CANADIAN INSTITUTE FOR ENVIRONMENTAL LAW AND POLICY

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Submission to the Works Committee and Economic Development and Parks Committee Regarding the City of Toronto New Sewer Use By-Law

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I. Introduction

Canadian Institute for Environmental Law and Policy is an independent, not-for-profit environmental law and policy research and education organization, founded in 1970 as the Canadian Environmental Law Research Foundation.

The Institute welcomes the opportunity to comment on the city's proposed sewer-use by-law. Over the past decade, the Institute has published a number of studies on water pollution prevention and hazardous waste management, including a major 1988 study entitled *Controlling Industrial Discharges to Sewers*.

The City of Toronto's proposed sewer use by-law is an important initiative, with implications well beyond the City of Toronto. The City's proposed by-law has been consistently stronger than proposals advanced by the provincial Ministry of the Environment for its revised model sewer use by-law, and the province has recently indicated that it will not be finalizing its proposals. It is therefore clear that other municipalities in Ontario will look to the City of Toronto's by-law for guidance in the development of their sewer-use by-laws.

II. The Problem: Industrial Discharges to Sewers

According to the most recent analysis (1994 using 1991 data) available from the Ontario Ministry of the Environment, shown in Table 1, the leading fate of subject and hazardous waste disposed of on-site, is releases into municipal sanitary sewer systems. This is the source a number of serious problems.

Table 1.[1]

Method of Disposal	Total Excluding Liquid Industrial and Registerable Solid Wastes		Total Subject Wastes	
	Quantity Tonnes	Percent of Total	Quantity (Tonnes)	Percent of Total
Sanitary Sewer	383,300	38%	394,000	
Water Pollution Control Plant	266,500	27%	384.200	
Landfill/Landfarm	260,600	26%	371,100	
Other Treatment	122,600	12%	143,000	
Incineration	35,800	3.5%	112,000	
Dust Suppression	1,600	1.6%	29,400	
Waste-Derived Fuel	100	0.1%	500	
Total	1,070,500	100%	1,434,200	100%

Despite these considerations, the Ministry of Environment and Energy does not maintain records of industrial discharges to municipal sewer systems, stating that this is a municipal responsibility.[2] However, it has estimated that Ontario municipal sewage treatment plants release 18 tonnes of organic compounds and 1100 tonnes of heavy metals into Ontario waterways each year, principally as a result of industrial releases to municipal sewage systems.[3]

The former Metropolitan Toronto Works Department has developed estimates for industrial discharges to its sewer system. These include a total volume of 33-40 million cubic metres of discharges from industrial sources each year. Metro Work's estimates regarding discharges of specific substances in **Table 2**[4].

TABLE 2: Industrial Discharges to Metro Toronto Sewer System

Substance	Estimated Discharges (kg/day)	Estimated Discharges (Tonne/yr)
Copper	131	77
Zinc	105	38
Toluene[5]	86	33
Xylene[6]	69	25
Chromium	18	6.5
1.4 dichlorobenzene	2.5	0.912
Mercury	0.2	0.073
Lead	0	0
Cadmium	0	0
Nickel	0	0

Heavy metals that are removed in sewage treatment plants are concentrated in sewage sludge, often making the sludge unfit for application to agricultural land as a soil conditioner or fertilizer.[7] More recently, concerns have been raised regarding the presence of persistent organic pollutants in sewage sludge, in addition to heavy metals.[8] The presence of hazardous waste residues in sewage sludge has also been associated with emissions of heavy metals and persistent organic pollutants from sewage sludge incinerators. Sewage sludge incinerators in Ontario have, for example, been estimated to release more than 1 tonne of metals (mercury, lead, cadmium, chromium, copper and zinc) to the atmosphere, and the transfer of 208 tonnes of metals to landfills in ash each year.[9]

The discharge of toxic substances to sewage systems can disrupt sewage treatment processes, resulting in the release of large quantities of untreated or partially treated sewage to the environment.[10] Highly acidic or caustic industrial wastes can also corrode piping and equipment in sewer lines and sewage treatment plants.[11] Grease and oil can "clog" the sewers, reducing their capacity.[12] Furthermore, the discharge of toxic substances to sewer systems may cause serious public and worker health and safety problems such as fires, explosions and the release of poisonous gases.[13] More than 12,000 industrial facilities are estimated by the Ministry of Environment to discharge into municipal sewer systems in the province.

The development of pre-treatment requirements for industrial discharges to sewers was proposed as part of the province's Municipal Industrial Strategy for

Abatement (MISA) Program in the late 1980's. However, this effort has been abandoned, and industrial discharges to sewers remain unregulated by the province. Pre-treatment standards for industrial discharges to sewers are in place under federal law in the United States.

