

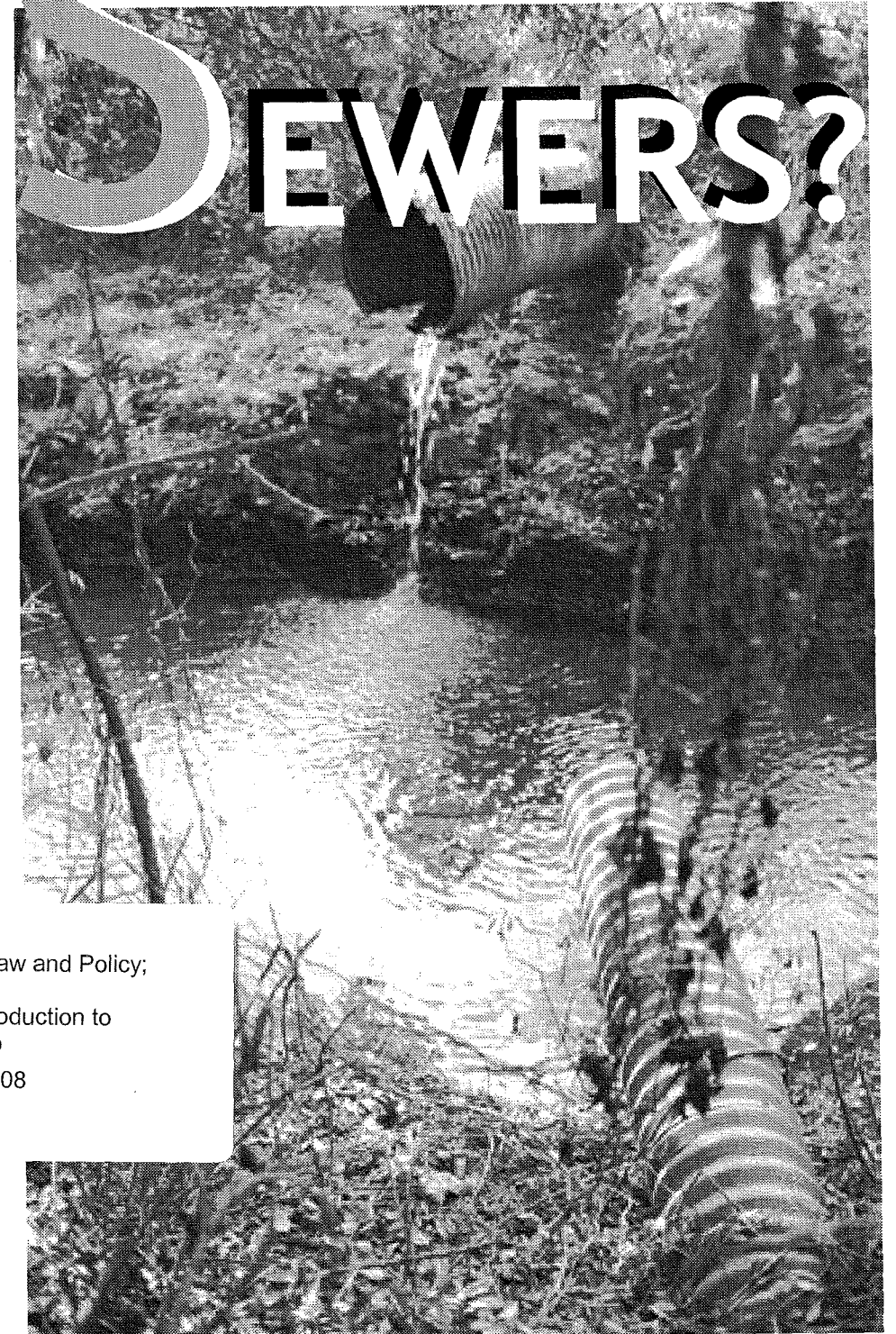
WHAT'S in your

A Citizen's
Introduction
to Municipal
Sewer Use
By-laws
in Ontario

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VF:
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What's in your sewers? A citizen's introduction to
municipal sewer use by-laws in Ontario

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About this guide ...

In Canada, municipalities are the caretakers of both **sanitary flow**, flushed from the bathrooms and kitchens of residential homes, and **effluent**, from industrial, commercial and institutional facilities. Both sanitary flow and effluent flow through a network of pipes below the ground called sanitary sewers. In some older cities, these same pipes also carry the stormwater that runs off streets and lawns.

