GUIDELINES FOR COMPLETING A POLLUTION PREVENTION (P2) PLAN

Note:

1. The following guidelines will assist industries in completing and submitting the pollution prevention plan as required.
2. Information marked by * is not mandatory by the City of Toronto Municipal Code Chapter 681. They are requested as data/information to complete this Pollution Prevention Plan.
3. The spreadsheet can be expanded with rows to list all applicable records (e.g. subject pollutants, pollution generation processes, input materials that contain subject pollutants, etc.). Attach additional sheets if space is not enough to include all the information.
4. Refer to City of Toronto Municipal Code Chapter 681 for reference of legal requirements.

1.1	**FACILITY INFORMATION**
1.1.1	Name of the facility for which the Pollution Prevention (P2) Plan is being prepared.
1.1.2	Full legal name of the main corporation that owns the facility.
1.1.3	Address of the facility for which the Pollution Prevention (P2) Plan is being prepared.
1.1.4	Mailing address of the facility if different from facility address.
1.1.5	North American Industrial Classification System (NAICS) Number: Appendix 1 in the City of Toronto Municipal Code, Chapter 681 lists the numbers and industry descriptions. If the industry is not listed in Appendix 1, find the number and description from NAICS sources available (e.g. Statistics Canada website).
1.1.6	If the industry generates wastes that fall within the scope of Regulation 347 of Ontario's Environmental Protection Act, the waste generator must register through the Ministry of the Environment and Climate Change (MOECC) HWIN System and have an assigned Waste Generator Number. This information is not mandatory by the City of Toronto Municipal Code, Chapter 681. It is requested for information purposes in this document.
1.2	**BUSINESS CONTACT INFORMATION**
1.2.1	The contact information of the senior management official, which includes name, position/title, business telephone number, business fax number and business email address. Normally this should be the most senior management person at the facility.
1.2.2	The contact information of an alternate contact person (if applicable), which includes name, position/title, business telephone number, business fax number and business email address.
1.3	**POLICY OF ENVIRONMENTAL MANAGEMENT**
	A. It is essential to the success of a Pollution Prevention (P2) Program that the senior management of the facility is committed to improving the corporation's environmental performance by reducing or eliminating the generation of subject pollutants at the source. The policy statement should state why a Pollution Prevention Program is being established, what is to be accomplished in qualitative terms, and who will do it. The policy may refer to your organization's involvement with other environmental initiatives such as ISO 14001, energy and water conservation, environmental management systems and initiatives to reduce hazardous wastes.

	B. If applicable, state/attach the organization's environmental policy. Attach separate sheet if more space is needed. A pre-printed environmental policy can be attached to the end of the Pollution Prevention Plan for submission.
2	**REVIEW OF PREVIOUS POLLUTION PREVENTION PLAN AND PLAN SCOPE**
2.1	**Subject pollutants** identified in both previous and current reporting periods. Table 3 of the City of Toronto Municipal Code, Chapter 681 lists all the subject pollutants that shall be reported in a Pollution Prevention (P2) Plan, which include **12 heavy metals** (i.e. arsenic, cadmium, cobalt, chromium, copper, hexavalent chromium, mercury, molybdenum, nickel, lead, selenium and zinc) and **21 organic substances** (i.e. benzene, chloroform, 1,2-dichlorobenzene, 1,4-dichloroethylene, cis-1,2-dichloroethylene, trans-1,3-dichloropropylene, ethyl benzene, methylene chloride, 1,1,2,2-tetrachloroethane, tetrachloroethylene, toluene, trichloroethylene, total xylene, di-n-butyl phthalate, bis (2-ethylhexyl) phthalate, nonylphenols, nonylphenols ethoxylates, PCBs, 3,3'-dichlorobenzidine, pentachlorophenol and total PAHs).
2.2	Was the subject pollutant identified in the previous reporting period (i.e. 2007 - 2013)? If yes, click the checkbox to select.
2.3	Or, is the subject pollutant identified in the current reporting period (i.e. 2013 - 2019)? If yes, click the checkbox to select.
2.4	Process names that generated subject pollutant (e.g. Electroless Copper Plating). Also briefly describe the process. Do not include any proprietary names. Give a generic description. A process may include all operations in the process (e.g. a zinc electroplating process can include all cleaning, rinsing, and plating operations). If there is more than one process for the particular subject pollutant, they should all be listed. If required, attach a separate sheet.
2.5	Was this subject pollutant determined for reduction in previous reporting period (i.e. 2007 - 2013)?
2.6	% of reduction target set in previous reporting period (i.e. 2007 - 2013).
2.7	% of reduction actually achieved by the end of the previous reporting (i.e. 2013).
2.8	Was the reduction determined in the previous reporting period (i.e 2007 - 2013) continued or is this a new reduction in the current reporting period (i.e. 2013 - 2019)?
2.9	Have P2 options been identified for implementation in this reporting?
3.1	**INVENTORY OF SUBJECT POLLUTANTS - INPUT**
	A. To reduce or eliminate the generation of subject pollutants, it is important that current discharge (through air emissions, sewage and/or disposed/recycled wastes) be qualified and quantified so that opportunities for pollution prevention may be determined. All waste streams that contain subject pollutants should be identified and evaluated. **B.** The mass balance in the plan is for “Facility Level” and not “Process Level”. This mass balance can assist in identifying the targets and their potential reductions. A process level material balance is required in working out the details of generating pollution prevention options.
3.1.1	How to calculate input amount of subject pollutants - see notes in the spreadsheet
3.1.2.1	Input sources/materials that contain the subject pollutant. If possible, list each material. If multiple similar materials/chemicals contribute to one source, they can be consolidated as one source. All the sources/materials should be listed and grouped under the particular subject pollutant. Expand the spreadsheet if more space is needed. When expanding, copy the formula provided in the cells for calculations.
3.1.2.2	Quantity of input sources/materials containing subject pollutant that is purchased based on a recent 12-month period.

