

TOXICS REDUCTION LEGISLATION

The Toxics Reduction Act (TRA) and Regulation introduced by the Ontario Ministry of Environment (MOE) has been law since January 1, 2010. Changes to some time lines and toxics reduction planner qualifications were amended under Regulation 214/11 on July 1, 2011. This newsletter provides an overview of the program requirements.

The TRA applies to mining/processing and manufacturing facilities who employ more than an equivalent of 10 full-time persons and who use or create materials regulated by the National Pollutant Release Inventory (NPRI), and acetone under regulation 127/01. According to the MOE, the purposes of the legislation are to “prevent pollution and protect human health and the environment by reducing the use and creation of toxic substances and to inform Ontarians about toxic substances.”

TRA and Ontario Regulation [455/09](#) sets out requirements for the following:

- Toxic substance accounting
- Toxic substance reduction plans
- Plan summary reports and annual reports
- Toxic substance reduction planners

TOXIC SUBSTANCE ACCOUNTING

Each toxic material has a reporting threshold that aligns with those of NPRI. However, whereas NPRI focuses on reporting emissions and disposals, the TRA also concerns toxics that are used or created in processes and manufactured products.

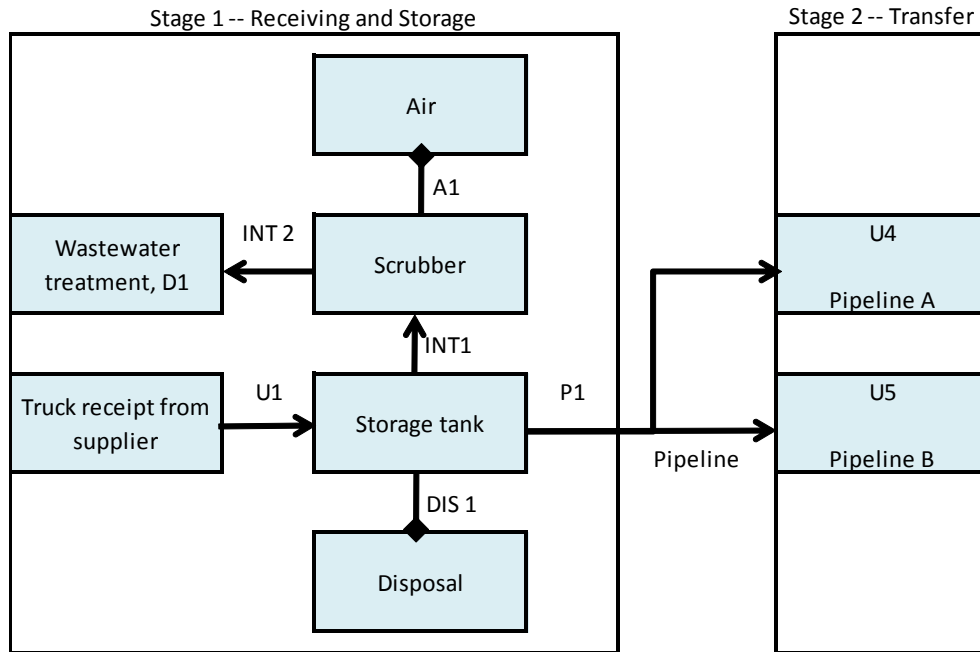
Toxics substance accounting requires considerable detail to document the amount and disposition of the toxic substance in the operation. The regulation specifies the creation of the following records:

1. A description of every stage of the manufacturing operation at the facility that uses or creates the substance and how each stage is divided into processes.
2. Process flow diagrams that give a visual representation of the movement of the substance through each process, including how it enters, whether it is created, destroyed or transformed, how it leaves, and what happens to it after it leaves the process, and showing the relationships between the processes.
3. If the sum of the quantities of the substance that are used and created in a process does not approximately equal the sum of the quantities of the substance that are destroyed, transformed and leave the process, an explanation is required.
4. A description of the method or combination of methods used to track and quantify the substance in each process and an explanation of why they were chosen.

Quantification methods cannot be changed from year to year unless required by law or because of a review of the toxic substance reduction plan for the substance. The best available method or combination of methods for tracking and quantifying the substance must be used, taking into consideration the process, industry standards, economic

achievability, legally prescribed methods, and various methods of monitoring, testing, mass balance, emission factors, and engineering estimates.

Prevention and Regulatory Solutions Ltd. uses integrated spreadsheets to create the required accounting records.



