Proposed Risk Management Strategy addressing Ammonia, Inorganic Chloramines and Chlorinated Wastewater Effluents under CEPA 1999

Pollution Prevention Planning as a First Step Toward a Long-term Strategy for Managing Wastewater Effluents

For consultation purposes

August 2002

Environment Canada

Executive Summary

On June 23, 2001, the Ministers of the Environment and Health published in the *Canada Gazette, Part I*[1] their proposed recommendation that Ammonia[2], Inorganic chloramines, Textile mill effluents, and Nonylphenol and its ethoxylates be added to the List of Toxic Substances, Schedule 1, under the *Canadian Environmental Protection Act, 1999* (CEPA 1999). On March 4, 1999, Chlorinated wastewater effluents was added to Schedule 1[3] based on a previous risk assessment.

These substances are released to the aquatic environment primarily through effluents from municipal wastewater treatment and collection systems. To fulfill the requirements of CEPA 1999 for the development of preventive or control instruments, Environment Canada is proposing that pollution prevention plans be prepared and implemented to manage the risks associated with the release of ammonia, inorganic chloramines and chlorinated wastewater effluents in municipal wastewater effluents. Textile mill effluents and nonylphenol and its ethoxylates are being addressed in a separate but coordinated process.

Environment Canada recognizes that addressing the risks associated with effluents from municipal wastewater systems and other wastewater systems is a complex issue and that the proposed requirement to prepare and implement pollution prevention plans under CEPA 1999 is only part of the solution. This first step must be taken within the context of developing a long-term strategy which considers both the current and future "CEPA-toxic" substances and the *Fisheries Act*. Environment Canada envisions that such a strategy would include many of the elements identified by stakeholders at the National Forum and First Multilateral Meeting on Municipal Wastewater Effluents held in January 2001.

Environment Canada is hosting a series of one-day consultation sessions across Canada from August to October 2002, with provinces, municipalities, industry associations, environmental groups and other interested parties. The consultation sessions are aimed at providing participants with:

1) contextual information for the substances addressed in the proposed instrument under CEPA 1999 and for the development of a long-term strategy; and

2) an opportunity to comment on the proposed elements of the notice that requires pollution prevention plans to be prepared and implemented under CEPA 1999 such as the:

[1] Government of Canada, Canada Gazette, Part I, Vol. 135, No. 25, pp. 2255-2262, June 23, 2001 (http://canada.gc.ca/gazette/hompar1-2001_e.html)
[2] The nomenclature for Ammonia is subject to change.
[3] Government of Canada, Canada Gazette, Part II, Vol. 133, No. 6, pp. 688-689, March 4, 1999 (http://canada.gc.ca/gazette/hompar2-1999_e.html)

a) risk management objectives for ammonia, inorganic chloramines and chlorinated wastewater effluents;
b) criteria to select the wastewater systems for which pollution prevention plans will be prepared;
c) timelines for the preparation and implementation of the pollution prevention plans.

To support the consultations, Environment Canada has prepared two documents. The proposed Risk Management Strategy outlines the proposed approach based on pollution prevention planning under CEPA 1999 as a first step, and on the development of a long-term strategy for wastewater effluents. The second document, the draft Pollution Prevention Planning Working Document, provides details on pollution prevention planning for ammonia, inorganic chloramines and chlorinated wastewater effluents.

Environment Canada will summarize the input received during the consultation sessions. The summary will be shared with those who participated in the consultation and other interested parties. After consideration of the comments received, Environment Canada will formally propose, by publication of a Notice in the *Canada Gazette*, *Part I* a preventive or control instrument for ammonia, inorganic chloramines and chlorinated wastewater effluents in the Spring of 2003, which will be followed by a 60-day comment period. A final instrument will be published in 2004.

