



**STAFF REPORT
ACTION REQUIRED**

**Sewers By-law Pollution Prevention (P2) Program and
Hexavalent Chromium Stakeholder Update**

Date:	November 5, 2013
To:	Public Works and Infrastructure Committee
From:	General Manager, Toronto Water
Wards:	All
Reference Number:	P:\2013\Cluster B\TW\pw13022

SUMMARY

This report provides the summary of the successes, challenges, and proposed future direction of the Pollution Prevention ("P2") program under Municipal Code Chapter 681-Sewers (the "Sewers By-law") as requested by City Council.

The report recommends amendments to the P2 Planning process and submission requirements.

The report also recommends inclusion of hexavalent chromium in the list of subject pollutants for P2 Planning and Reporting, and provides a summary of the stakeholder consultation in connection with that recommendation.

RECOMMENDATIONS

The General Manager, Toronto Water, recommends that:

1. City Council amend Municipal Code Chapter 681-Sewers substantially in accordance with the draft By-law attached as Appendix "A" to this report.
2. City Council direct that stakeholder consultations be conducted throughout 2014 regarding the proposed changes to the Pollution Prevention Program in relation to the:
 - a. Creation of a subject pollutant threshold reporting list.
 - b. Proposed changes to dental office Pollution Prevention submission requirements.

- c. Addition of a Best Management Practice for restaurants with the requirement to adhere to the Canadian Standard Association's B481 Standard for grease interceptor maintenance in the Sewers By-law.
 - d. Addition of a new Best Management Practice for the automotive refinishing sector.
 - e. Addition of a new Best Management Practice for mobile washing business operations (including vehicle washing, graffiti removal power washing, etc).
3. City Council direct staff to report back in late 2015 with suggested recommendations following its stakeholder consultations.

Financial Impact

There are no financial implications to the City as a result of this report.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its April 18, 2012 meeting, the Public Works and Infrastructure Committee ("PWIC") requested from the General Manager of Toronto Water an additional report regarding the administration of the Sewers By-law and also requested the General Manager to report back on additional parameters for P2 planning. The decision and link can be found at: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.PW14.1>

The General Manager of Toronto Water submitted a report titled Sewers By-law Administration – Response to Request for Information at the PWIC on October 11, 2012. City Council adopted the recommendations on November 27, 28, and 29, 2012 with two amendments and authorized staff to consult with the City's water stakeholders on the feasibility of adding of hexavalent chromium as a subject pollutant, under the Sewers By-law for P2 planning purposes and to report back in 2013.

The PWIC also requested that the General Manager, Toronto Water, report back to the Public Works and Infrastructure Committee on: examples of successful P2 reductions since the P2 program started; which sectors have not been successful in implementing P2; and recommendations for improving the success of P2 plans.

The decision and link to the report and appendices can be found at: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.PW18.1>

ISSUE BACKGROUND

Pollution Prevention ("P2") Planning

Mandatory reporting of P2 planning has been a part of the Sewers By-law since 2000. The By-law requires a company to prepare a P2 Plan if it is part of a subject sector or it discharges a subject pollutant in any amount. The purpose of this requirement was to improve the quality of wastewater reaching the wastewater treatment plants thereby protecting the biological treatment process at the plants and removing contaminants that otherwise cannot be fully removed by the treatment plants. The P2 Program is currently based on 38 subject pollutants that include 11 heavy metals and 27 organic compounds.

"Subject pollutant" refers to an element, material or compound that is identified under Appendix 2 of the Sewers By-law which requires a Pollution Prevention plan prepared if discharged to the sewer. A "subject sector" refers to a specific class of businesses – such as chemical manufacturers – that are subject to the Pollution Prevention planning provisions of the Sewers By-law per Appendix 1.

Since 2000, the P2 Program has gone through two cycles of P2 planning and each cycle is six years in length. As part of the six-year cycle, P2 plan summaries are also required to be submitted every two years by those who have prepared a P2 plan. As the Program progressed, a number of changes to the program were made such as: including Best Management Practices for the Automotive Repair, Gas Station, Vehicle Wash, and Photo Finishing sectors in lieu of a P2 Plan, reducing the general P2 plan template form from 30 pages to 10 pages in length and creating specific subject sector P2 plan forms.