3.1.2.3	Inventory of input sources/material containing subject pollutant, which is the difference of starting inventory minus ending inventory based on a 12-month period.
3.1.2.4	Sum of purchased quantity and inventory input of the input material/resource based on a 12-month period.
3.1.2.5	Average concentration of input sources/materials containing subject pollutant, based on a recent 12-month period. If the concentration is not known, an analysis may be required to get the information.
3.1.2.6	The total of EACH input sources/materials containing subject pollutant by multiplying 3.1.2.4 by 3.1.2.5.
3.1.2.7	The total input of a subject pollutant is the sum of all input sources/materials containing subject pollutant, hence the sum of all sub totals in 3.1.2.6.
3.2	**INVENTORY OF SUBJECT POLLUTANTS - OUTPUT**
3.2.1	How to calculate output amount of subject pollutants - see notes in the spreadsheet
3.2.2.1	Subject pollutant into manufactured products, in kilograms.
3.2.2.2	If subject pollutant is released to the air from the facility, for a true material balance, it is necessary to know the amount discharged to other media. Thus to determine the quantity of subject pollutant released into the air, it should be calculated by the cubic metres per year of air emission discharged from the facility, multiplying the average concentration of the subject pollutant in the emitted air emission. If this figure cannot be determined from known average concentration values, then sampling and analysis may be required.
3.2.2.3	If subject pollutant is released into offsite disposed sludge/wastes (solids, liquids, etc.), it is necessary to know the amount disposed offsite. Thus, to determine the quantity of subject pollutants disposed in sludge/wastes, it should be calculated by litres/kilograms of sludge/wastes, multiplying the concentration of the subject pollutant in the sludge/wastes. The quantity (litres or kilograms) of disposed sludge/wastes can be calculated with the waste disposal reporting information through MOECC HWIN System, and/or internal other waste management records. If the average concentration of the subject pollutant in sludge is not known, it should be determined by collecting and analyzing sufficient samples to generate reliable data.
3.2.2.4	If subject pollutant and/or input materials are recycled/re-used offsite, it is necessary to know the amount recycled/reused. Thus, to determine the quantity of subject pollutants recycled/reused, may need to calculate both raw materials reused and waste recycled/reused.
3.2.2.5	The quantity of subject pollutant should be calculated if wastes that are not covered elsewhere are disposed/ treated/discharged.
3.2.2.6	The volume (in litres) of wastewater discharged into the sanitary or combined sewer from the facility's final discharge point(s) should be determined. If the facility doesn't have a flow meter to measure the discharge, volume can normally be estimated by finding out the water intake to the facility (i.e. sum up the monthly volume on the water bills charged by the City of Toronto) and subtracting this from the amount of water lost to evaporation, and to products (if necessary, with appropriate conversion factor).
3.2.2.7	The average concentration (milligrams per litre) of the subject pollutant from the facility's final sanitary or combined sewer discharge point(s). If the average concentration of the subject pollutant is not known, it should be determined by collecting and analyzing sufficient sewer monitoring and testing samples to generate reliable data.
3.2.2.8	Subject pollutant discharged into the sanitary or combined sewer, presented in kilograms, by multiplying 3.2.2.6 (if necessary, with appropriate conversion factor) by 3.2.2.7.