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List of Acronyms and Abbreviations

BOD	biochemical oxygen demand
CEPA 1999	*Canadian Environmental Protection Act, 1999* (CEPA 1999)
CEPA NAC	CEPA 1999 National Advisory Committee
CCME	Canadian Council of Ministers of the Environment
CWWE	chlorinated wastewater effluents
MWWE	municipal wastewater effluents
NPEs	nonylphenol and its ethoxylates
NPRI	National Pollutant Release Inventory
TMEs	textile mill effluents
TSS	total suspended solids

1. Issue

Municipal wastewater effluents are the largest source of pollution to Canadian waters, and their management is complex and costly. In Canada, responsibility for the collection and treatment of wastewater, the administration and performance of wastewater facilities, and the control of environmental and health impacts of wastewater is shared across all levels of government. In Canada, a high proportion of the population is served by wastewater collection and treatment systems but the level of treatment varies considerably. Discharges from wastewater treatment plants, stormwater sewers and combined sewer systems have caused adverse impacts on some lakes, rivers and coastal waters[4].

On June 23, 2001, the Ministers of the Environment and Health published in the *Canada Gazette, Part I*[5] their proposed recommendation that Ammonia[6], Inorganic chloramines, Textile mill effluents, and Nonylphenol and its ethoxylates be added to the List of Toxic Substances, Schedule 1, under the *Canadian Environmental Protection Act, 1999* (CEPA 1999). On March 4, 1999, Chlorinated wastewater effluents was added to Schedule 1[7] based on a previous risk assessment. These substances are released into the aquatic environment primarily through effluents from municipal wastewater systems. CEPA 1999 requires the Minister of the Environment to propose preventive or control instruments for these substances within 24 months of the Ministers' recommendation (by June 2003) and to finalize these instruments within a further 18 months (December, 2004).

This document outlines the approach proposed by Environment Canada to address the risk management requirements under CEPA 1999 for ammonia, inorganic chloramines and chlorinated wastewater effluents. Textile mill effluents and nonylphenol and its ethoxylates are being addressed initially through a separate, but coordinated risk management process (Appendix 2 and Appendix 3). Taking into account that the issues associated with wastewater effluents are broad and multi-faceted, Environment Canada is working on developing a long-term strategy leading to a fair, consistent and predictable application of CEPA 1999 and the *Fisheries Act.*

[4] Chambers, P.A. et al., Impacts of Municipal Wastewater Effluents on Canadian Waters: a Review. Water Quality Resources Journal of Canada, 1997, Vol. 32, No. 4, pp. 659-713.
[5] Government of Canada, Canada Gazette, Part I, Vol. 135, No. 25, pp. 2255-2262, June 23, 2001 (http://canada.gc.ca/gazette/hompar1-2001_e.html)
[6] Note that the nomenclature for Ammonia is subject to change. This applies for the balance of the document.
[7] Government of Canada, Canada Gazette, Part II, Vol. 133, No. 6, pp. 688-689, March 4, 1999 (http://canada.gc.ca/gazette/hompar2-1999_e.html)

2. Background

The term "municipal wastewater effluents" is used in reference to effluents from sewer systems and wastewater (sewage) treatment plants. For the purpose of this Risk Management Strategy, the term "municipal wastewater effluents" is used as the majority of wastewater systems in Canada are owned and operated by municipalities. It is recognized that wastewater systems are also owned and operated by provinces, territories and federal departments and agencies. Public-private management arrangements also exist in Canada and they usually involve private sector operation and public sector ownership of wastewater systems.

The wastewater that is found in sewer systems is a mixture of liquid wastes, solids, debris and chemical pollutants discharged from residential, institutional, commercial and industrial sources. The effluents from sewer systems typically include discharges from treatment systems and collections systems (outfalls), sanitary sewer overflows and combined sewer (sanitary and storm sewer) overflows. The term "stormwater" usually refers to effluents discharged from a separate storm sewer collection system that is designed to carry rainfall and surface runoff to the nearest water course.

