

National Pollutant Release Inventory (NPRI) – Alternate Thresholds (ATH)

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Part A. Background

Prior to 2000, all substances listed in National Pollutant Release Inventory (NPRI) had common reporting criteria: 10 tonnes manufactured, processed or otherwise used at a concentration of 1% or more, except for by-products. This is referred to as the conventional M, P, O threshold. In addition, a facility would have reported the substance to the NPRI only if the 20,000-hour per year employee threshold was exceeded.

Since that time, two other types of thresholds have been used by NPRI to establish reporting triggers for substances, namely: a release threshold and an activity-based threshold. The release threshold has been used in the case where the substance of concern is primarily incidentally manufactured, for example due to incomplete combustion, and is not a commercial chemical or product. An activity-based trigger is considered where the types of facilities, or activities, or processes associated with the substance are well defined. For example, this particular type of threshold is used for the NPRI listing of dioxins/furans and Hexachlorobenzene (HCB). As well, MPO thresholds at lower quantities than the 10 tonnes have been applied, for example in the case of trace metals. For some types of activities, the 20,000-hour employee threshold has been eliminated. These activities include incineration, wood preservation, terminal operations, and wastewater collection systems.

As of the 2005 reporting year, the NPRI included 323 substances of which 92 substances were listed at an alternate threshold (ATH) instead of the conventional threshold. These substances include: six metals, 17 polycyclic aromatic hydrocarbons (PAHs), dioxins/furans, hexachlorobenzene (HCB), seven Criteria Air Contaminants (CACs), and 60 species of volatile organic compounds (VOCs), (refer to Appendix 1, Table 1).

The requirement to report on these substances at an ATH has been done on a case-by-case basis, taking into account considerations such as whether the substances have been determined to be toxic under the *Canadian Environmental Protection Act 1999* (CEPA 1999), targeted for virtual elimination (Track 1) under the Toxic Substances Management Policy (TSMP), and/or are widely recognized as requiring a lower reporting threshold to capture releases of concern, for harmonization with other jurisdictions, and for international reporting requirements.

Part B: Draft Framework for Listing of Substances with an Alternate Threshold

The Working Group (WG) members of the NPRI and Environment Canada (EC) identified a need to develop a systematic framework with clear selection criteria and processes to identify substances that may require an ATH, and to determine the appropriate reporting threshold. Consequently, EC and WG members have been working on developing an ATH Framework document since 2002. This Framework evolved into a proposal document tabled at the NPRI consultation meeting in September 2004 and at that time, WG members agreed to use the Framework as a working document on an interim basis¹.

The development of a comprehensive ATH framework has become increasingly more important to provide support on the imminent Domestic Substances List (DSL) post-categorization activities. It is also important to review whether the thresholds adopted for specific substances are indeed appropriate and adequate in considering the degree of toxicity of a substance and whether the NPRI data represents sufficient capture of the releases of each substance.

The draft framework includes three categories for consideration of an ATH:

- “Category 1:
 - a. Substances that have been proposed for virtual elimination (VE) under sub-section 65(3) of CEPA 1999, or substances that have been targeted for VE (Track 1 substances) under the TSMP².
 - b. Substances that are considered persistent and bio-accumulative (P and B).
- Category 2: Substances that have been determined to be toxic under CEPA 1999, and where ATH are required, to support the risk management action for these substances
- Category 3: Other substances that merit consideration and are not adequately captured by the conventional 10 tonne MPO threshold.”

Part C: ATH Sub-Group (SG)

While an ATH Sub-Group was established initially in 2002, this Sub-Group was not well utilized. EC indicated that it was developing a new process and while waiting for this, no progress could be made. Additional pressures on establishing an ATH Framework particularly related to post-categorization, resulted in re-convening the ATH Sub-Group (SG) in June 2006. In addition, EC proposed utilizing the air dispersion modeling as one tool to assist in the determination of appropriate reporting thresholds for Category 3 substances as defined in the ATH Framework.

¹ *Draft Framework for Listing of Substances with an Alternate Threshold in the National Pollutant Release Inventory*: http://www.ec.gc.ca/pdb/npri/consultations/2006-2008/ATF_07_e.cfm

² The TSMP is developed by Environment Canada solely as a policy framework and is not prescribed under CEPA.

As a result, the SG was charged with completing the review and refinement of the ATH framework; exploring the merits and limitations of models and other mechanisms (e.g., toxicity data, policy decisions) to establish an ATH; and defining substances of special concern (category 3 substances) that should be considered for an ATH.

