be considered in the next stage for bans or phase-outs.

"We have taken the lead in doing the scientific work to identify the most hazardous substances. Today we are offering our candidate list to the federal government. The federal government has already initiated a consultation process on bans or phase-outs that includes industry and the public," Environment Minister Ruth Grier said.

"Now that Ontario has laid the scientific foundation, we expect a commitment from Environment Canada to evaluate the economic and technical implications of banning or phasing out these chemicals.

"The development of this list is part of Ontario's commitment to the Great Lakes Water Quality Agreement. Since 1978, this Agreement has called for 'zero discharge of persistent toxic chemicals' to the Great Lakes. In its recent Great Lakes Water Quality report, the International Joint Commission repeated its call for governments to ban or phase out certain persistent toxic chemicals.

"We challenge all other governments in the Great Lakes basin and across Canada to work together and quickly adopt time frames for phasing out these chemicals. We believe that eliminating these chemicals must be done not only on a national level but on an international level," Mrs. Grier added.

"Although some of these substances are already banned, we are still detecting them in our monitoring and we need to find ways to permanently eliminate them," she said.

"The proposed ban or phase-out of highly hazardous chemicals is an important milestone in Ontario's pollution prevention initiative."

Copies of the report titled Candidate Substances List for Bans or Phase-Outs, PIBS 1921E, are available through the ministry's Public Information Centre, 135 St. Clair Ave. W., Toronto, Ontario, M4V 1P5, (416) 323-4321.

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* version française disponible

PRIMARY LIST OF CANDIDATE SUBSTANCES FOR BAN OR PHASE-OUT

anthracene
arsenic
benzo[*a*]pyrene
benzo[*ghi*]perylene
benz[*a*]anthracene
DDT (+ DDD & DDE)
1,4-dichlorobenzene (paradichlorobenzene)
3,3'-dichlorobenzidine
dieldrin
hexachlorobenzene
alpha-1,2,3,4,5,6-hexachlorocyclohexane (α-HCH)
gamma-1,2,3,4,5,6-hexachlorocyclohexane (lindane, γ-HCH)
mercury
mirex
pentachlorophenol
perylene
phenanthrene
polychlorinated biphenyls
polychlorinated dibenzo-p-dioxins and -furans
toxaphene
tributyl tin

SECONDARY LIST OF CANDIDATE SUBSTANCES FOR BAN OR PHASE-OUT

Group A

benzo[*b*]fluoranthene
benzo[*e*]pyrene
benzo[*j*]fluoranthene
benzo[*k*]fluoranthene
beryllium
bis(2-ethylhexyl)phthalate
cadmium
chloroform
chromium (Cr^{+6})
chrysene
copper
dibenzo[*a*,*i*]pyrene
7H-dibenzo[*c*,*g*]carbazole
dibenz[*a*,*h*]acridine
dibenz[*a*,*j*]acridine
7,12-dimethylbenz[*a*]anthracene
1,8-dinitropyrene
1,4-dioxane
1,2-diphenylhydrazine
ethylene dibromide
hexachlorocyclopentadiene
indeno[1,2,3-*cd*]pyrene
lead
pyrene
silver (free ion)
styrene
2,3,4,6-tetrachlorophenol
tetraethyllead
thiourea
uranium
zinc

Group B

aluminum
chlorobenzene
hexachlorobutadiene
hexachloroethane
pentachlorobenzene
2,4,5-trichlorophenol
triphenyl phosphate

Group C

4-chlorophenyl phenyl ether (1-chloro-4-phenoxybenzene)
palustric acid
selenium
1,2,3,5-tetrachlorobenzene
tetrachloroguaiacol
2,3,4,5-tetrachlorophenol
1,2,3-trichlorobenzene
trixylyl phosphate