During the first four years of implementation, the City of Toronto's P2 initiative received the following three awards for its innovative By-law:

- Ontario Ministry of Environment 2000 Toronto and Region Remedial Action Plan Award of Excellence;
- Federation of Canadian Municipalities 2001 Sustainable Community Award in the wastewater category; and
- Canadian Council of Ministers of the Environment 2002 P2 Award.

Toronto Water's Environmental Monitoring & Protection Unit oversees the P2 Program.

Hexavalent Chromium

At its meeting of November 27, 2012, City Council authorized staff to consult with the City's water stakeholders on the feasibility of adding of hexavalent chromium as a subject pollutant, under the Sewers By-law for P2 planning and reporting purposes and report back in 2013. The result of the stakeholder consultation on hexavalent chromium is also discussed in this report in the Comments section.

Hexavalent chromium is a recognized carcinogen. Because of its toxicity, it is important to flag hexavalent chromium for reduction and/or elimination from wastewater entering Toronto's sewers and wastewater treatment facilities. The addition of hexavalent

chromium as a subject pollutant will help ensure companies are properly monitoring and treating this pollutant.

COMMENTS

P2 Program Overview

Pollutants discharged to the sewers that cannot be fully removed by the wastewater treatment process may impact aquatic health and the environment. In order to protect the aquatic environments, public health and safety, sewage works, wastewater treatment processes and to control biosolids quality, Federal and Provincial governments have regulations that limit the quality and quantity of substances of concern discharged into the environment via the municipal sewer systems. As a result, municipalities have By-laws that control the quality and quantity of substances discharged into their sanitary and storm water sewer systems by waste generators or “point sources” within their jurisdictions.

In 1998, the former Municipality of Metropolitan Toronto and its six area municipalities amalgamated to form the City of Toronto. With the amalgamation, there was a need to harmonize the seven individual Sewers By-laws of the former municipalities into a uniform By-law for the new City of Toronto. A draft of the new Toronto Sewers By-law was completed and released for public consultation in May 1999.

On July 6, 2000, Toronto City Council enacted the new Sewers By-law. A key objective of the By-law is for businesses to identify ways of reducing and/or eliminating pollutants, at the source through Pollution Prevention.

The City of Toronto was the first municipality in Canada to include mandatory reporting of pollution prevention planning in its By-law. The Sewers By-law requires that every Industrial, Commercial, and Institutional ("ICI") facility that is part of a subject sector or discharges a subject pollutant in any amount prepare a P2 Plan and submit the P2 Plan summary to the City. The program mandated in 2000 was phased in over a two-year period to give various sectors time to prepare the plan and for City staff to manage the workload.

A P2 Plan covering a six-year period was to be prepared by the due date specified in the By-law and an update on the progress of the P2 Plan was required to be submitted every two years.

The initial focus was on the metal finishing sector and other sectors were introduced and needed to complete the P2 Plan in a one-year period.

Every industrial sector that required P2 planning was provided with training delivered by Toronto Water in collaboration with industry associations, Environment Canada, and Canadian Centre for Pollution Prevention.

The list of subject pollutants for P2 Planning consists of 11 heavy metals from the Ministry of the Environment's Guidelines for the Utilization of Biosolids on Agricultural Lands and 27 toxic organics from Tier I and Tier II substances of the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem.

A comprehensive description of P2 Program successes are included in Appendix B of this report, including reduced metal concentrations and other pollutants, and advancements made at an industry sector level.

The By-law requires businesses to prepare and submit a P2 Plan but the implementation of the P2 Plan is not mandated in the By-law. Implementation was kept voluntary at the advice of the City's Legal Services in 2000.

The issue of mandatory implementation of P2 Plans was reviewed by the Auditor General's Office leading to a recommendation in 2008 to Toronto Water. The Auditor General recommended that, "The General Manager, Toronto Water, in consultation with the City Legal Division, reassess the City's authority to enforce the implementation of pollution prevention plans. Should it be determined that no such authority exists, the General Manager consider whether seeking such authority is necessary."

In 2012, the City's Legal Division concluded that the City has authority to enforce the implementation of P2 Plans; however, it is unlikely to be an effective mechanism in reducing pollution as industry would limit their planned actions for reductions. This is explained in greater detail beginning in item 7 of the following report accepted by City Council at its November 27 to 29, 2012 meeting:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.PW18.1>

It is important to note that implementation of a P2 Plan does not necessarily mean compliance with the Sewers By-law pollutant limits will be achieved; rather it is a step in the process to achieving compliance.

