Chapter 6: Toxic Substances

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6.1 INTRODUCTION

This chapter provides an overview of several areas of international, federal and provincial efforts to control toxic substances in the environment. Instead of looking at individual standard-setting examples or regulations, general or overall approaches to risk assessment and risk management are addressed. As well, each area has been reviewed in terms of whether and how precautionary approaches such as weight of evidence and reverse onus are applied.

6.2 THE GREAT LAKES WATER QUALITY AGREEMENT

The Great Lakes Water Quality Agreement was the culmination of multiple studies by the International Joint Commission (IJC), and an important landmark in the recognition of toxic substances in the environment. Originally signed in 1972, the updated 1978 agreement called for a prohibition of "the discharge of toxic substances in toxic amounts" and "the virtual elimination of the discharge of any or all persistent toxic substances."[1]

The agreement named over 350 *hazardous polluting substances*, defined as "any element or compound identified … which, if discharged in any quantity into or upon receiving waters or adjoining shorelines, would present an imminent and substantial danger to public health or welfare."[2] These substances were divided between those known to have toxic effects and a potential for discharge, and those that may have such toxic effects and discharge potential. Toxicity was determined based on animal studies using specific criteria, with some risk of discharge being necessary for its inclusion. In some cases, the agreement outlined reduction targets for specific substances that were intended to protect the most sensitive aquatic species.[3] It also stated that levels should be based on combined exposures from various media, and on the interactive effects of toxic substances, calling for more research into these interactions.[4]

Further International Joint Commission reports continued to refine their assessment of toxicity, recommending a "weight of evidence" approach and supporting the concept of "reverse onus" where the responsibility for proving reasonable safety falls on the producer.[5] This combination of an assessment based on inherent toxicity and a reverse onus approach created a precautionary framework that emphasized human and environmental health.

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[1] *Revised Great Lakes Water Quality Agreement of 1978, Article II(a).*

[2] *Ibid., Article I(j).*

[3] *Ibid., Annex 1.*

[4] *Ibid., Annex 12 (6).*

[5] International Joint Commission. *5th, 6th and 8th Biennial Reports on the Great Lakes Water Quality Agreement.*

6.3 CANADIAN ENVIRONMENTAL PROTECTION ACT

6.3.1 CEPA, 1988

The 1988 *Canadian Environmental Protection Act* (*CEPA*)[6] takes a chemical-by-chemical approach to managing toxics in the environment. Several lists of chemicals are established for regulatory purposes. Overall, the Domestic Substances List (DSL) covers all substances in commercial use in Canada. It currently contains over 23,000 substances.

CEPA, 1988, defines a substance as toxic if it may be entering the environment at a level that may harm human health or the environment. Under the Act, a substance cannot be regulated merely for having the inherent potential to cause harm; it must also be shown to be entering or likely to enter the environment at levels sufficient to cause harm. Action can only then be taken after a substance is placed on the Toxic Substances List (TSL) which is a permanent list contained in Schedule 1 to the Act. The legislation outlines two ways in which substances reach the TSL. The first is through the creation of a Priority Substances List (PSL 1), with each of the chosen priority substances being assessed by the Ministries of Health and Environment.[7] Health Canada takes responsibility for the human health risk assessments and Environment Canada for the risk to ecosystems. Designation of a substance to a PSL is temporary until a decision is made to assign the substance to the TSL or not.

The risk assessments of PSL substances are externally peer reviewed and must also be approved by the Rulings Committee of the Bureau of Chemical Hazards in Health Canada and the Environment Canada-Health Canada *CEPA* Management Committee. If a substance is determined to be toxic according to the *CEPA* definition ("*CEPA*-toxic"), it is then recommended for the Toxic Substances List (Schedule 1). A substance is "*CEPA*-toxic" if it is persistent, bioaccumulative and primarily the result of human activity.

Listing as a toxic substance does not, however, require that action be taken. Appropriate controls are to be decided through a risk management phase that includes social and economic factors.[8] The Ministers must, nevertheless, on receiving notice of a Priority Substance's assessment as toxic, publicly outline a plan of action or inaction. The assessments of the 44 substances on the PSL1 were completed by 1994 with 25 substances declared toxic, 6 not toxic, and 13 undecided due to a lack of sufficient information.

