

Comments of the
Alkylphenols & Ethoxylates Research Council
On The
Proposed Risk Management Strategy For
Nonylphenol and Its Ethoxylates in Products Under CEPA 1999

The Alkylphenols & Ethoxylates Research Council (APERC) appreciates this opportunity to submit comments on the Proposed Risk Management Strategy for Nonylphenol (NP) and Nonylphenol Ethoxylates (NPEs) in Products under CEPA 1999. APERC membership is comprised of major North American manufacturers and processors of alkylphenols (APs) and alkylphenol ethoxylates (APEs), including NPs and NPEs.¹ APERC and its member companies have conducted extensive research on the environmental fate, effects and exposure to NP/NPE and share Environment Canada's overall goal of maintaining acceptable levels of NP and NPE in the environment. We have committed to develop responsible environmental management guidelines for the handling, treatment and disposal of these products.

These comments address the *Proposed Risk Management Strategy For Nonylphenol and Its Ethoxylates, Canadian Environmental Protection Act, 1999 (May 2002)* as it relates to NP/NPE containing products.

I. Overview of the CEPA Assessment on NP/NPE

The CEPA Assessment Report for Nonylphenol and Its Ethoxylates presents a reasonably comprehensive and generally accurate summary of the extensive health, environmental fate and effects, and exposure databases for NP and NPE. NP and NPE were not considered to be toxic under sections 64(b) or 64(c) of CEPA. The Assessment Report concludes, however, that based on a limited number of samples, NP and NPE concentrations in partially treated or untreated effluents from textile mills, pulp and paper

¹ Members of APERC include: Dover Chemical Corporation; GE Plastics; Great Lake Chemical Corporation; Mitsubishi Chemical Corporation; Rhodia Inc.; Rohm and Haas Company; Schenectady International, Inc.; Stepan Canada; Sunoco, Inc.; and, The Dow Chemical Company.

mills, and municipal wastewater treatment plants (MWWTPs) justify their classification under CEPA 64(a): “Nonylphenol and its ethoxylates are entering the environment in a quantity or concentration, or under conditions that have or may have an immediate or long-term harmful effect on the environment or its biological diversity.”²

As the data demonstrate, and Environment Canada has recognized in its Assessment Report, NP/NPEs are treated adequately in well-functioning wastewater treatment plants. Where treatment is not present or is inadequate, however, levels of NP and low mole NPE -- as well as levels of other toxic species -- in wastewater and receiving streams near wastewater outfalls may exceed effect levels for sensitive aquatic species.

The number of Canadian MWWTPs where risk quotients for NP/NPE exceed 1 using a distributional assessment on a Toxic Equivalency Quotient (TEQ) basis varies in correlation to the level of treatment. The Supporting Document listed the number of MWWTP sites for which NP/NPE levels exceeded TEQ-based Water Quality Criteria as compared to the total number of sites sampled in a treatment category as follows: primary 5/10, secondary 1/21, tertiary 0/7 and lagoon 0/5.³ The draft Consultation Meeting Report recognizes that “secondary or tertiary treated effluents generally have concentrations of NPEs below levels of environmental concern.”⁴

II. The Risk Management Objective for NP/NPE in Products Should Be to Ensure that Environmental Levels Do Not Exceed Canadian Water Quality Guidelines within Five Years.

The Proposed Risk Management Strategy for NP/NPE states “all risk management actions have the same environmental objective, or long term goal, which is to achieve

² Health Canada and Environment Canada, Canadian Environmental Protection Act (CEPA) Priority Substances List (PSL) Assessment Report for Nonylphenol and Its Ethoxylates (March 2000).

³ Servos *et al.*, “Background Document for the PSL-2 Assessment of Nonylphenol and its Ethoxylates,” Environment Canada, (2000), Table 19, p. 190.

⁴ Environment Canada, “Risk Management Strategy for the Wet Processing Textile Industry Addressing Textile Mill Effluents and Nonylphenol and Its Ethoxylates Under CEPA 1999, Draft Consultation Meeting Report,” (July 2002) p. 1.

ambient concentrations in Canadian waters that do not exceed the Canadian Water Quality Guidelines (WQGs) for NP TEQ of 1µg/L freshwater and 0.7 µg/L for NP TEQ for marine waters.”⁵ The WQGs are set such that no adverse effects are likely to occur in the resident aquatic biota. In addition, the Assessment Report states a “value of 1 µg/L seems justified for application to the EEV data for NP to determine if there is potential for endocrine mediated responses in biota.”⁶ Since the WQGs for NP/NPE are protective of the environment, the Risk Management Objective for NP/NPE should be to ensure that environmental levels do not exceed the WQCs within five years of the baseline year. Since, for most places in Canada, the environmental levels of NP/NPE are already below the guideline levels, broad sweeping product substitution should not be required.