Environmental and health impacts of municipal wastewater effluents have been clearly established in the scientific literature, including the review by Chambers et al.[8]. The review suggests that actions need to be taken to address the direct harmful impact of wastewater effluent on the environment. The harmful impacts include negative effects on fish and wildlife populations, oxygen depletion, beach closures and other restrictions on recreational water use, restrictions on fish and shellfish harvesting and consumption, and restrictions on drinking water consumption. Emerging science indicates that other substances such as some pharmaceutical and personal care products, which primarily enter the environment in municipal wastewater effluents, may also be posing threats to human health, aquatic life and wildlife.

In January 2001, Environment Canada organized a *National Forum* and *First Multilateral Meeting on the Management of Municipal Wastewater Effluent in Canada* to identify: a shared understanding of the key issues and problems around wastewater management; and, the elements of a national strategy on municipal wastewater effluents management in Canada. Participants agreed on the need for this shared vision and that the specific options for addressing the elements of the strategy developed during the meeting provided a sound foundation for moving forward. Instruments to address CEPA 1999 and the *Fisheries Act*, and communications were highlighted as key priorities.

[8] Chambers, P.A. et al., Impacts of Municipal Wastewater Effluents on Canadian Waters: a Review. Water Quality Resources Journal of Canada, 1997, v32, No. 4, pp. 659-713.

Environment Canada hosted a *Municipal Wastewater Effluent Pollution Prevention Planning Workshop* on March 25 and 26, 2002. The purpose of the workshop was to consult with Canadian experts on the use of Pollution Prevention Plans, as described under Part 4 of CEPA 1999, as an instrument to manage "toxic" substances found in municipal wastewater effluent. Workshop participants indicated that defined roles, responsibilities, cooperation and participation between all jurisdictions, especially between federal and provincial governments, are critical to a successful MWWE strategy and that a national standard for effluent quality would help clarify requirements and targets.

3. Environment Canada's Proposed Approach

Environment Canada recognizes that addressing the risks associated with wastewater effluents is a complex issue that requires immediate action set in a long-term strategy. Environment Canada is proposing pollution prevention planning under CEPA 1999 as the first step toward a long-term strategy for managing wastewater effluents.

3.1 Risk Management and Pollution Prevention Planning under CEPA 1999

CEPA 1999 provides the regulatory framework for the implementation of the federal government's *Toxic Substances Management Policy*. The policy describes the approach to deal with CEPA-toxic substances that includes an open and transparent process with many opportunities for public input. The goal is to manage risk throughout the life cycle of a substance, except for persistent, bioaccumulative, and toxic substances that are present in the environment primarily due to human activity, where the goal is virtual elimination. Under CEPA 1999 preventive or control instruments, including risk management objectives, must be proposed within two years, and finalized within a further 18 months, after the Ministers have recommended that a substance be added to Schedule 1 of CEPA 1999 (List of Toxic Substances). Additional information on the risk management process can be found in Appendix 1.

An instrument is the means used to prevent, control or reduce pollution and achieve the risk management objectives. Examples of instruments are regulations, pollution prevention planning, guidelines, codes of practice, environmental charges or financial incentives. In examining potential instruments, Environment Canada considered CEPA 1999 and the *Fisheries Act.*

A risk management objective is an achievable target toward which pollution prevention efforts or control measures are directed.

The first step in the proposed approach will focus on the five CEPA-toxic substances found primarily in municipal wastewater effluents.

3.1.1 Ammonia, Inorganic Chloramines and Chlorinated Wastewater Effluents

3.1.1.1 Risk Management Instrument

Pollution prevention planning under CEPA 1999 is well suited as a first step to engage owners and operating authorities of wastewater collection and treatment systems to take early action toward achieving the proposed risk management objectives. Pollution prevention planning encourages system-wide reviews and life cycle considerations and can result in fundamental reconsideration of system design and operation. Specific criteria are proposed to determine the wastewater treatment or collection systems for which the preparation and implementation of pollution prevention plans will be required.