III. The City's Proposed By-Law

The Institute wishes to express its support for the overall direction of the City's proposed By-Law. The City's proposals have been consistently stronger than those advanced by the Ontario Ministry of the Environment, and addresses a number of major gaps in the Ministry's most recent proposals. We note in particular the maintenance of prohibitions on discharges of all forms of hazardous wastes, the addition of standards for a range or organic pollutants, and the establishment of pollution prevention planning requirements for facilities discharging priority pollutants.

Discharge Standards

The Institute notes a number of changes from the City's most recent draft by-law (#5) including the significant weakening of standards for discharges of Copper, nonylphenols/nonlphenol exthoxylates, Di-n-butylphthalate/Bix (2-ethylhexyl) phthalate, for discharges to Sanitary and Combined Sewers compared to earlier drafts. These changes are not supported by the Institute.

We also note that separate limits for hexavelant chromium and total chromium have been established for both Sanitary and Combined Sewers and Storm Sewers. This is despite the consideration that the United States Environmental Protection Agency states that hexavelant and trivalent chromium have the same chronic toxicity in aquatic ecosystems.[14]

Limits for a number of substances, including Bismuth, Vanadium, Iron, Chlorides, and Suphates have been dropped from the Sanitary and Combined Sewer section of the proposed By-Law. These requirements should be restored. It is also recommended that standards for number of metals, for which provincial water quality objectives have been established, including Tungsen, Zirconium, Uranium, Thallium, and Beryllium, by added to the By-Law. Similar standards should be set for organic metal compounds, including Tetraethyl Lead, Tetramethyl Lead, Triethyl Lead, Tributyl Tin, Triethyl Tin, Triphenyl Tin.

Recommendation

Standards for discharges of bismuth, Vanadium, Iron, Chlorides, and Suphates should be restored to the By-Law and discharge standards added for Tungsen,

Zirconium, Uranium, Thallium, Beryllium,Tetraethyl Lead, Tetramethyl Lead, Triethyl Lead, Tributyl Tin, Triethyl Tin, Triphenyl Tin.

Pollution Prevention Planning

One of the most important elements of the new sewer use by-law is the introduction of pollution prevention planning requirements for eleven metals and twenty-seven organic compounds/groups of compounds. These substances are priority pollutants identified through the 1994 *Canada-Ontario Agreement on the Great Lakes Basin Ecosystem.* Facilities within subject sectors or which are discharging these metals and organic compounds are to be required to prepared detailed pollution prevention plans every six years, and submit a plan summary every two years.

Pollution prevention planning programs have been implemented in a number of U.S. states, most notably New Jersey and Massachusetts. Analyses of these programs have shown that they result in significant reductions in the use, generation and discharge of toxic substances. In addition, pollution prevention programs have consistently resulted in economic benefits to the affected facilities well in excess of their costs, as a result of increased efficiency and reduced use of inputs.[15]

The federal *Canadian Environmental Protection Act* includes provisions for the Minister of the Environment to require the development and implementation of pollution prevention plans from facilities manufacturing, processing, generating or using substances found to be "toxic" for the purposes of the Act, or which are involved in international air or water pollution.[16]

The Institute has consistently recommended the adoption of pollution prevention planning legislation by the Province of Ontario,[17] although it has declined to do so. CIELAP therefore strongly supports the inclusion of pollution prevention planning requirements in the City's Sewer Use By-Law.

The city's proposals could be strengthened in a number of ways. The City proposes to defined pollution prevention as follows:

> "Pollution prevention means any action which reduces or eliminates the discharge of pollutants or wastes at the source and may include activities such as raw material substitution, product process modification, product reformulation, improvements in operations and maintenance, in-process recycling of production materials, and other activities (s.1(dd))."

This definition is inconsistent with the definition of pollution prevention adopted by the federal government through the new *Canadian Environmental Protection Act* which

reads as follows:

> "'Pollution prevention' means 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 (s.3(1))."

A similar definition was adopted by all of the provinces through the Canadian Council of Ministers of the Environment in November 1996. The federal and CCME definitions of pollution prevention place a clear emphasis on the reduction of the generation of pollutants at source, rather than simply reducing their discharges through end-of-pipe pollution control measures.