More importantly, Environment Canada should promote Risk Management Objectives that will address the reason that NP/NPE were found to meet the criteria to be declared “CEPA toxic.” Unacceptable levels of NP/NPE in the environment are symptomatic of inadequate practice and treatment. Risk Management Objectives aimed at product use reduction will not address these issues.

The Qualitative Assessment document states, “[I]t is important to note that all surfactants exhibit aquatic toxicity and that they all require effective municipal wastewater treatment to avoid detrimental impacts on the aquatic environment.”⁷ Data in the Supporting Document indicate that unacceptable levels of NP/NPE (on a TEQ basis) are almost always associated with inadequate or inefficient treatment (*e.g.*, primary WWT.)⁸ Industrial and municipal WWTPs without adequate treatment capabilities should represent a concern to Environment Canada, as these facilities will remain ineffective

⁵ Environment Canada, “Proposed Risk Management Strategy for Nonylphenol and Its Ethoxylates Under CEPA 1999,” (May 2002) p. 7.

⁶ Servos *et al.*, “Background Document for the PSL-2 Assessment of Nonylphenol and Its Ethoxylates,” Environment Canada (2002) p. 212.

⁷ Campbell, P., “Qualitative Assessment of Management Instruments for the Reduction of NP/NPEs in Cleaning Products,” (January 2002) p. 23.

⁸ Servos *et al.*, “Background Document for the PSL-2 Assessment of Nonylphenol and Its Ethoxylates,” Environment Canada, (2000), Table 19, p. 190.

even if they no longer process NP/NPE. The Risk Management Strategy should focus on assuring that such facilities have adequate treatment and follow best practices.

III. The Proposed Risk Management Strategy for NP/NPE Should Follow the Framework for Improved MWWT and Municipal Pollution Prevention that Has Already Been Established for Other Compounds Found in Municipal Effluents.

Experts agree that there is a general need for improved WWT in Canada. “In recognition of the importance of the issue and the federal mandate to protect the health of Canadians and the environment, a scientific workshop entitled *Assessment and Management of Pharmaceuticals and Personal Care Products in the Canadian Environment* was held February 24 to 27, 2002, in Niagara-on-the-Lake, Ontario. This Multi-stakeholder Workshop, sponsored by Health Canada and Environment Canada, provided a forum to discuss Pharmaceutical and Personal Care Products within a Canadian and international perspective. The main objective of the Workshop was to identify major research and risk management needs in Canada. To provide an international multidisciplinary perspective, presentations were made by scientists and regulators from the EU, US and Canada. Invited participants representing industry, government, academia and public interest groups provided a broad spectrum of expertise and perspectives. Informal breakout and round table sessions were designed to promote discussion and identify and prioritize research needs.”⁹ There was unanimous agreement among the participants that the number one research priority should be in the area of improved municipal wastewater treatment.

In addition, recognizing the need for better control at the municipal level, Environment Canada has proposed Risk Management Strategies that will require municipalities to develop and file Pollution Prevention Plans for the reduction of three other “toxic” substances under CEPA: Ammonia, Chloramines and Chlorinated Municipal Effluent.

⁹ Servos, M.R., E. Innes, J. Given, K. Ostapyk, E. Topp, R. McInnis, M.E. Starodub. (2002) *Assessment and Management of Pharmaceuticals and Personal Care Products in the Canadian Environment: Proceedings of a Multi-Stakeholder Workshop*. Environment Canada and Health Canada Special Publication, 78 p. NWRI Contribution 02-334.

There is near unanimous agreement among Environment Canada, Health Canada and numerous other experts that there is a general need to improve WWT standards in Canada, and Environment Canada is already addressing three other CEPA “toxic” compounds through Pollution Prevention Planning at the municipal level. Since the data demonstrate that NP/NPE are adequately treated in well-functioning WWTPs with secondary or tertiary treatment, Environment Canada should incorporate NP/NPE into the same Risk Management framework.

IV. Pollution Prevention Planning Under CEPA Should Afford Flexibility in the Development of Approaches to Accomplishing the Risk Management Objective.