The following sections provide a summary of the elements of the proposed pollution prevention planning requirements, specific details can be found in the accompanying document "Pollution Prevention Planning for Inorganic Chloramines, Chlorinated Wastewater Effluents and Ammonia in Municipal Wastewater Effluents - Working Document." In finalizing the preventive or control instrument, Environment Canada will also prepare a guidance document providing examples of pollution prevention approaches and additional sources of information.

Pollution prevention planning under CEPA 1999 is a flexible instrument to promote progress toward the risk management objectives in an efficient and effective manner.

3.1.1.2 Risk Management Objectives

The following risk management objectives for ammonia, inorganic chloramines and chlorinated wastewater effluents are proposed:

Substance(s)	Risk Management Objective
Ammonia	No acute lethality from ammonia in the discharge or in the environment, based on a site-specific discharge limit.
Inorganic Chloramines and Chlorinated Wastewater Effluents (CWWEs)	No acute lethality from inorganic chloramines or CWWEs, as represented by a discharge limit of 20 μg/L total residual chlorine.

Regarding the proposed risk management objective for ammonia, the approach considered to calculating site specific discharge limits includes a comparison of the ammonia concentration in the effluent with the projected ammonia concentration in the receiving water (no dilution). Considering the effects of pH on the toxicity of ammonia, differences in pH between the effluents and the receiving water will be accounted for in the calculations. The lower of the two concentrations that presents no acute lethality then becomes the site-specific discharge limit for ammonia.

3.1.1.3 Criteria to Select Systems for which Preparation and Implementation of Pollution Prevention Plans will be Required

The proposed requirement to prepare and implement a pollution prevention plan applies to any person who owns or operates a wastewater system that meets certain specific criteria related to the effluent discharged to surface water. Environment Canada is proposing specific criteria based on the following parameters: the use of chlorine for disinfection; the level of ammonia in the effluent (> 20 mg/L); and, the size of the wastewater system based on volume of effluent discharge (> 10,000 m^3/day). The accompanying Pollution Prevention Planning Working Document provides detailed information on the application of these criteria.

3.1.1.4 Proposed Timelines for the Preparation and Implementation of Pollution Prevention Plans

The following timelines are proposed:

Before June 23, 2003	Publication of a Notice in *Canada Gazette* proposing pollution prevention under CEPA 1999 as the instrument for ammonia, inorganic chloramines and chlorinated wastewater effluents.
Before December 2004	Publication of a Notice in *Canada Gazette* requiring the preparation and implementation of pollution prevention plans for ammonia, inorganic chloramines and chlorinated wastewater effluents.
December 2005	Declaration of Preparation. A declaration, submitted to Environment Canada by owner/operators of selected systems, indicating that the pollution prevention plan has been prepared and is being implemented.
December 2007	Interim Progress Report submitted to Environment Canada by owner/operators of selected systems.
December 2009	Declaration of Implementation. A declaration, submitted to Environment Canada by owner/operators of selected systems indicating that the implementation of the pollution prevention plan has been completed.

3.1.2 Textile Mill Effluents and Nonylphenol and its Ethoxylates

Textile mill effluents and nonylphenol and its ethoxylates (NPEs) are substances also primarily released through municipal wastewater effluents. These substances are being addressed initially through a separate but coordinated risk management process (Appendix 2 and Appendix 3). The proposed risk management strategies for these substances include:

- pollution prevention planning as an instrument under CEPA 1999 for textile mills to reduce uses of NPEs and reduce the toxicity of the textile mill effluents prior to discharge to municipal wastewater systems, and;

- pollution prevention planning as an instrument under CEPA 1999 for producers and importers of products containing NPEs with the objective of reducing the content of NPEs.

A consultation process, separate from the process for ammonia, inorganic chloramines and chlorinated wastewater effluents, is under way for textile mill effluents and nonylphenol and its ethoxylates.