A large number of those PSL1 substances declared *CEPA*-toxic have gone to a 'Strategic Options Process' (SOP), multi-stakeholder consultation. Also called Issue Tables, these multistakeholder groups look at technical, social and economic factors in providing advice to decision-makers. The stated objectives of the SOP are those of the federal Toxic Substances Management Policy (TSMP) (see below): "virtual elimination" of persistent and bio-accumulative substances and lifecycle management of the rest.[9] Following an assessment of the options available for controlling a substance, the Ministers of

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[6] *Canadian Environmental Protection Act*, R.S.C. 1988, s.11 (Hereinafter, *CEPA, 1988*).

[7] According to Section 33, the second way a substance can be placed on the TSL, without a Priority Substances evaluation, is if the Ministers are already "satisfied" the substance is toxic.

[8] Health Canada. *Human Health Risk Assessment for Priority Substances*. (1994), p.2.

[9] *Strategic Options for the Management of Toxic Substances from the Steel Manufacturing Sector*: Report of the Stakeholder Consultations, Draft #3. (Nov 1996), p.55.

Environment and Health may then propose a strategy of regulatory and/or non-regulatory instruments for eliminating the risk posed by a toxic substance.

Twenty-five substances have since also been named to the second Priority Substances List and are currently being reviewed.

The risk assessments conducted by both ministries, are based on methods developed by the U.S. Environmental Protection Agency and include the requirements of entry into the environment, potential exposure and evidence of effects (called the 3E approach).[10] In addition to quantitative analysis, Environment Canada states they use a "weight of evidence approach" in dealing with the "biases and uncertainties" associated with risk assessment.[11] Using a three-tiered method, Environment Canada starts with more conservative assessments and then progressively factors in distributions of exposure and effects to derive a more "realistic" picture.[12] Community and population models of ecosystems are then used to aid weight-of-evidence determinations, and the ecological significance of an organism is factored in to the decision as to whether the potential risks are important.[13]

Both Health Canada and Environment Canada admit that, because of scientific uncertainties, the use of risk assessment involves a fair amount of "professional" or "sound scientific judgement on a case-by-case basis."[14] In addition, uncertainty factors are routinely used in human health risk assessments to account for the inherent weaknesses of epidemiological and toxicological studies and for gaps in the data. For instance, following the models developed in the US, Health Canada uses 10-fold uncertainty factors to account for 'inter-species' differences (such as between rats and humans), and 'intra-species' differences (such as the different susceptibilities of children or the elderly) among others.

Health Canada calculates exposures for six different age groups, taking into account differences in food, water and air intake, as well as differences in other behaviour such as children's play habits. The department estimates "mean and reasonable worst case exposure" for the general population, but also for populations near point sources. Where priority substances are known to exist in consumer products, they also estimate the direct exposure to those substances when data are available.[15]

Health Canada calculates the maximum acceptable Tolerable Daily Intake (TDI) for a substance, the acceptable daily intake over a lifetime. This limit is based on the most sensitive effect (also called the critical effect) found, meaning the effect that occurs at the lowest dose. Effects on child development due to early exposure for example, only form the basis of the TDI if there are data showing that they occur at the lowest doses. If such evidence is unavailable, extra uncertainty factors are not used, as the fetus and the child may not necessarily be the most susceptible population for the specific substance.[16]

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[10] Environment Canada. *Environmental Assessments of Priority Substances Under the Canadian Environmental Protection Act, Guidance Manual Version 1.0*. (March 1997), pp.1-5.

[11] *Ibid.,* pp.1-4.

[12] *Ibid.*, pp.7-4.

[13] *Ibid.*

[14] *Ibid.*, p.1-3; and Health Canada. *Human Health Risk Assessment for Priority Substances*. (1994), p.2.

[15] Written communication, Ron Newhook, Bureau of Chemical Hazards, Health Canada, June 14, 1999.

[16] *Ibid*.