The proposed Risk Management Strategy for NP/NPE in Products purports to recommend Pollution Prevention as the CEPA Risk Management Instrument for NP/NPE. In contrast, the proposed Risk Management Objectives prescribe product use reduction at the level of the product formulator, distributor or importer as the method of achieving the Environmental Goal. This eliminates the flexibility to implement Pollution Prevention Plans that allow each organization, company or facility to assess the best approach to meeting the environmental goals. The Risk Management Strategy should allow end users of Products containing NP/NPE to develop Pollution Prevention Plans designed to reduce NP/NPE emissions in a manner that is most beneficial to their situation. Pollution Prevention Plans at the level of an end user should address how reductions in NP/NPE emissions will be accomplished as well as methods of measuring success in achieving the environmental objectives.

Pollution Prevention Planning is defined under CEPA as “the use of processes, practices, materials, products, substances, or energy that avoid or minimize the creation of pollutants and waste and reduce the overall risk to the environment or human health.” A properly structured Pollution Prevention Plan will meet a number of public policy objectives, including but not limited to, reducing emissions to the environment, reducing

substance risks and maintaining the socio-economic viability of facilities and/or businesses. The development of Pollution Prevention Plans can be a positive step for Environment Canada and industry provided there is allowance for flexibility to use a toolbox of Risk Management Options, including improved treatment, best practices and other options including product reformulation, where necessary.

For example, companies that use NP/NPE containing products in a setting that provides adequate WWT control, such as an industrial laundry, a hospital or institution or a paper or textile mill should have the opportunity to submit Pollution Prevention Plans that explain how their environmental management practices, disposal systems and monitoring practices are sufficient to control levels of NP/NPE in their effluent rather being forced to discontinue using products that contain them. This would be particularly useful in cases where registered disinfectant products are involved.

Environment Canada, APERC and others, should work cooperatively with industry associations and companies related to the textile, paper, pulp and institutional and industrial cleaning industries where NP/NPE-based products are used and MWWTPs where NP/NPE are treated to promote Best Practice Codes for environmental management and wastewater treatment. The NPE Environmental Management Program can be used as a resource in Pollution Prevention Planning for these compounds.

V. Environment Canada Should Consider Utilizing Pollution Prevention Plans on a Watershed Basis as the Risk Management Instrument for Achieving the Overall Environmental Objective for NP/NPE.

Environment Canada has already established Water Quality Objectives for NP/NPE, which are protective of the aquatic environment when calculated on a TEQ basis. A generalized summary of published and unpublished environmental monitoring data used to create the summary tables in the Assessment Report for NP/NPE was provided to APERC for the purpose of developing an environmental monitoring program. This summary indicates that all of the water bodies that reported levels of NP/NPE (reported

as NP TEQ) of greater than 1 µg/L were in Ontario.¹⁰ It would seem, based on this preliminary monitoring data, that Environment Canada could address this area of concern most effectively and efficiently by working with regional authorities, such as the Province of Ontario or the Regional Environment Canada office, and the facilities from priority sectors identified in the Assessment Report for NP/NPE (wet-processing textile mills, pulp and paper mills and MWWTPs) to develop a Pollution Prevention Plan for the management of NP/NPE on a watershed basis. The Pollution Prevention Plan could address improvements to treatment and practice at facilities with excessive discharges. MWWTPs could incorporate Pollution Prevention Planning for NP/NPE into the overall improvement efforts that will be required to deal with the three other CEPA toxic compounds as well as other compounds that will be identified in forthcoming CEPA Assessments.

This approach would avoid the need for unnecessary product reformulation and the complex administrative framework that would be required to deal with hundreds of product level or municipal level Pollution Prevention Plans.

VI. The Risk Management Strategy for NP/NPE Should Assess Environmental Performance on a Watershed Basis in Comparison to the Environmental Objective at Specified Milestones.

The Qualitative Assessment of Management Instruments for the Reduction of NP/NPE in Cleaning Products recognizes “the broad environmental objective of Environment Canada (EC) is to reduce the release of NP\NPEs into the environment” and “based on its toxicity profile the proposed environmental objective for NP would be a maximum concentration of 1µg/L Environmental No Effect Value (ENEV) for protection of aquatic biota.”¹¹ In addition, the Assessment Report states a “value of 1µg/L seems justified for application to the EEV data for NP to determine if there is potential for endocrine

¹⁰ Correspondence from Josee Portugais, Environment Canada, Head Controls Development Section, August 12, 2002.