Recommendation:

> *The City of Toronto should adopt the following definition of pollution prevention in its sewer use By-Law: "Pollution prevention means any action which reduces or eliminates the generation of pollutants or wastes at the source and may include activities such as raw material substitution, product process modification, product reformulation, improvements in operations and maintenance, in-process recycling of production materials."*

The City's most recent draft by-law (#5) also reduces the frequency of requirements for the development of pollution prevention plans from five to six years (s.5(12), and requirements for updating from every year to every two years (s.5(13)). It is important that pollution prevention plans be updated on a frequent basis in order to take into account changes in available technologies and skills.

Recommendation:

> *The Sewer Use By-Law should require that detailed pollution prevention plans be prepared every five years, and that pollution prevention plan summaries be submitted every year.*

The Institute also notes that the pollution prevention planning requirements do not require the reporting of total discharges of substances to sewers. Rather reporting on discharges to sewers is expressed as concentration/flow (Appendix 3 - Pollution Prevention Plan, s.2.1 and Appendix 4 - Pollution Prevention Plan Summary, Part B).

Recommendation

> *The pollution prevention plan (Appendix 3) and pollution prevention plan*

summary requirements (Appendix 4) should be amended to require reporting on total amounts of substances discharged into sewers each year.

IV. Community Right To Know

The Institute's 1998 study on hazardous waste management in Ontario revealed significant underreporting of industrial discharges to sewers through the federal National Pollutant Release Inventory (NPRI).[18] Public reporting of pollutant releases and transfers has been shown to have a significant impact on facility behaviour, as well as strengthening the accountability of facilities to the public for their environmental performance.[19] The proposed Sewer-Use By-Law includes provisions requiring that facilities report their discharges to sewers through their pollution prevention plan summaries. However, no provision is made for making the contents of these reports available to the public.

Recommendation

The City of Toronto should commit to making the contents of facility annual reports on their discharges to the city's sanitary, combined and storm sewers available to the public, and providing an annual summary report on the basis of their contents, including facility specific information.

V. Conclusions

The City of Toronto's proposed Sewer Use By-Law represents one of the most important initiatives on toxic substances pollution prevention currently under way in Canada. The City's By-Law will provide a model for other municipalities, not only in Ontario, but elsewhere in Ontario as well. The Institute asks that Toronto City Council move to adopt the By-Law, amended as per its recommendations, as the earliest opportunity.

Endnotes

1.Joint Board (OMB/EAB), Ontario Waste Management Corporation Decision, 1994 Table 1, pg. 3-25.

2.The Hon. N.Sterling, Response to Order Paper No.218, Question No. 2087, filed August 25, 1997 by D.Augustino, M.P.P.

3.MoEE, The MISA Municipal Program (January 1994).

4.Memo from R.M. Picket, Director, Water Pollution Control, Metro Works, to M.Winfield, Director of Research, CIELAP, October 10, 1997.

5.Metro Works advises that this is likely an underestimate due to volatization occurring in the sewer system.

6.Ibid.

7.MoEE, The MISA Municipal Program.

8.See, for example, World Wildlife Fund Canada, Toxics In, Toxics Out: Toxics from Sewage Treatment Plants in the Great Lakes & St.Lawence River (Toronto: Undated).

9.World Wildlife Fund Canada, Toxics In/Toxics Out: Toxics from Sewage Treatment Plants in the Great Lakes & St.Lawrence Basin (Map) (Toronto: 1996).

10.Controlling Industrial Discharges to Sewers (Toronto: Ministry of Environment and Energy, September 1988), pg.1.

11.Ibid.

12.M.Winfield and J.Swaigen, "Water" in J.Swaigen and D.Estrin, eds., Environment on Trial: A Guide to Ontario Environmental Law and Policy (Toronto: Emond Montgomery and CIELAP, 1993), pp. 539-540.

13.MoEE, MISA Municipal Program, pg.4.

14.USEPA www:odsnet.com/TRIFacts/74.html

15.M.Becker and K.Geiser, Evaluating Progress: A Report on the Findings of the Massachusetts Toxics Use Reduction Program Evaluation (Lowell: Toxics Use Reduction Institute, March 1997). See also M.Aucott, D.Wachspress, and J.Herb, Industrial Pollution Prevention Trends in New Jersey (Trenton: New Jersey Department of Environmental Protection, December 1996).

16.*Canadian Environmental Protection Act, 1999*, s.56.

17.See, for example, M.Winfield, Hazardous Waste Management Ontario: A Report and Recommendations (Toronto: CIELAP, February 1998), Recommendation IV-29.

18.Hazardous Waste Management in Ontario., pg.IV-12.

19.See, for example, A.Fung and D.O'Rourke, "Reinventing Environmental Regulation from the Grassroots up: Explaining and Expanding the Success of the Toxics Release Inventory," Environmental Management, Vol.25, No.2, pp.115-127.