P2 Program Challenges

In the initial stages of the P2 Program it was recognized that preparation of a P2 Plan as required by the City at that time was very challenging for certain commercial sectors such as Automotive Repair, Vehicle Wash, Fueling Stations, and Photo Finishing primarily due to lack of resources, good technical knowledge and products prepared and sold to these specific sectors. City council then allowed Best Management Practices (BMPs) into the P2 Program. As noted earlier in the report, the City developed BMPs for automotive sectors and these were added to the By-law in 2005. A BMP for Photo Finishing operations was added in 2007.

A BMP is a set of practices and procedures of Do's and Don'ts that will give the same benefits of pollution reduction to small commercial facilities that a P2 Plan will give to large industrial facilities. It is laid out in a simple language that a non-technical person will understand and will be able to implement.

One of the challenges for small and medium sized businesses in Toronto is the required support of a technical and/or financial nature. Until recently a not-for-profit sustainability organization was funded by multi levels of government, including Toronto at one point, and was assisting these businesses in preparing P2 Plans through prequalified sector specific P2 consultants. With the lack of such funding, this resource is no longer available to small businesses which will likely result in poorer quality P2 Plans.

Future Direction of the P2 Program

After 13 years of experience with the P2 Program, Toronto Water recommends seven areas for improvement to the P2 Program. Toronto Water is recommending that five of the seven proposed areas for improvement undergo stakeholder consultations throughout 2014.

(i) Subject Pollutant threshold

The Sewers By-law requires every ICI facility discharging "any amount" of subject pollutant to submit a P2 Plan. Any amount means literally anything over zero milligrams per Liter (0 mg/L) and not practical to achieve meaningful action by businesses. It technically requires an industry with minute or very low concentrations of subject pollutants to prepare a P2 Plan. It is recommended, that stakeholder consultation, occur in 2014 on this topic to create a table with reporting threshold limits for each subject pollutant. The limits should be reasonable to achieve meaningful reductions by the industries regulated.

(ii) Dental Clinic P2 Plan submission

The central Pollution Prevention action for dental clinics is the installation and maintenance of a dental amalgam separator and best handling practices of other biomedical wastes. Toronto Water has observed that a plan for dental clinics will not change over the course of time. Therefore, the only way to ensure compliance with the maintenance of the amalgam separator is to have dental clinics submit proof of annual maintenance and not a regular submission of a P2 plan.

Toronto Water recommends holding stakeholder consultations to change the reporting requirement for dental clinics whereby only one plan is submitted for a dental operation with the requirement that annual submission of amalgam separator maintenance invoices be provided to Toronto Water via electronic format. A new P2 Plan will only be needed if a dentist moves to a new location or another dentist moves into an existing location.

(iii) Restaurants and Grease Issues:

Grease blockage of sewer lines causes sewage backup into basements, businesses, and the natural environment. The resulting cost of business closures, public health, clean-up, and maintenance of sewer lines makes prevention of grease from entering the sewers of utmost importance and falls under the philosophy of a P2 Program.

The Sewers By-law currently requires food premises where food is cooked, processed or prepared to install and maintain grease interceptors. The installation is also governed by the Ontario Building Code; however, there is no regulatory guideline for maintenance of grease interceptors. By referring to the Canadian Standard Association's (CSA) B481-Grease Interceptors Standard, Toronto Water and food premises will have a guideline that is clear. The CSA's B481 has been adopted by Canadian Council of Ministers of the Environment's Model Sewer Use By-law for Canadian municipalities to use as a guide. It is recommended that Toronto Water hold a stakeholder consultation in 2014 on the following:

- Creation of a BMP for restaurants and food premises;
- Referencing the CSA's B481-Grease Interceptors Standard into the Sewers By-law and the BMP for restaurants and food premises with grease interceptors that are less than 100 gallons.

(iv) Best Management Practices ("BMP") for Automotive Refinishing Sector.

Currently, the Sewers By-law allows for a BMP for vehicle carwash operations, repairs, and gas stations but none for automotive refinishing. An automotive refinishing business main line of work is to fix or replace body parts and painting of vehicles. They also wash vehicles and perform general automotive repairs. As the work method is similar across the sector, this sector can benefit from a BMP particularly since it has no control over the paint component used but rather the cleaning operations and application of the paint.

(v) Creating and adding BMP for mobile washing operations.