6.3.2 CEPA, 1999

The revised *Canadian Environmental Protection Act* was proclaimed in 1999 and includes a commitment to the precautionary principle, but only when such measures are considered "cost-effective."[17] *CEPA, 1999* also sets out new ways for substances to reach the Toxic Substances List, and incorporates the TSMP criteria and definition of "virtual elimination." Of the 23,000 substances on the Domestic Substances List, the list of substances currently used in Canada, these will now be assessed through one of three tracks. A flow chart describing this process is reproduced in Figure 6.1.

[17] *Canadian Environmental Protection Act*, R.S.C. 1999, s.2(a) (Hereinafter, *CEPA, 1999*). Environment Canada has not clarified what "cost effective" means in this context and could benefit from application of the kind of analysis conducted in the United States as to the health costs of air pollution (discussed in Section 5.2.5 of Chapter 5).

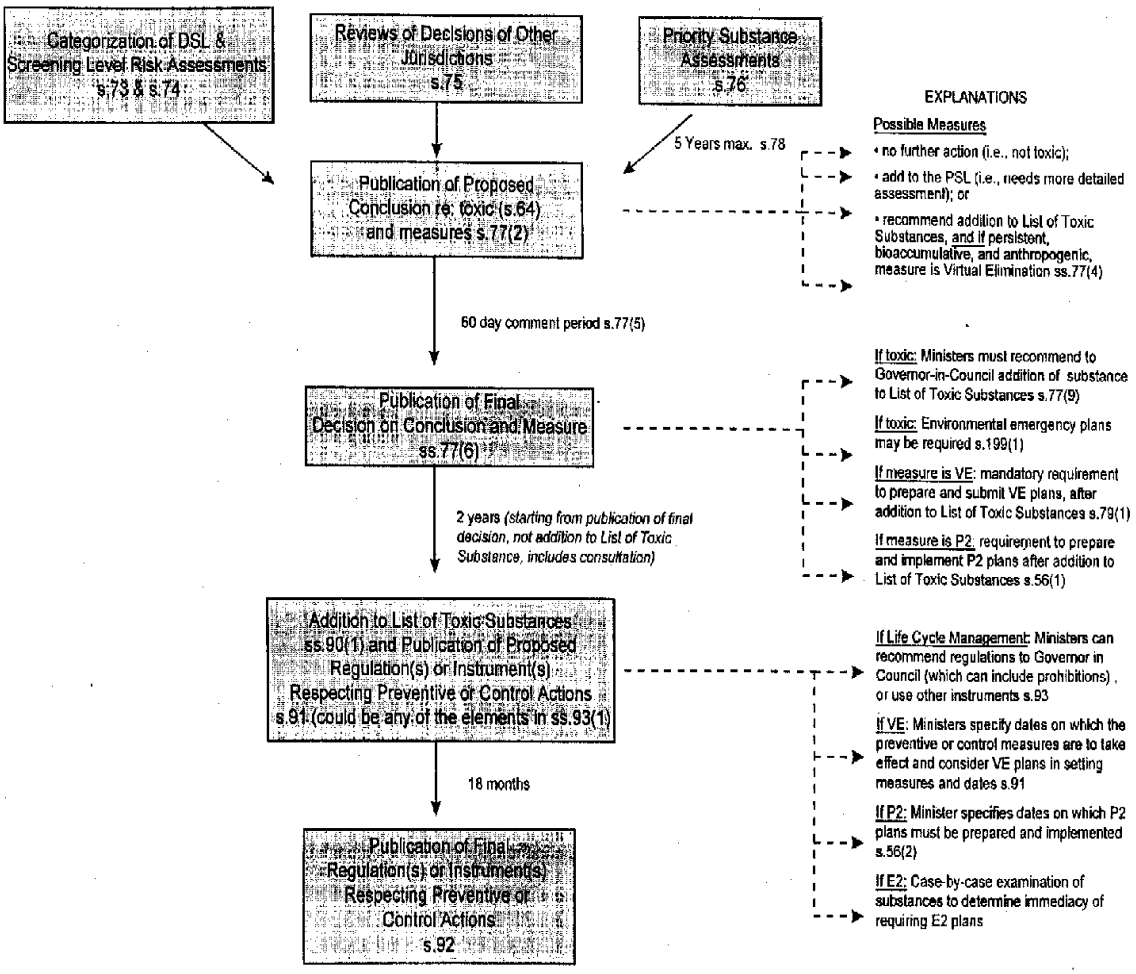

Figure 6.1. CEPA '99 Part 5 & 6.
(Source: Environment Canada, *A Guide to the New Canadian Environmental Protection Act*. March 2000, p.8.)