3.2 Path Forward to a Long-term Strategy

Environment Canada is working on the development of a long-term strategy to reduce the environmental and health impacts of wastewater effluents, based on the following long-term vision:

> *To establish an adequate level of wastewater treatment across Canada to address risks posed to human and ecosystem health, fisheries resources, and recreation.*

Environment Canada is proposing to develop specific objectives for "CEPA-toxic" and deleterious substances released through wastewater systems. It is Environment Canada's intention to refer to these objectives in CEPA guidelines and a regulation under the *Fisheries Act*. The outcome will be a fair, consistent and predictable application of CEPA and the *Fisheries Act*. Environment Canada intends to work with other jurisdictions and stakeholders, as appropriate, on meeting its long-term objectives. Figure 1 below shows the proposed timelines to develop a long-term strategy for wastewater effluents.

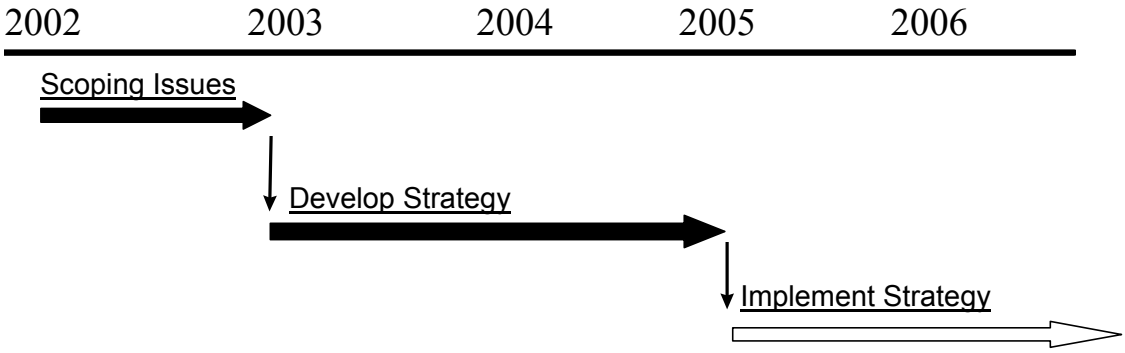

Figure 1: Proposed timelines for a long-term strategy

This approach reflects the advice received from stakeholders during both the January 2001 National Forum and the First Multilateral Meeting on the Management of Municipal Wastewater Effluents, and the March 2002 Municipal Wastewater Effluent Pollution Prevention Planning Workshop.

In addition to the risk management objectives for specific "CEPA-toxic" substances, Environment Canada is developing an environmental quality objectives framework. The framework integrates toxicity, chemical, and biological indicators, to assess the condition of aquatic resources and to determine whether any observed effects in the receiving environment are the result of municipal wastewater effluents. Environment Canada intends to further refine the framework and will engage stakeholders as part of the long-term strategy.

3.3 Infrastructure

Environment Canada recognizes that a key aspect of addressing the risks associated with the management of wastewater effluents is the financing needed to upgrade and/or construct collection and treatment facilities. The federal government has for some time advocated full-cost accounting and user/polluter pay principles for water and wastewater services. Appropriate pricing to reflect the true cost of water and wastewater treatment is critical in order to ensure the efficient use of water, reduce the demand for additional infrastructure, and allow municipalities to recover a portion of their infrastructure investment.

Although the Government of Canada has no specific mandate with regard to funding of municipal infrastructure, it has made a substantial commitment to assist municipalities with their infrastructure funding pressures. The federal government has put in place three infrastructure programs that collectively provide over $4B in federal funding to assist municipalities to upgrade or construct new infrastructure: the *Green Municipal Funds*, managed by the Federation of Canadian Municipalities; the *Infrastructure Canada Program*; and most recently, the *Canada Strategic Infrastructure Fund*. These funds are expected to leverage an additional $8B in funding from other levels of government and the private sector, for a total investment of $12B.