Sanitary sewers flow to a wastewater treatment plant that treats the water before discharging it into a receiving water body such as a lake or a river. But these treatment plants can only do so much. A significant amount of the pollution that gets dumped into the sewer system passes right through the treatment plants and into the receiving water. The result is that, in Ontario, municipal wastewater treatment plants are among the worst polluters in the province. According to Environment Canada's 2001 National Pollutant Release Inventory, nine out ten of Ontario's largest water polluters are wastewater treatment plants.

While great effort has been made in recent years to improve these plants to better clean the water that flows through them, the best solution is to reduce the amount of pollution that enters the sewer system in the first place, *before* it reaches the treatment plant. (This is especially true given the fact that some of the pollution which treatment plants successfully capture merely settles out with the sewage sludge. This sludge is either landfilled, incinerated or given to farmers to spread on their fields - in all cases re-introducing the pollutants to the environment).

about H₂info™

This guide has been prepared by H₂info - The Water Information Network. H₂info is a project founded in 1999 by RiverSides Stewardship Alliance, the Toronto Environmental Alliance (TEA) and the Canadian Institute for Environmental Law and Policy (CIELAP).

The project aims to improve municipal water quality, quantity and flow by fostering and supporting community-based programs and increasing civic participation in national, provincial and local efforts to control municipal non-point sources of water pollution.

For more information about H₂info visit our web site at www.H2info.org.

Top 10 Water Polluters in Ontario

Nine out ten of Ontario's largest documented water polluters are wastewater treatment plants, which receive pollution via the sewer system from hundreds of sources.

1. Ashbridges Bay Treatment Plant (Toronto)
2. Robert O. Pickard Environmental Centre (Ottawa)
3. Woodward Avenue Wastewater Treatment Plant (Hamilton)
4. Humber Treatment Plant (Toronto)
5. Highland Creek Treatment Plant (Toronto)
6. Lakeview Water Pollution Control Plant (Mississauga)
7. Central Mills Inco Limited (Copper Cliff)
8. Lou Romano Water Reclamation Plant (Windsor)
9. Greenway Pollution Control Centre (London)
10. Guelph Wastewater Treatment Plant (Guelph)

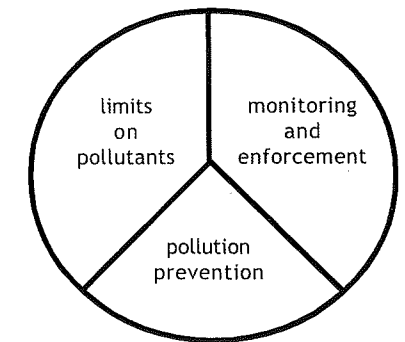
(Source: *Pollution Watch*, based on Environment Canada's 2001 National Pollutant Release Inventory, www.pollutionwatch.org).

Components of an effective by-law ...

For the purposes of this guide, we focus on three important components of an effective sewer use by-law that have a great impact on water quality: *limits on pollutants*, *pollution prevention* and *monitoring and enforcement*.

Limits on pollutants describes the acceptable concentration of specific chemicals that the by-law allows to be released legally into the sewer system. Using national and provincial standards, municipalities determine different acceptable levels for each regulated pollutant. These limits are largely determined by the cost associated with treating the wastewater to ensure that only scientifically acceptable levels of each pollutant are ultimately released into the environment. Periodically, these limits should be updated as scientific testing and monitoring methods improve and new studies reveal the effects of various chemicals.

components of an effective by-law



Pollution prevention describes the steps taken to reduce the amount of pollution entering the sewer system by avoiding or minimizing the use of these pollutants at the source. Most pollution prevention programs in Ontario are voluntary, but some municipalities are evaluating the adoption of mandatory pollution prevention programs for all industrial, commercial and institutional facilities that use the municipal sewer system.

Enforcement and monitoring refers to various methods municipalities use to ensure compliance with sewer use by-laws. Although most by-laws contain provisions to levy fines against companies that are in violation, municipalities rarely resort to using heavy fines to ensure compliance. More often the municipality attempts to work with the polluter to help them come into compliance with the by-law. Some municipalities enter into overstrength agreements with polluters to amend the requirements of the by-law on a facility-specific basis for a pre-determined length of time.