Those substances that have been nominated and chosen for a Priority Substance List are assessed for toxicity within five years, though this may be extended if there are insufficient data. Substances that have been banned in another country or jurisdiction, will have those decisions reviewed and will be added to either the PSL, if more assessment is considered necessary, or placed directly on the Toxic Substances List. The rest of the Domestic Substances List will be reviewed over the next seven years, first by categorizing substances based on their inherent toxicity, their persistence in the environment and their potential for bioaccumulation. All the substances will then undergo further assessments to determine if they are 'toxic' by the *CEPA* definition and will be added to the PSL or potentially to the TSL directly.[18] Where a substance is determined to be *CEPA*-toxic, i.e., persistent, bio-accumulative and primarily the

[18] Environment Canada. *A Guide to the New Canadian Environmental Protection Act*. (March 2000), p.7.

result of human activity, it will also be targeted for virtual elimination.[19]

Sections 80 to 89 of *CEPA* 1999 prescribe assessments for new substances to be used or imported into Canada that are neither on the Domestic Substances List, nor covered by other federal acts. Manufacturers or importers of these new substances must pay an assessment fee and provide the relevant information needed. In addition, the same procedure may be required for substances in use for which there are "significant new activities," but in both these cases, the ministers may waive the need for assessment information if they are satisfied that the substance will be contained so that it is not harmful to humans or the environment, or "if it is not practical or feasible to obtain the test data."[20]

6.4 TOXIC SUBSTANCES MANAGEMENT POLICY

In June of 1995, Environment Canada pre-empted the Standing Committee on the Environment and Sustainable Development's proposed changes to *CEPA* by releasing the Toxic Substances Management Policy (TSMP) two weeks before the Standing Committee issued its report.[21] The TSMP proposed a division of substances named toxic into a Track 1 for those that are persistent and bio-accumulative and a Track 2 for the rest. Track 1 substances would then be targeted for virtual elimination, and Track 2 substances would have 'lifecycle management' with attempts to reduce exposure at all stages.[22] The TSMP definition of virtual elimination is a lack of measurable release, an end-of-pipe approach, where the release of a substance must be below the 'Level of Quantification,' the lowest concentration that can be accurately measured using routine devices. This definition contrasts with the Standing Committee's proposal that virtual elimination include the elimination of use of a substance. By the TSMP definition, new persistent and bio-accumulative toxic substances can be manufactured or imported into Canada as long as there is no measurable release detected.[23]

The TSMP definition of virtual elimination was incorporated into *CEPA* 1999 referring only to the elimination of release, not of use. The Ministers of Environment and Health set the Level of Quantification for each substance named to a Virtual Elimination List. This level however, does not necessarily become the regulatory limit; the specific regulation is later determined by looking at other technical, social, political and economic matters.[24]

In addition to substances declared toxic through the *CEPA* processes, the TSMP, in theory, also applies to toxic substances that are '*CEPA*-equivalent,' for instance for pesticides, which are not covered by *CEPA*. According to the Federal Commissioner for the Environment and Sustainable Development's 1999 report however, the "departments cannot agree on other substances that could be considered *CEPA*-toxic

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[19] *CEPA, 1999*, s.77(3).

[20] Environment Canada. March 2000, *op.cit*., pp.8-9.

[21] Standing Committee on Environment and Sustainable Development, House of Commons Canada, Report: It's About Our Health! Towards Pollution Prevention. CEPA Revisited. June, 1995.

[22] Environment Canada. *Toxic Substances Management Policy* (June 1995).