Mobile washers typically wash vehicles or equipment at the customer's site outdoors. They also wash carpets, and buildings. While it is not a subject sector under the P2 Program, this sector has been on Toronto Water's horizon due to illegal hook-ups to fire hydrants and wastewater discharge to the storm sewers. Toronto Water has conducted a survey of mobile washers in the GTA informing them of Toronto's By-laws and soliciting comments. Generally, the comments cited were about the difficulty in legally obtaining water away from their base and lack of understanding a violation is occurring.

The wastewater from mobile washer operation may contain detergents, paints, oil, volatile organic compounds, metals and dirt. These wastewaters are most often not contained and enter the storm sewer system.

It is recommended that Toronto Water hold public consultation in 2014 to create new BMPs for mobile washing operations to formally regulate this sector.

(vi) Simplify Administration: Reduce the current two P2 Updates into one:

After a P2 Plan submission to the City, subject sector industries are required to submit P2 updates in the second and fourth year and another P2 Plan by the end of the sixth year. This is known as plan summary and the submission requirement does not correspond

with the P2 Plan's 3-year and 6-year reduction targets. Changing the P2 Update requirement submission to the third year only will correspond with the P2 Plan targets of 3-year and 6-year. This would also allow the City to assess the actual reductions with the targets set for the same time period; this will also reduce costs and administrative burdens to the City and to companies. Amendments are recommended to section 5 of the By-law to reflect the changes as outlined in Appendix A.

(vii) Add a clause to require vehicle wash facilities to install sediment interceptors:

The Ontario Building Code requires premises which discharge sand, grit or similar materials to install an interceptor designed for the purpose of intercepting such discharges. Currently, the Sewers By-law only states that premises that discharge sand, grit or similar material to take all necessary measures to ensure that such sediment is prevented from entering the drain or sewer but it does not state the requirement for sediment interceptors (refer to Appendix A).

To be consistent with the Ontario Building Code, it is proposed to add a clause in the By-law that would require the installation of sediment interceptors.

Hexavalent Chromium: Summary of stakeholder consultation

Hexavalent chromium is a part of the Priority Substances List published by Environment Canada. The discharge limit in the Sewers By-law for hexavalent chromium is 2.0 mg/L; however, hexavalent chromium is not listed as a specific subject pollutant. Instead, total chromium is listed as a subject pollutant which encompasses all states of chromium. Total chromium is the sum of trivalent and hexavalent chromium states and has a discharge limit of 4 mg/L in the Sewers By-law.

Trivalent chromium is naturally occurring and is essential for good health. The normal intake from eating foods that are high in natural chromium is 70-80 micrograms per day and is considered safe. Some food processing facilities have demonstrated total chromium at the 0.1 mg/L levels from Toronto Water's sampling. This is expected as it is naturally occurring in food.

Hexavalent chromium, however, does not occur naturally, but is produced by certain industrial processes. It is the most toxic form of chromium – a carcinogen - and is shown to cause lung cancer when workers are exposed to high air levels for long time periods. Because of its toxicity, it is important to flag hexavalent chromium for reduction and/or elimination from wastewater entering Toronto's sewers and wastewater treatment facilities to protect City employees.

Toronto Water has been considering adding hexavalent chromium to the list of subject pollutants requiring a Pollution Prevention Plan under the Sewers By-law in light of sampling data it has observed related to this substance. About 70 facilities in Toronto were found to have total chromium results of 0.1 mg/L or greater and some of these industries that use hexavalent chromium would be impacted from the addition of hexavalent chromium as a subject pollutant. It is expected that adding hexavalent

chromium as a subject pollutant will have minimal impact to local industries as most of these facilities already have P2 Plans for total chromium.

As noted above, the benefit of adding hexavalent chromium as a subject pollutant for P2 planning purposes is to focus a company's attention on reducing and/or eliminating hexavalent chromium and to protect City employees working in the sewers from hexavalent chromium gases.

As directed by the Council, Toronto Water held stakeholder consultation meetings regarding the possible addition of hexavalent chromium as a subject pollutant, under the Sewers By-law for Pollution Prevention Planning purposes in May 2013. Specifically, three information sessions were held. Invitations were sent to all companies classified under the metal finishing industry as well as any other companies that discharged total chromium of greater than 0.1 mg/L in 2011 and 2012.