4. Other Issues

The federal government's role in managing wastewater effluents also includes activities on federal and aboriginal lands, including federal departments, boards, agencies, federal works and undertakings and Crown Corporations (Federal House). CEPA 1999 Part 9 evolved largely in recognition of the need for legislative provisions to be enacted so that the Federal House would be subject to laws similar to those of the provinces and territories in those situations where they would not otherwise apply. The federal government is committed to have the Federal House be held accountable to the same environmental protection and pollution prevention standards as the communities in which they operate. Accordingly, Environment Canada is committed to the development of appropriate instruments that address wastewater management issues for the Federal House along a timeline that is consistent with the proposed long-term strategy for municipal wastewater effluents.

5. Consultation

Environment Canada is hosting a series of one-day consultation sessions across Canada from August to October 2002, with provinces, municipalities, industry associations, environmental groups and other interested parties. The consultation sessions are aimed at providing participants with:

1) contextual information for the substances addressed in the proposed instrument under CEPA 1999 and for the long-term strategy; and

2) an opportunity to comment on the proposed elements of the notice that requires pollution prevention plans to be prepared and implemented under CEPA 1999 such as the:

    a) risk management objectives for ammonia, inorganic chloramines and chlorinated wastewater effluents;
    b) criteria to select the wastewater systems for which pollution prevention plans will be prepared;
    c) timelines for the preparation and implementation of the pollution prevention plans.

Environment Canada will summarize the input received during the consultation sessions. The summary will be shared with those who participated in the consultation and other interested parties. After consideration of the comments received, Environment Canada will formally propose, by publication of a Notice in the *Canada Gazette*, *Part I* a preventive or control instrument for ammonia, inorganic chloramines and chlorinated wastewater effluents in the Spring of 2003, which will be followed by a 60-day comment period. A final instrument will be published in 2004.

Appendix 1:

Canadian Environmental Protection Act, 1999 (CEPA 1999) Risk Management Process

The Government of Canada is committed to improving and protecting the environment, and the primary tool in this commitment is the *Canadian Environmental Protection Act, 1999* (CEPA 1999). With health and safety of Canadians and the environment as the first priorities, CEPA 1999 includes provisions for controlling toxic substances, preventing pollution, and managing waste. It also sets out the process for preventing pollution and addressing environmental emergencies.

Pollution prevention is the cornerstone of CEPA 1999. There is also recognition that the risks from pollution associated with toxic substances pose a serious threat to the health and quality of life of Canadians.

Under CEPA 1999 a substance is considered toxic if it is: "entering or may enter the environment in a quantity or concentration or under conditions that:

a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity;
b) constitute or may constitute a danger to the environment on which life depends; or
c) constitute or may constitute a danger in Canada to human life or health."

Sound science is at the heart of the process used to determine if a substance is toxic. The criteria are set out under CEPA 1999. This science is used by the Ministers of the Environment and Health who make decisions based on the weight of evidence and the precautionary principle. The guidance for these decisions is also set out in CEPA 1999.

Science also guides the risk management process that follows when a substance has been determined to be toxic. It is an open and transparent process, and it includes many opportunities for public input. CEPA 1999 makes provision for social and economic considerations to be taken into account during the risk management phase as Ministers select a course of action.