[23] Mausberg, B. et al. *A Response to the Proposed Toxic Substances Management Policy for Canada*, Canadian Environmental Law Association and Canadian Institute for Environmental Law and Policy (November, 1994).

[24] *CEPA, 1999,* s.65 (3).

equivalents or substances of concern. Criteria to identify them have not been established."[25]

6.5 PESTICIDES

The federal pesticide regime is distinct from that of other chemicals, pesticides being managed under the *Pest Control Products Act* (see Case Study #2 on Pesticides). While potentially harmful to humans, they are, by definition, toxic to parts of the ecosystem. Pesticides also differ fundamentally from other chemicals in that the release of a pesticide into the environment is essential to its use, and the elimination of release of pesticides is the same as the elimination of use.

Pesticides, unlike other chemicals in Canada, have historically required pre-market assessment and approval. The *Pest Control Products Act* requires that, to be approved, a pesticide's use must not lead to an "unacceptable risk of harm" and it must show efficacy for the purposes proposed.[26] This determination of efficacy is referred to as an assessment of "value," where it must be shown that a product does what it intends to do before it can be approved. Unacceptable risk of harm is not further defined however, and its interpretation is left to the discretion of the Pest Management Regulatory Agency, which has overseen pesticide regulation since 1995. The situation is further complicated because pesticides have not only active ingredients but also 'formulants,' vehicles that aid in their application, and these formulants may have safety profiles that differ considerably from the active ingredients. As discussed further in Case Study #2, pesticide formulants are not adequately regulated in Canada.

It is difficult to say how pesticides have been assessed for safety since they were first introduced in Canada. This difficulty arises since the majority of pesticide active ingredients were approved before 1981 when approval standards were less strict, 150 of these in use since before 1960.[27] No guidelines had been published by the PMRA describing their process for assessing new pesticides until the January 2000 draft report that describes the risk assessment and risk management framework the agency now uses. The draft also voices the PMRA's commitment to the precautionary principle and implementation of the TSMP and international agreements on substances such as the proposed Persistent Organic Pollutants treaty (see below).[28] A consistent approach to toxic substances has still not been reached across various departments however. The Federal Environment Commissioner notes for instance, that there are significant disagreements between the assessments of Priority Substances conducted under the *Canadian Environmental Protection Act* and the PMRA assessments of the same substances under the *Pest Control Products Act*.[29]

6.6 ACCELERATED REDUCTION/ELIMINATION OF TOXICS

The Accelerated Reduction/Elimination of Toxics (ARET) program is a voluntary pollution reduction

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[25] Federal Commissioner for the Environment and Sustainable Development. *Annual Report*. (1999), p.4.50.

[26] *Pest Control Products Act*, R.S.C. 1985, c.P-9.

[27] Federal Commissioner for the Environment and Sustainable Development. *Annual Report*. (1999), 3.75.

[28] Pest Management Regulatory Agency. *Risk Assessment and Risk Management in the Pest Management Regulatory Agency* (Draft). (Jan 17, 2000).

[29] Federal Commissioner for the Environment and Sustainable Development. *Annual Report*. (1999), 3.133.

framework involving 162 companies and organizations. Launched by the federal Minister of the Environment in 1993, the program's stakeholder committee chose 117 substances to be targeted for reduction from 2000 substances in the Chemical Evaluation Search and Retrieval System database (pesticides being excluded). In deciding upon the substances, "no consideration was given to quantities released, the medium of release or quantities in the environment," and the candidate lists were "not meant to imply that actual harm is currently being caused by these substances."[30] Instead toxicity was determined solely based on toxicological criteria originally developed by the Ontario Ministry of the Environment. According to ARET's third progress report though, only 500 of the 2000 substances had enough data to be considered for the list.[31]

The program is committed to a co-operative, voluntary approach they consider "faster and more effective than relying on regulations alone."[32] Although the original stakeholders committee included environmental non-governmental organizations, these groups questioned the viability of the voluntary program and eventually left over ARET's decision to focus on eliminating the release and not the use of substances. ARET follows the Toxic Substances Management Policy framework of two major tracks, with the first 30 substances being targeted for virtual elimination based on the TSMP definition of release below measurable levels. The remaining 87 substances, listed as toxic but not necessarily both persistent and bio-accumulative, are targeted for reduction below levels of harm. Eight of the substances on the present federal Toxic Substances List however, are not included in the ARET program, as well as 16 of those listed in the second Priority Substances List. ARET is currently under review and will either be changed or renewed in the near future.