♦ ♦ ♦

Each of the five municipal sewer use by-laws examined in this report have been compared based on their treatment of the above three components. These by-laws are:

- City of Toronto Municipal Code Chapter 681 (adopted 2000)
- City of Hamilton By-law R89-049 (adopted 1989)
- City of Guelph By-law 15202 (adopted 1996)
- City of Kingston By-law 2000-263 (adopted 2000)
- City of Windsor By-law 11446 (adopted 1993)

Limits on pollutants ...

At the core of most municipal sewer use by-laws is a specific limit on the amount of each pollutant that a regulated discharger may legally emit into the sewer.

In the past, a municipality's decision regarding limits for each pollutant was largely based on the limits set in a model sewer use by-law provided periodically by the Ministry of Environment (MOE). The most recent MOE Model Sewer Use By-law was released in draft form in 1998, and is still available for download from the MOE web site at www.ene.gov.on.ca/envision/env_reg/documents/a/pa8e0029.pdf. This model by-law was produced to help Ontario municipalities develop local sewer use by-laws. Most municipalities chose to adopt the MOE model by-law in part or in its entirety in order to address local concerns. However, the draft 1998 model by-law was never finalized and the MOE has not yet released any further materials regarding the development of municipal sewer use by-laws. Although the MOE promised to provide a new manual to assist municipalities, it has now been more than five years and it appears that many municipalities are now turning to the City of Toronto's 2000 sewer use by-law as the model for updating their own by-laws.

The five municipalities examined in this report have set discharge limits similar to the draft 1998 MOE model by-law. But some have gone further, targetting additional pollutants and setting more stringent discharge limits. The City of Toronto set an impressive standard when it adopted its new by-law in 2000. Toronto's by-law includes stricter limits than the MOE model for 11 metal contaminants. The Toronto by-law also includes limits for 27 groups of organic pollutants not found in the MOE model. For pollutants listed under Ontario's Provincial Water Quality Objectives (PWQO) Toronto's limits were set at 20 times the acceptable PWQO limits. For pollutants listed under Tier I and Tier II of the Canada-Ontario Agreement, the limits were set at 10 times the acceptable limits.

The City of Kingston has followed Toronto's lead and adopted a similarly stringent set of limits. However, most municipalities in Ontario still have by-laws based on previous versions of the

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Toronto's by-law contains discharge limits for 27 groups of organic pollutants that are not addressed in the 1998 MOE model by-law.

Sewer Use By-law Discharge Limits for a Select Group of Common Contaminants
(all figures in mg/L)

Pollutant	Toronto	Guelph	Kingston	Windsor	Hamilton	MOE
Arsenic	1	1	1	1	1	1
Benzene	0.01	no limit	0.01	no limit	no limit	0.01
Bis phthalate	0.012	no limit	0.012	no limit	no limit	no limit
BOD	300	300	300	400	300	300
Cadmium	0.7	1	0.7		1	0.7
Chromium Total	2	5	4	5	5	5
Copper	2	3	2	1	3	3
Fluoride	10	10	10	10	10	10
Hexachlorobenzene	0.0001	no limit	0.0001	no limit	no limit	no limit
Lead	1	5	1	5	5	2
Mercury	0.01	0.1	0.01	0.1	0.1	0.05
Nickel	2	3	2	5	3	3
Nonylphenol ethoxylates	0.01	no limit	0.01	no limit	no limit	no limit
Oil/Grease - Organic	150	100	150	120	150	150
Phosphorus	10	10	10	30	10	10
Suspended Solids	350	350	350	500	350	350
Trichloroethylene	0.4	no limit	0.07	no limit	no limit	0.07
Zinc	2	3	2	5	3	3

Monitoring and enforcement ...

Monitoring and enforcement of municipal sewer use by-laws is primarily done by municipal field staff who visit facilities periodically to test and monitor pollutants being released into the sewer system. When it is determined that a facility is failing to meet the limits for a specific pollutant, the municipality will generally advise implementation of voluntary abatement methods to bring the facility into compliance. These methods often include in-depth analysis of the facility's operations and assistance in finding alternative processes and technology to reduce or eliminate the problem pollutant. Most municipalities rely heavily on these types of "compliance agreements" whereby facilities are ordered to come into compliance within a given timeline.