CEPA 1999 includes deadlines for action when substances are determined toxic under Schedule 1. Preventive or control instruments must be proposed within two years, and finalized within a further 18 months. However, the Government has considerable flexibility in the tools that can be used to manage risk. CEPA 1999 authorizes regulations, pollution prevention plans, guidelines, codes of practice and even some economic instruments. The goal is to manage risk throughout the life cycle of a substance, except for persistent, bioaccumulative and toxic substances that are released into the environment as a result of human activity, where the goal is virtual elimination. Further information is available in the CEPA Registry at: *(*www.ec.gc.ca/CEPARegistry) **.**

Appendix 2:

Proposed Risk Management Strategy for Nonylphenol and its Ethoxylates Under CEPA 1999 - Executive Summary

Issue and Background

Nonylphenol and its ethoxylates (NPEs) are high volume chemicals that have been used for more than 40 years in a variety of products such as detergents, emulsifiers, wetting agents and dispersing agents. It is estimated that annually 18,000 tons of NPEs are used in Canada, in many sectors such as:

- Cleaning products, degreasers, detergents for institutional and domestic use
- Textile processing
- Pest control products
- Pulp and paper processing
- Paints, resins and protective coatings
- Oil and gas recovery
- Steel manufacturing
- Power generation

On June 23rd, 2001 the Ministers of the Environment and of Health published their final decision on the assessment of NPEs in the *Canada Gazette* and notified the public that they recommended NPEs to be added to the List of Toxic Substances in Schedule 1 under the *Canadian Environmental Protection Act, 1999* (CEPA 1999). Under subsection 91(1) of CEPA 1999, the Minister of the Environment must propose a regulation or instrument respecting preventive or control actions to manage NPEs no later than June 23rd, 2003. The instrument must then be finalized by December 23rd, 2004.

The final decision to declare NPEs toxic followed the publication of the draft *Priority Substances List Assessment Report for NPEs* in which it was concluded that NPEs were harmful to the environment. NPEs were not considered harmful to human health. The NPEs risk assessment revealed that environmentally harmful concentrations of NPEs could be found in municipal and industrial effluents that are untreated or followed only a primary treatment. These concentrations can exceed levels above which chronic effects are observed in aquatic organisms. The concentrations of NPEs found in effluents discharged by wastewater treatment plants using secondary or tertiary treatment are usually lower because NPEs biodegrade during treatment. However, some of the biodegradation by-products, such as lower ethoxylated products or nonylphenol itself, are more persistent and more toxic than the parent NPEs discharged to the treatment plant. NPEs have been reported to cause endocrine disruption in a variety of aquatic organisms. However, its significance is not currently well understood.

Recommended Risk Management Actions

Products containing NPEs and the textile industry: The risk management objective will be to reduce NPEs in products and NPEs use in the textile industry to a level reflecting the best available techniques economically achievable (BATEA) in order to reduce the environmental risks associated with NPEs. To do so, the risk management instrument proposed for products containing NPEs and for the textile industry is pollution prevention planning under section 56 of CEPA 1999. Close to 100%

substitution of NPEs is expected to be achievable. The main NPEs alternatives, alcohol ethoxylates (AEs), have a more favourable environmental profile than NPEs. AEs are readily and ultimately biodegradable and their biodegradation intermediates are less toxic than the parent surfactant. In addition, neither AEs nor their biodegradation intermediates have been associated with the 'endocrine disruptor' issue. The cost of substitution is negligible to modest depending of the application of the products. The risk management strategy for products containing NPEs and for the textile industry will cover approximately 80% of the NPEs use in Canada.

Pesticides: The Pesticide Management Regulatory Agency has begun an internal review and assessment process to investigate risk management options for NPEs in pesticides. NPEs in pesticides account for about 8% of NPE use in Canada.

Pulp and paper industry: In the past few years, the pulp and paper industry has voluntarily reduced the use of NPEs in their operations. Environment Canada, in partnership with the Forest Products Association of Canada, is currently examining use patterns in the pulp and paper industry to help identify if additional risk management activities are required in this industry.

Municipal wastewater effluents: NPEs found in wastewater effluents are associated primarily with the use and disposal of products containing NPEs and to a lesser extent, with the discharge of textile mill effluents to wastewater collection systems. Environment Canada is in the process of developing a broad risk management strategy that will include risk management actions needed to address, among other substances, NPEs in municipal wastewater effluents. Environment Canada intends to begin by addressing NPEs at the source, through the proposed risk management actions described above for products containing NPEs and for the textile industry.