6.7 THE CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT

The Canadian Council of Ministers of the Environment (CCME), though it does not have the authority to implement or enforce legislation, has also taken on a role in determining the safety or potential risks of substances. On January 29, 1998, all the Ministers of the Environment except Quebec's signed the Canada-Wide Accord on Environmental Harmonization and its sub-agreements, including the sub-agreement on Canada-Wide Standards. The accord created a multilateral process for screening and recommending controls for potentially toxic substances, and embraced the *CEPA* definition of the precautionary principle.[33] Though the Canada-Wide Standards sub-agreement does not alter the federal authority for managing toxic substances, it stipulates that when "a [provincial] government has accepted obligations and is discharging a role" under the agreement, the federal government will not also act in that role.[34]

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[30] Accelerated Reduction/Elimination of Toxics. *Environmental Leaders 2: Progress Report*, http://www.ec.gc.ca/aret/el2/el2covr.html.

[31] Accelerated Reduction/Elimination of Toxics. *Environment Leaders 3: Voluntary Action on Toxic Substances*, p.42 http://www.ec.gc.ca/aret/reports/aret_el3_e.pdf,

[32] Accelerated Reduction/Elimination of Toxics. *Environmental Leaders 2: Progress Report*, http://www.ec.gc.ca/aret/el2/el2covr.html.

[33] A Canada-Wide Accord on Environmental Harmonization. http://www.ccme.ca/3e_priorities/3ea_harmonization/3ea1_accord/3ea1.html

[34] Canadian Council of Ministers of the Environment. http://www.ccme.ca/3e_priorities/3ea_harmonization/3ea2_cws/3ea2a.html

The creation of Canada-Wide Standards for substances intentionally "incorporates socio-economic and technical factors" and they are intended to be "achievable targets."[35] The standards are meant to balance "the best health and environmental protection possible" with the "feasibility and costs of reducing emissions."[36] Though the CCME endorses risk assessment and management as the preferred methods for managing toxic substances, the standards are, in practice, numbers negotiated by 'stakeholders' in the process. The CCME too has incorporated the TSMP guidelines for toxic substances management. In addition, the multi-lateral approach to nominating substances proposed for the Canada-Wide Standards process includes an initial screening out of those substances that are not of "national significance" or sufficiently present in the environment.[37]

To date, Canada-Wide Standards agreements for Benzene, Mercury, Ozone and Particulate Matter have been proposed (these are discussed further in the previous chapter). They were accepted in principle by the Ministers in November of 1999 and have been taken back for ratification by their respective cabinets before the agreements will be signed. According to a senior official at Environment Canada however, the federal Environment Minister is committed to pushing for stricter standards than those now on the table.[38]

6.8 PERSISTENT ORGANIC POLLUTANTS (POPS)

Canadian plans for the control of toxic substances must also account for international agreements such as the Montreal Protocol on Ozone Depleting Substances. Likewise, in its draft risk assessment guidelines, the PMRA commits itself to making pesticide registrations compatible with international frameworks.[39]

In negotiation right now is an international treaty on Persistent Organic Pollutants (POP's). Based on 1992 Earth Summit commitments to the elimination of persistent, synthetic toxics, the Intergovernmental Forum on Chemical Safety (IFCS), agreed in 1996 on a list of 12 POP's for reduction. Endorsed by the United Nations Environment Program, meetings have taken place since 1998 to negotiate an international treaty.

The proposed document, commonly known as the proposed "Legally Binding Convention on Persistent Organic Pollutants," is expected to be completed by 2001. A fifth, and probably final, negotiating session is to be completed in South Africa in December of 2000. The proposed convention is intended to initially address 10 products and 2 by-products (namely dioxins and furans). A process is also included in the proposed convention for adding additional substances. The proposed convention focuses on persistent, bioaccumulative and toxic substances.