The following groups and associations were also invited to attend:

- Canadian Association for Surface Finishing (CASF)
- Community Awareness and Emergency Response (CAER)
- Ontario Ministry of the Environment (MOE)
- Toronto Industry Network (TIN)
- Pollution Probe
- Toronto Environmental Alliance
- Great Lakes St. Lawrence Cities Initiatives
- Safe Sewage Committee and,
- Environmental Defence

The purpose of the sessions was to provide affected stakeholders with background information and discuss the possibility of adding hexavalent chromium to the City's P2 Planning. These sessions also provided an opportunity for stakeholders to learn about the common wastewater treatment processes, and pollution prevention initiatives in the metal finishing industry and those specific to hexavalent chromium.

During the round-table discussion, stakeholders were asked to provide their perspectives and comments on the topic. The following are the summaries of these accounts:

- The Ontario Ministry of the Environment commented that many industries have phased out the use of hexavalent chromium.
- A consultant supported the addition of hexavalent chromium and stated that P2 Planning is good business due to cost savings, business risk reductions and gaining competitive advantages. However, businesses might encounter a different customer perspective.

- A manufacturer stated that they do not have a problem with the addition since they are already required to report for hexavalent chromium under the Ontario Toxics Reduction Act and have separated it from total chromium in their P2 Planning.
- A metal finisher commented that the addition of reporting on hexavalent chromium in a P2 Plan might result in a cost increase due to sample analysis and the material used in production is often dictated by customer demands.

It should be noted that four companies were not interested in attending the sessions as they indicated in their response that they have either eliminated or never used hexavalent chromium. Eleven other companies did not have comments and attended the sessions for information purposes.

After the information sessions, four stakeholders, all metal finishers, submitted written comments, summarized below:

- Hexavalent chromium reporting is already required by other legislations such as the Ontario Provincial Toxics Reduction Act, and therefore it is appropriate for P2 planning as well.
- A company stated it does not use hexavalent chromium in process; however, they believe it is important that facilities do not contaminate the drinking water system and Lake Ontario.
- One company stated it stands neutral on the addition. However, concerns were expressed over the proposal including: addition would increase the cost of effluent monitoring; their customers may not be satisfied with non hexavalent chromium substitution; and that it might be redundant as other legislations have already included this parameter. They would like the City to provide information on how to monitor hexavalent chromium in the mg/L level so they could better determine the cost for sample analysis.
- Only one metal finisher did not respond positively to the addition of hexavalent chromium. The company does not see any benefits, only additional cost to electroplaters. They stated that in 2000 when their facility addressed the initial P2 process, they were targeting hexavalent chromium on the onset while most platers at that time used only hexavalent chromium and did not include it in P2 Planning.

Since then, the company has converted to trivalent chromium wherever possible and continued to use hexavalent chromium only for customers that demand it. They also indicated that under the Restriction of Hazardous Substances Directive, platers are forced to eliminate hexavalent chrome content in most products. The company asked that if the addition of hexavalent chromium to P2 planning is mandatory, they would like an exemption as they have addressed the issue over the last 13 years.

Based on the feedback and comments received to date, five out of thirty-three responded stakeholders are in favour of adding hexavalent chromium to P2 Planning. They agree with the potential environmental benefits and that other existing legislations have already included this parameter. The addition would place Toronto in line with other legislations such as the Provincial Toxics Reduction Act and Federal National Pollutant Release Inventory (NPRI) in terms of reporting parameter requirements.

Twenty-seven of thirty-three responded stakeholders are neutral as they do not use or have eliminated hexavalent chromium from their production and are unlikely to be impacted by the addition. One out the of thirty-three responded stakeholders expressed concerns over possible increase in effluent monitoring costs, redundancy in reporting and customer demand for hexavalent chromium products.

It is important to note that adding hexavalent chromium as a subject pollutant does not ban its usage by companies. The proposed requirement of P2 Planning is strictly in reporting the quantity of hexavalent chromium discharging into the sewers and plan for reduction. The affected stakeholders are already reporting total chromium and the addition of hexavalent chromium would help to ensure that the toxic hexavalent chromium is reduced to the less toxic trivalent state prior to secondary wastewater treatment and protect City sewer workers.

The Sewers By-law allows new businesses to submit P2 Plans within twelve months from commencement of operation. It is recommended that we allow businesses twelve months from the time the hexavalent chromium is added to the By-law to submit a Plan. The recommended date for P2 Plan submission for hexavalent chromium is December 31, 2014.

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ATTACHMENTS

Appendix A: Draft Amendments to Municipal Code Chapter 681 - Sewers
Appendix B: Pollution Prevention (P2) Program Successes