3.2.2.9	Quantity of subject pollutant generated as by-products due to chemical reactions in operational processes, if applicable. This means subject pollutant does not exist in any input materials, but when mixed in the operational processes, subject pollutant is generated and exists in wastewater discharge due to the chemical reactions from process to process.
3.2.2.10	Quantity of subject pollutant destroyed onsite such as incineration, chemical break-down, etc., if applicable.
3.2.2.11	Total output = sum from 3.2.2.1 to 3.2.2.5 and from 3.2.2.8 to 3.2.2.10.
3.3	**INVENTORY OF SUBJECT POLLUTANTS - MASS BALANCE**
3.3.1	How to calculate mass balance of subject pollutants - see notes in the spreadsheet
3.3.2	See 3.1.2.7 - Inventory of Subject Pollutants - Input
3.3.3	See 3.2.2.1 - Inventory of Subject Pollutants - Output
3.3.4	**Non-Productive Output (NPO)**
3.3.4.1	See 3.2.2.2 - Inventory of Subject Pollutants – Output
3.3.4.2	See 3.2.2.3 - Inventory of Subject Pollutants - Output
3.3.4.3	See 3.2.2.4 - Inventory of Subject Pollutants - Output
3.3.4.4	See 3.2.2.5 - Inventory of Subject Pollutants - Output
3.3.4.5	See 3.2.2.8 - Inventory of Subject Pollutants – Output
3.3.4.6	See 3.2.2.9 - Inventory of Subject Pollutants - Output
3.3.4.7	See 3.2.2.10 - Inventory of Subject Pollutants – Output
3.3.4.8	Sub total of non-productive output of the subject pollutant (sum from 3.3.4.1 to 3.3.4.7), which has not ended up in any products, but is discharged, disposed, reused, recycled and destroyed.
3.3.4.9	Non Productive Output (NPO) divided by total input is the NPO Ratio.
3.3.5	The difference between total input and output of the subject pollutant, which is the total input minus output into products and non-productive output (NPO).
4	**CURRENT WASTE MANAGEMENT PRACTICES**
4.1	See 2.4 - Pollution Generating Process Identified.
4.2	For each subject pollutant and pollution generating process identified, if applicable, provide details of currently implemented pollution prevention practices, which can be, but not limited to, avoidance and elimination of polluting products or materials through material substitution and product reformulation; reduction in the use of polluting products or materials; elimination and reduction of generating polluting by-products; increasing efficiency of equipment and material usage through process change, equipment modification and improving operation performance; and recycling and reuse of polluting materials, wastes and by-products.
4.3	Provide details of **onsite** waste treatment including physical/chemical reduction, incineration, treatment and break-down, etc. Also if applicable, details of how subject pollutant is reclaimed and reused back into onsite production processes.
4.4	Provide details of **offsite** waste recycling, reuse and resale, which can be recyclable wastes, scrap raw materials and inventories, both in the same industry and different industries.
4.5	Provide details of **offsite** waste treatment and disposal including all registered/regulated wastes (i.e. disposed wastes that are reported to MOECC through HWIN System).
5	**POLLUTION PREVENTION OPPORTUNITY IDENTIFICATION**
5.1	Among the process(es) that generated subject pollutant identified in the Pollution Prevention (P2) Scope (2.4), if they are targed for pollution reduction, re-enter here and provide details that may include all operations in the process (e.g. a zinc electroplating process can include all cleaning, rinsing, and plating operations). If required, attach a separate sheet.
5.2	Determined pollution prevention options and practices, which can be, but not limited to, avoidance and elimination of polluting products or materials through

	material substitution and product reformulation; reduction in the use of polluting products or materials; elimination and reduction of generating polluting by-products; increasing efficiency of equipment and material usage through process change, equipment modification and improving operation performance; and recycling and reuse of polluting materials, wastes and by-products.
5.3	Target media such as air, water or solid that is targeted for pollution prevention.
5.4	Specify details on how to implement (e.g. how to change product formula, modify specific process/operation to improve efficiency and/or decrease consumption of input of raw materials, water and energy to reduce the production of subject pollutants, etc.).
5.5	Enter the expected/estimated possible reduction (%) of the subject pollutant output through each target media by the end of implementation of all pollution prevention options identified.
6	**IMPLEMENTATION SCHEDULE**
6.1	See 5.2 - Pollution Prevention Options.
6.2	**Implementation Timeline**
6.2.1	Starting date of implementation.
6.2.2	Ending date of implementation.
6.3	**Target of Reduction into Sewer Discharge**
6.3.1	Reduction in percentage (%) of the subject pollutant's discharge into sanitary or combined sewers in the whole third year (i.e. 2016).
6.3.2	Reduction in percentage (%) of the subject pollutant's discharge into sanitary or combined sewers in the whole sixth year (i.e. 2019).
7	**DECLARATION**
	Declaration shall be signed and dated by the senior management official who is responsible for preparing the Pollution Prevention (P2) Plan.