Article D of the proposed convention outlines the respective obligations for products and by-products and

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[35] Canadian Council of Ministers of the Environment. http://www.ccme.ca/3e_priorities/3ea_harmonization/3ea2_cws/3ea2b.html

[36] Canada-Wide Standard for Benzene. *Canada Gazette*, Part. II (Feb 5, 2000), p.321.

[37] Canadian Council for the Ministers of the Environment Policy for the Management of Toxic Substances. http://www.ccme.ca/3e_priorities/3ec_toxic/3ec1_toxic/3ec1a.html

[38] Personal communication, (April 5, 2000).

[39] Pest Management Regulatory Agency. *Risk Assessment and Risk Management in the Pest Management Regulatory Agency (*Draft). (Jan 17, 2000), p.4.

includes schedules for what substances will be eliminated or severely restricted. A number of contentious issues remain including the timeframes for eliminating some of the products, what exemptions are appropriate and whether the overall goal for by-products will be elimination or reduction.

6.9 ONTARIO

The 1986 Municipal Industrial Strategy for Abatement, or MISA, had an approach different from most toxics regulation in Canada. Based on the inherent toxicity of a substance, its persistence and its potential for bio-accumulation, MISA regulations called for reducing toxic discharges via use of the best available technology economically achievable (BATEA). Toxicity was determined using toxicological criteria by the Standards Branch of the Ministry of the Environment, and the technology standards were based on international surveys of the technology available and its costs. MISA regulations were therefore not risk-based, but intended to reduce pollution as much as possible while attempting to balance the feasibility of controls and their impact on industry. Notably, these regulations contributed to significant reduction in toxic emissions from pulp mills in Ontario.

In 1991, the Hazardous Contaminants and Water Resources Branches of the Ontario Ministry of the Environment established a list of candidate substances to be phased out or to have restrictions on use or release.[40] As with MISA, the ministry focused on persistent and bio-accumulative substances, and attempted to determine which were "the most inherently hazardous," those that "should ideally not be permitted to enter the environment." Using their toxicological scoring system, they looked at over 800 substances in the Chemical Evaluation Search and Retrieval System database, and used a cutoff score that would capture the 10-15% most hazardous. They then created a Primary List of 21 toxics and a Secondary List of 46, the Secondary List being those that were either not persistent or not bio-accumulative, or were both, but were less toxic. The inherent toxicity approach was chosen, according to the ministry's report, because of "the limited exposure information available," the extent of exposure being necessary for reasonable risk assessment determinations.[41] No activity has occurred on this list since 1994 or 1995.

In addition to the MISA regulations, the Ontario Drinking Water Objectives (ODWO's) and the Provincial Water Quality Objectives guide water quality in Ontario. The Drinking Water Objectives are guidelines for over 100 contaminants that must be met by water works to obtain Certificates of Approval. Ontario usually adopts the Canadian Drinking Water Guidelines developed by the Federal-Provincial-Territorial Sub-Committee on Drinking Water, and when it does develop independent objectives, the province generally follows the sub-committee's methods. Health Canada is responsible for the risk assessments that inform the objectives, while the provinces and territories incorporate the technical and socio-economic issues into the standard-setting process.[42]

Provincial Water Quality Objectives are driven primarily, but not exclusively, by the health of aquatic life. They are developed in co-operation with the CCME's water quality group with the intention of protecting "the most sensitive aquatic life-stage for an indefinite period of time, with an added margin of

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[40] Socha, A.C. et al. *Candidate Substances List for Bans or Phase-Outs*. Ontario Ministry of the Environment. (April 1992).

[41] *Ibid*. p.1.

[42] Ontario Ministry of the Environment , *Setting Environmental Quality Standards in Ontario: The Ministry of the Environment's Standards Plans*, undated, p.13-14.

safety."[43] The more than 240 objectives do not consider socio-economic or technical factors, and are not directly enforceable, but come in to play as the ministry decides on Certificates of Approval (for industrial facility emissions) based on the objectives.