Maximum Fines for Sewer Use By-law Violations

Toronto	\$5,000 to \$100,000
Guelph	\$10,000 to \$100,000
Kingston	\$10,000 to \$100,000
Windsor	\$10,000 to \$100,000
Hamilton	\$10,000 to \$100,000

If a facility fails to honour the agreement and continues to violate the by-law, the municipality may resort to charging the polluter with a fine based on the severity of the violation. In Ontario, municipal fines for violating sewer use by-laws generally range from \$5,000 to \$100,000 per offence, but these types of fines are rarely levied. Most municipalities rely instead entirely on compliance agreements.

In the case of chronic polluters, violations may be dealt with through an over-strength agreement. If a facility releases large amounts of pollutants that can be efficiently and effectively removed at the municipal treatment plant, a municipality may enter into an "over-strength agreement" whereby the company will pay the municipality a set rate based on the amount of excess pollutants they release in a given year. These rates are determined by the municipality based on recovery costs and, in a municipality with a large industrial base, can generate millions of dollars in revenue. The

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City of Toronto recovers more than \$8 million per year from 150 over-strength agreements. The City of Hamilton has more than 30 companies that release billions of litres of over-strength wastewater into the municipal sewer system each year.

MOE model by-law. The by-laws in Guelph, Windsor and Hamilton all allow greater levels of various pollutants and they do not set standards for many of the organic pollutants identified in the Toronto and Kingston by-laws. The table on page 4 compares the currently allowable discharge limits for a select group of pollutants in each of the five municipalities.

It is worth noting that if municipalities do not properly control what is discharged into the sewer system, they may put themselves in a situation where they are vulnerable to prosecution. Municipal wastewater treatment plants operate under Certificates of Approval (C of A) issued by the Ontario Ministry of Environment. Failure to comply with the conditions of a C of A could result in prosecution under the *Ontario Water Resources Act*.

Most by-laws also enact complete bans on particularly problematic pollutants. For example, all of the municipalities surveyed banned discharges of hazardous or radioactive waste, fuel and pesticides. Most municipalities also prohibit landfill leachate due to the high cost and technical problems associated with properly treating it at the treatment plant. However, our survey revealed that some municipalities, including Hamilton and Kingston, do currently allow leachate from municipal and privately-owned landfills to be discharged into the sewer system.

Pollution prevention ...

Pollution prevention, also known as P2, focuses on avoiding the creation of pollutants rather than trying to manage them after they have been created. Environmental protection activities can be seen as a hierarchy of practices with pollution prevention at the top and other methods such as pollution control, remediation and disposal below. The latter are important environmental protection efforts but are not as effective as avoiding the creation of pollution and waste in the first place.

Who pollutes?

Sewer use by-laws regulate discharges from all polluters, large and small. You might be surprised how many everyday businesses are sources of pollutants in our sewer systems:

Dry cleaners:

perchloroethylene, freon, ammonia, peroxides

Photo shops:

mercury, silver, ammonia, cadmium, chromium

Printers:

toluene, VOCs, isopropyl alcohol

Gas stations:

oils, hydrocarbons, various solvents

Pollution prevention has a long and successful history in Ontario. Environment Canada's Pollution Prevention Information Clearinghouse documents dozens of P2 case studies which demonstrate that P2 can be beneficial both environmentally and economically.

Unfortunately, few municipalities have taken full advantage of this tool as part of their sewer use by-laws.

Although all of the municipalities surveyed had some sort of requirement for a waste survey and undertook some form of P2 educational programming, only Toronto *requires* dischargers to prepare and submit pollution prevention plans.

Toronto's by-law requires each facility to submit to the City a complete list of the pollutants that it releases and to provide detailed plans for reducing the amount of pollutants it generates and puts into the sewer system. Failure to submit a P2 Plan is a punishable offence under the Toronto by-law, but failure to comply with the P2 Plan is not. Rather the requirement for a P2 Plan is seen as a powerful educational tool and as evidence of due diligence in meeting the legally enforceable discharge limits of the by-law.

As discussed earlier, several municipalities are now following the City of Toronto's lead in adopting stricter discharge limits for a greater number of pollutants under their sewer use by-laws. Unfortunately, few are following Toronto's lead when it comes to enforcing pollution prevention planning. And the Ministry of Environment's model by-law is also silent on this issue.

It is important that municipalities come to recognize the importance of pollution prevention strategies in protecting their local environment. Their sewer use by-laws are the ideal place for this to happen.

A P2 Success Story ...