Stage 1 Description: HCl 29% liquid is delivered to the site by tanker truck. It is transferred to a 30,000L capacity lined storage tank. The tank has full containment and has a dedicated scrubber, Model xxx, with a scrubbing efficiency of 95%. Material that is out of specification is collected and disposed of by licensed haz waste hauler

Sample Process Map of Toxic Material Stages

Stage 1 -- Receiving and Storage									
I/O Analysis	Label	w/w Conc	Usage kg, or flow kg/hr	# batches or time, hr	Emission factor	Conversion	Total tonne/yr	Method Used	Best Available Method Rationale
U + C	U1	28.9%	22,000	156	1	0.001	992	Receipt records and supplier CoFA	Supplier receipt records
	C	0.0%	0	0	1	0	0	None	
Total U + C							992		
T + D + P + A + L + W + DIS + TR	T	0.0%	0	0	1	0	0	None	
	D1	8.3%	140	8760	1	0.001	102	Lab tests conducted on scrubber water	Test method 1234
	P1	28.9%	2,985,039	1	1	0.001	863	Totalizer from flow meter Model A2343	Annual calibrated meter
	A1	3.1%	2,100	156	0.05	0.001	1	Vapour expelled & removed by scrubber	NPRI data set
	L	0.0%	0	0	0	0	0	None	
	W	0.0%	0	0	0	0	0	None	
	DIS1	28.0%	1,000	6	1	0.001	2	Waste manifest records and lab test results	Official records
	TR	0.0%	0	0	0	0	0	None	
Total T + D + P + A + L + W + DIS + TR							967		
Difference (U + C) - (T + D + P + A + L + W + DIS + TR)									
Is this difference "Approximately equal"?								25	
Explanation if required:									

Sample Quantification of Toxic Material

TOXIC SUBSTANCE REDUCTION PLANS

Toxic substance reduction plans are required to assess manufacturing processes wherever the toxic substances are used. The result is intended to inspire facilities to realize the high cost of using toxic materials and the benefits of switching to options that consume or produce less toxic materials. Plans must address the following:

- General facility information including plant location coordinates
- Statement of intent to reduce use and creation of the toxic substance or reason for not including one
- Objectives and any targets for reducing toxic substance use or creation
- Process flow diagram showing inputs, outputs, all processes and relationships, and descriptions of processes that use or create the toxic substance
- A cost estimate of each material and the toxic substance accounting information
- Description and analysis of at least one of seven options to reduce use and creation, including feasibility analyses. See below for more information.
- Identification of options to be implemented, including steps and timetables
- An estimate of the amount by which use, creation and discharges to air, land or water of the toxic substance will be reduced as a result
- Certification of plan by the highest ranking employee at the facility

OPTIONS

1. Materials or feedstock substitution
2. Product design or reformulation
3. Equipment or process modification
4. Spill and leak prevention
5. On-site reuse or recycling
6. Improved inventory management or purchasing techniques
7. Training or improved operating practices

At least one option must be identified unless an explanation is provided. For each option, the plan identifies the estimated reductions of use, creation, discharge, and containment in the product. The list of options is then pared down to those that are technically feasible. Technically feasible options are then further analyzed for economic feasibility, including any anticipated savings and payback periods. The resulting options are both technically and economically feasible. Implementation of options is not mandatory, but if the manufacturer decides to implement any of the options, then implementation steps and timetables are required. If the manufacturer decides not to implement any of the options, it is declared in the annual reports.

Toxics reduction plans are required to be produced or updated by December 31 of the calendar year that is specified by the regulation. The regulation contains algebraic expressions to describe when plans are reviewed and updated. In general, reviews are required every five years or sooner if significant process changes are made.

PLAN SUMMARY REPORTS AND ANNUAL REPORTS

Following the completion of each toxics reduction plan or review, a summary report is required for the MOE and public. This report includes toxic materials used, facility location, owner/operator, reasons for using the toxic substance, a description of options to be implemented for reduction, estimates and timelines for reductions, and a statement that the summary accurately reflects the current version of the plan.

Each toxic substance also requires annual reports for the MOE and for the public, and are due by June 1 of each year for the previous year's data. The MOE report is generated using the federal [OWNERS](#) database, and requires information for each toxic substance, including facility and personnel, quantities used, created, and contained in product, reduction plans, and steps taken to achieve reduction objectives. The public report requires similar information with less detail, and must be made available to employees, posted on the internet, and provided to the public if requested.

IMPLEMENTATION

TRA legislation is being implemented in two phases. Phase 1 began on January 1, 2010 for facilities that use substances on a priority listing in Table A of the regulation, and required annual reports prepared by June 17, 2011. Phase 1 toxics reduction plans and plan summaries are due on December 31, 2012.

Phase 2 implementation addresses facilities using all other NPRI substances and acetone. Accounting data for these substances must be tracked beginning January 1, 2012 with annual reporting, reduction plans and summaries due in 2013.

TOXIC SUBSTANCE REDUCTION PLANNERS

Toxics reduction plans must be prepared in part by a licenced "Toxic Substance Reduction Planner". The planner must include recommendations and rationale on the plan in order to improve it. Once completed, the planner certifies that it meets the requirements of the legislation.

The planner licensing program will be administered by the MOE. Requirements include payment of a fee, completing a training course, passing an examination, and providing proof of education and operational experience in relevant fields and facilities. These are detailed in [section 27.1](#) of the regulation and outlined below:

- Hold a university degree and have four years of relevant experience, or
- Hold a college diploma and have six years of relevant work experience, or
- Have eight years work experience, with at least two years in each of environmental management and operational activities in a relevant facility

HOW CAN WE HELP?

Prevention and Regulatory Solutions Ltd can apply their significant manufacturing experience to assist with analysis, accounting, and documentation required by this legislation. Qualified personnel will be licenced as Toxic Substance Reduction Planners when the program is made available by the MOE. Please [contact us](#) to learn more, or for assistance in determining how your facility may be impacted.