Air pollution regulation in Ontario is built on the Ontario Ambient Air Quality Criteria (AAQC), which include standards for over 300 air pollutants. These are then used to calculate "Point of Impingement" standards under Regulation 346 of Ontario's *Environmental Protection Act* (see Chapter 5: Air). In addition, Ontario guidelines also include those for tissue residues of bio-accumulative substances, for vegetation contaminants, for lake fill quality and for sediment quality. Finally, based on Health Canada safety guidelines, Ontario publishes fish consumption guidelines in the *Guide to Eating Ontario Sport Fish*.

6.10 CONCLUSIONS

As far back as 1978, Canada agreed to the precautionary principle with respect to toxic substances when it concluded the *Great Lakes Water Quality Agreement*. The agreement, and its interpretation through the International Joint Commission, has provided the impetus for progressive policy development not only in North America, but globally as well. However, despite this early commitment, the Canadian federal government has been slow to implement an agressive toxic mangement regime.

Certainly both the Toxic Substances Management Policy and the recently enacted *Canadian Environmental Protection Act* provide some general support in principle for the goal of virtual elmination and the precautionary principle. However, at this point in time, it is unclear whether the general support will be operationalized into firm action. The historical support for voluntary initiatives (such as the ARET process) and the commitment to the *Canada-Wide Accord on Environmental Harmonization* may well undermine any legislative authority for clear action on toxic substances. The Accord in particular provides little direction for strong action, especially with the need to get support from the provinces and the federal government as a precondition to action.

The province of Ontario is not seen as a leader in issues pertaining to toxics management. Some of the initiatives, such as the Candidate List for Bans and Phase-Out, does not seem to have any currency. Moreover, its water program, MISA, was really a technology based approach to provide some regulatory foundation, although it was not seen as the exclusive program. Ontario's approach to air is discussed in Chapter 5. Its commitment to the precautionary principle is unclear at best. It also has decreased significantly its emphasis on pollution prevention and other such policies. In fact, it seems to now to rely more on the *Canada-Wide Accord* for its priority-setting.

6.11 RECOMMENDATIONS

1. Environment Canada should clarify what it means by "cost effective measures" when applying the precautionary principle and ensure that "cost effective" comprehensively accounts for human health costs, particularly for children, affected by exposure to toxic substances.

2. Environment Canada should commit to take regulatory action on all substances found to be toxic under the *Canadian Environmental Protection Act* and employ processes such as the Strategic

[43] *Ibid*., p.14.

Options Process as a means to consult stakeholders on those regulatory initiatives.

3. Environment Canada should exercise its discretion under the *Canadian Environmental Protection Act* to require pollution prevention planning for all *CEPA* toxic substances up to and including establishing timetables for phase-down and phase-out of inherently toxic substances.

4. Resources and efforts should be applied to in-depth focussed research on the effects of toxic substances on vulnerable populations, particularly children. This focussed research should directly inform the assessment processes within *CEPA* as well as in Ontario processes.

5. Criteria should be established to identify as "*CEPA* toxic" or "*CEPA* –equivalent" those substances not currently subject to *CEPA* to ensure they are made subject to the Toxic Substances Management Policy.

6. The ARET (Accelerated Reduction/Elimination of Toxics) program should not be renewed until an in-depth, impartial assessment is undertaken. Unless that assessment reveals unequivocal evidence of sustainable and actual progress, toxic substances should not be dealt with through voluntary measures but through regulatory measures.

7. The Canada-Wide Standards process under the Environmental Harmonization Accord Standard-Setting Sub-Agreement should be repealed with respect to toxic substances.

8. The federal government should take a leadership role in the negotiation of the proposed Legally Binding Treaty on Persistent Organic Pollutants. In particular, Canada should support language in the treaty that calls for the elimination of both products (such as pesticides) and by-products (such as dioxins) in the proposed treaty as opposed to a mere reduction regime supported by some countries.

9. The province of Ontario should re-vitalize its list of candidate substances to be phased out or restricted, and this list should be developed using the precautionary principle.

10. The province of Ontario should enhance its policy and legal framework for pollution prevention.

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