Langley Parisian Limited in Hamilton was Canada's first dry cleaning plant to replace equipment that uses perchloroethylene with wet cleaning equipment, achieving total elimination of hazardous solvents from the facility. Process heat, as a cost per garment, was 25% higher for wet cleaning. However, electricity costs were substantially lower as they were offset by replacing the electric water heater with a new gas water heater. Water use was also reduced as cooling water used in the vented drycleaning operation exceeded the water consumed by wet cleaning on a per unit basis.

Case Study: Dental Mercury ...

Few people think of the local dentists' office when they think about major polluters, but when it comes to mercury, that is in fact the case.

Every "silver" dental amalgam filling is composed of 50% mercury, about 1 gram for the typical filling. This mercury gets discharged to the sewer system through the dentists' sink during standard dental procedures such as replacement fillings, crowns, extractions and so on. According to the U.S. group Health Care Without Harm in its 2002 report *Dentist The Menace*, 24.7 tons of mercury was released into municipal sewers in 2001 by Canadian dentists.

The Association of Metropolitan Sewerage Agencies (AMSA) in the U.S. evaluated seven major municipal wastewater treatment plants to determine and quantify sources of mercury coming into these facilities. At all plants, dental uses were identified as "by far" the greatest contributors to the mercury load, accounting on average for 40 percent of the load, more than three times the next largest source.

Within the first eight months of Toronto's sewer use by-law coming into effect, mercury levels flowing in the city's sewers fell by between 40% and 68%.

To address this problem, some municipalities are starting to turn to their sewer use by-laws.

The City of Toronto's by-law, passed in 2000, requires dentists to install amalgam separators in their sinks to capture amalgam for disposal at a hazardous waste facility before it enters the city's sewer system. The by-law also requires dentists to prepare and submit pollution prevention plans for reducing mercury waste. And finally, all dentists must meet a strict new discharge limit for mercury of 0.01 mg/L.

The results after just one year were stunning. Within the first eight months of the by-law coming into effect, mercury levels flowing in Toronto's sewers fell by between 40% and 68%.

Montreal, Calgary and Victoria have enacted by-laws requiring dental amalgam separators and the City of Kingston has adopted Toronto's 0.01 mg/L discharge limit for mercury to its sewer system. But unfortunately, few other Canadian municipalities have followed Toronto's lead.

Toronto's success in reducing mercury in the environment through its sewer use by-law is a testament to the potential impact of this municipal regulatory tool. Through a creative mix of

Addressing Dental Mercury Through Sewer Use By-laws

	Toronto	Guelph	Kingston	Windsor	Hamilton	MOE
Requirement for dental amalgam separators	Yes	No	No	No	No	No
Mercury discharge limit (in mg/L)	0.01	0.1	0.01	0.1	0.1	0.05
Requirement for pollution prevention planning	Yes	No	No	No	No	No

education, pollution prevention and regulation Toronto's sewer use by-law has achieved a phenomenal level of mercury reduction while imposing minimal financial burden on dentists.

Demand a stronger sewer use by-law for your community

Every municipality has the power to enact a strong sewer use by-law that includes all of the components discussed in this report: strict limits on pollutant discharges, mandated pollution prevention and full enforcement and monitoring. The City of Toronto has set the standard with its 2000 by-law. Your community can achieve that standard too. Talk to your local politicians and demand that they enact a strong sewer use by-law to better protect local water quality.

Be an environment-friendly consumer

You can make a difference with the products and services that you purchase. Ask your dentist if they have installed a dental amalgam separator. Patronize a service station that recycles waste oil. Wash your car at a local car wash that recycles its greywater and that uses non-toxic cleaners. Reward those businesses who are making a difference for the environment.

Clean up your own act

Toxic substances don't just enter our sewers from local businesses and industries. Your home is a polluter too! Some municipal sewer use by-laws apply to the residential sector, too. You should make your home by-law compliant. Use phosphate-free detergents. Bring hazardous waste like paint thinner and batteries to your local hazardous waste depot. Keep your lawn and garden pesticide-free. Don't dump pharmaceutical products down the toilet. Clean water starts with you!

Resources

- View municipal sewer use by-laws from across Canada using the Canadian Sewer Bylaw Directory CD-ROM by Envision Compliance (www.envisioncompliance.com)
- Get information on successful pollution prevention projects from Environment Canada's Canadian Pollution Prevention Information Clearinghouse (www.ec.gc.ca/cppic)
- Find out who is discharging pollutants in your community using the Pollution Watch on-line, searchable database (www.pollutionwatch.org).
- Stay on top of the latest water news and information by joining the free H₂info list serv (www.H2info.org).

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