The proposed risk management objectives and instruments for NPEs are in line with the current risk management activities in the European Union. So far the United States have established water quality criteria for NPEs and encourage reduction in NPEs use through voluntary programs.

Appendix 3:

Proposed Risk Management Strategy for the Wet Processing Textile Industry Addressing Textile Mill Effluents and Nonylphenol and Its Ethoxylates Under CEPA 1999 - Executive Summary

Issue and Background

On June 23rd, 2001 the Ministers of the Environment and of Health published their final decision on the assessment of textile mill effluents (TMEs) and nonylphenol and its ethoxylates (NPEs) in the *Canada Gazette* and notified the public that they recommended TMEs and NPEs to be added to the List of Toxic Substances in Schedule 1 under the *Canadian Environmental Protection Act, 1999* (CEPA 1999). Under subsection 91(1) of CEPA 1999, the Minister of the Environment must propose a regulation or instrument respecting preventive or control actions to manage TMEs and NPEs no later than June 23rd, 2003. The instrument must then be finalized by December 23rd, 2004. This proposed risk management strategy for the wet process textile industry outlines the risk management objectives and instruments proposed to address the environmental risks associated with TMEs and NPEs.

TMEs are wastewater discharges from wet processing textile mills. The TMEs risk assessment indicated that untreated and primary-treated effluents are harmful to aquatic organisms. Secondary- and tertiary-treated TMEs are generally not likely to cause environmental harm.

NPEs are a family of products widely used in textile processing. The NPEs risk assessment indicated that environmentally harmful concentrations of NPE occur in untreated or partially-treated industrial effluents, including TMEs. Secondary- or tertiary-treated effluents generally have concentrations of NPEs below levels of environmental concern.

According to the TMEs risk assessment, there were 145 mills in operation in Canada in 1996. Most mills were located in Quebec (58%), followed by Ontario (34%), Nova Scotia (3%), New Brunswick (2%), British Columbia (1%) and Prince Edward Island (1%). Almost all textile mills (96%) discharged their effluents to municipal wastewater treatment plants (MWWTPs), of which 61% had secondary treatment, 28% had primary treatment, 9% had tertiary treatment and 1% had no treatment.

Recommended Risk Management Objectives

For TMEs: The proposed strategy recommends achieving and maintaining a toxicity level of the textile mill effluent discharged to the municipal wastewater collection system which is equivalent to, or less toxic, than an inhibiting concentration IC_{50} 15 minutes of 13% measured according to toxicity testing using luminescent bacteria, such as the acute Microtox test®. This risk management objective is achievable through existing pollution prevention technologies and can lead to significant savings for textile mills. In order to achieve the effluent toxicity risk management objective, textile mills will not be permitted to use dilution.

For mills discharging directly to the environment (4%, or 8 mills) no specific risk management objectives are proposed for TMEs other than continued compliance with the *Fisheries Act*.

For NPEs: The recommended risk management objective is a reduction in NPEs use which reflects the best available techniques economically achievable (BATEA). A 97% reduction could be achievable at modest cost.

Recommended Risk Management Instruments

The proposed risk management instruments to meet the risk management objectives is pollution prevention planning complemented by technology transfer, financial incentives and reporting. The technology transfer and financial incentives components will make use of an existing joint program from Environment Canada and Economic Development Canada implemented in the Quebec Region known as EnviroClub^{OM}. Reporting will become necessary as the pollution prevention requirements will eventually sunset and Environment Canada must be able to assess whether TMEs are being managed adequately in Canada.

The other risk management instruments examined in detail were a regulatory package. Although a regulatory package may be successful in meeting the risk management objectives, it was determined, on the basis of a cost-benefit analysis that requiring pollution prevention planning as a first step would prove to be more efficient.