¹¹ Campbell, P., “Qualitative Assessment of Management Instruments for the Reduction of NP/NPEs in Cleaning Products,” (January 2002) p. 21.

mediated responses in biota.”¹² The Qualitative Assessment recommends “a phased approach to the reduction of NP/NPE use in the cleaning products industry be considered” stating “this allows the risk management strategy to be re-visited periodically in light of new and expanded data on environmental concentrations of NP/NPEs and updated information on the relative estrogenic potency of NP/NPE metabolites.” The Qualitative Assessment further suggests “each phase should be accompanied by systematic environmental monitoring studies to ensure that the reduction targets are resulting in net reduction in emissions of NP/NPE to the aquatic environment.”¹³

APEREC supports the concept of a Risk Management Strategy that is based on the periodic assessment of environmental performance on a watershed basis in comparison to the Environmental Objective. The Risk Management Strategy should focus on correcting treatment and practices at the priority sources (paper, textile, MWWTPs) identified in the NP/NPE Assessment in each watershed identified as having levels of NP/NPE that exceed the WQC for NP/NPE, with an objective of achieving environmental levels below the WQC within five years.

The Risk Management Strategy for NP/NPE in Products recommends the National Pollutant Release Inventory (NPRI) be used to monitor progress in emission reductions with regard to NP/NPEs. While NPRI reporting will provide some indication of NP/NPE emission reductions, a well-designed, periodic environmental monitoring program will provide the best understanding of the success of the Risk Management Strategy. Therefore, an assessment of the environmental levels relative to the Environmental Quality Guidelines for NP/NPE should be conducted at each monitoring milestone. Only when environmental levels exceed EQGs should additional Pollution Prevention activities be necessary.

¹² Servos *et al*, “Background Document for the PSL-2 Assessment of Nonylphenol and Its Ethoxylates,” Environment Canada, (2000) p. 212.

¹³ Campbell, P., “Qualitative Assessment of Management Instruments for the Reduction of NP/NPEs in Cleaning Products,” (January 2002) pp. 3-4.

VII. Product Substitution Results in a Permanent Cost Increase to the Formulator and User.

In Environment Canada's report "Alternatives to Nonylphenol Ethoxylates, Review of Toxicity, Biodegradation & Technical-Economic Aspects" it is recognized that "in recent years, the price of the alternatives to NPE have been, on average, 20 to 40% higher than NPE" and predicts that increases in detergent-grade alcohol capacity are likely.¹⁴ The Report also predicts that an oversupply of alcohol ethoxylates (AEs) will drive down its market price and will result in lower pricing for AE products. While it is true that additional alcohol production capacity is expected to come online this year and an oversupply situation may result in decreased alcohol and AE market pricing, there is no expectation that the pricing of AE will ever fall near the level of NPE. While the price differential between AE and NPE may decrease, AE is expected to always be priced higher than NPE. Therefore, any changes that limit a users ability to choose NPE will result in permanent cost increases.

In addition, product reformulation and process redesign to accommodate alternative products require significant investment in product development and requalification. Moreover, alternate products may not provide the same performance characteristics as NPE and require the use of additive packages to ensure technical efficacy. This further adds to product cost and may not provide a net environmental benefit.

It is important to remember that for businesses that operate on very tight profit margins even slight increases in raw material costs (*i.e.*, unit cost difference for AE vs. NPE) can adversely affect profit and stability - especially for a small business.

VIII. Conclusion

The Risk Management Strategy for NP/NPE in Products should be based on a Risk Management Objective that will address the reason that NP/NPE were found to meet the

criteria to be declared “CEPA toxic.” Unacceptable levels of NP/NPE in the environment are symptomatic of inadequate practice and treatment. Risk Management Objectives aimed at product use reduction will not address these issues. There is agreement among Environment Canada, Health Canada and numerous other experts that there is a general need to improve WWT standards in Canada, and Environment Canada is already addressing three other CEPA toxic compounds through Pollution Prevention Planning at the municipal level. NP/NPE should also be addressed within this framework. Environment Canada also should consider utilizing Pollution Prevention Plans on a watershed basis as an efficient means for achieving the overall Environmental Objective for NP/NPE. In addition, end users of NP/NPE containing products should not be prevented from submitting Pollution Prevention Plans that would allow the continued use of NP/NPE containing products without requiring product reformulation.

¹⁴ “Alternatives to Nonylphenol Ethoxylates, Review of Toxicity, Biodegradation & Technical-Economic Aspects,” (28 March 2002) p. 71.