Part D. ENGO Position and Recommendations

- ENGOs do not want to see any weakening of current ATHs.
- ENGOs want to see some substances currently on the NPRI at the regular threshold to be put on at an ATH, and to have some substances not currently on the NPRI added at an ATH.
- Overall, the thresholds should be set as related to the degree of hazard, toxicity and environmental fate of each substance.
- While the WG agreed that EC would proceed with a pilot project with MOE to use the substance Thiourea for the “modelling” test, it was with the understanding that it is one tool in the package of tools available for establishing the alternate thresholds in the ATH Framework, and that other substances should be considered as test substances for the modelling technique. ENGOs are highly concerned about the emphasis on modeling and have stated that air dispersion modeling should only be considered in cases where additional relevant information may be obtained by its application.
- For a number of substances, for example, mercury, and substances that are persistent, bioaccumulative and inherently toxic, there should be no threshold, i.e., all releases should be reported no matter how low the amount.
- Currently, where an MPO ATH is adopted, the 1% concentration exemption is reviewed on a case-by-case basis and removed or modified where appropriate. At present, this exemption has been removed for mercury and lowered to 0.1% for other trace metals. The MPO threshold and the accompanying 1% by-product exemption are confusing and may impinge on the level of reporting to the NPRI. This aspect should be examined and compared, for example, with release thresholds.
- The employee threshold is an inhibiting factor, particularly as a number of facilities that do not meet the 20,000-hour employee threshold may well exceed current reporting thresholds. Consideration should be given to removing this threshold for all substances.
- While EC and industry have postulated what would constitute an appropriate desired capture rate (i.e., proportion of releases from facility-based sources that should be reported), the capture rate approach is detrimental in that it disregards cumulative emissions of pollutants in communities and is primarily utilized to respond to industry’s quest to lessen the burden of reporting. Unfortunately this has led to a misconception that a fixed capture rate (e.g., 80%) would suffice. (Refer to Appendix 2, Section 5 of the Draft Framework).
- The SG should also continue its consideration of how best to use the DSL post-categorization information in establishing thresholds.

The lack of progress in this file is alarming, particularly in light of the work involved resulting from post-categorisation and the need to get a workable ATH framework. It is imperative that EC step up to the plate and accelerate efforts to improve the ATH Framework.

Appendix 1 Table 1

Table 1 - Listings of NPRI Substances at Alternate Thresholds				
Substance	Mass Threshold	Conc. Threshold	Units for Reporting	First Year of Reporting³¹
Mercury (and its compounds)	5 kg (M,P,O)	n/a	kg	2000
Cadmium (and its compounds)	5 kg (M,P,O)	0.1%	kg	2002
Arsenic (and its compounds)	50 kg (M,P,O)	0.1%	kg	2002
Lead (and its compounds)	50 kg (M,P,O)	0.1%	kg	2002
Tetraethyl Lead (and its compounds)	50 kg (M,P,O)	0.1%	kg	2002
Hexavalent Chromium Compounds	50 kg (M,P,O)	0.1%	kg	2002
Dioxins/Furans	activity-based and no quantitative threshold	n/a	g TEQ	2000
Hexachlorobenzene	activity-based and no quantitative threshold	n/a	g	2000
17 individual PAHs	incidental manufacture and release, disposal or transfer for recycling of 50 kg total, or any quantity for wood preservation using creosote	n/a	kg	2000
Carbon Monoxide	20 tonnes (air release-based)	n/a	tonnes	2002
Oxides of Nitrogen	20 tonnes (air release-based)	n/a	tonnes	2002
Sulphur Dioxide	20 tonnes (air release-based)	n/a	tonnes	2002
Volatile Organic Compounds	10 tonnes (air release-based)	n/a	tonnes	2002
Total Particulate Matter	20 tonnes (air release-based)	n/a	tonnes	2002
PM ₁₀	0.5 tonnes (air release-based)	n/a	tonnes	2002
PM _{2.5}	0.3 tonnes (air release-based)	n/a	tonnes	2002
60 Speciated VOCs	1 tonne if 10 tonnes air release-based threshold for VOCs (total) has been met	n/a	tonnes	2003

³ Substances like mercury, cadmium, arsenic, lead, and tetraethyl lead have been reported to the NPRI for many years at the conventional thresholds, prior to the threshold changes to become effective since the 2000 or 2002 reporting year

Appendix 2: Draft Framework (Section 5) Selection of Quantitative Levels of ATH

When considering which quantitative ATH level to select for a given substance, both scientific and socio-economic factors should be considered. Harmonization of reporting requirements within Canada and comparability of information across borders are also important considerations.

Where an inventory of releases and disposals is available, an analysis should be conducted to determine the capture rate, i.e. the proportion of releases from facility-based sources, using each ATH quantitative level. In some cases, data may only be available for certain sectors. If release data have been linked to safe ambient levels this analysis should be presented.

The appropriate capture rate may vary depending on:

- The level of environmental concern associated with the substance;
- The characteristics of the substance's use or generation and release by facilities;
- The need to include sources targeted for risk management and other needs;
- The nature of the receiving environment
- Significance to communities.

The threshold should meet reporting needs, while bearing in mind reporting burden. Thresholds should also be harmonized with other similar domestic and international inventory programs, wherever appropriate.

It is important that thresholds for substances determined to be toxic under CEPA 1999, targeted for VE under the TSMP or proposed for VE under CEPA 1999 (Category 1 and 2) support risk management activities. Depending on the bioaccumulation and persistence of the Category 1 substances, general thresholds of 5 kg or 50 kg may be appropriate, but other levels will be considered. Comparability with the U.S. Toxics Release Inventory (TRI) is also a consideration.

Further work is required to interpret Category 3 substances and to develop methodologies for determining acceptable ATHs to Category 3 substances.

CAC thresholds were primarily selected, in 2002, by examining other existing CAC inventories that allowed NPRI to determine the substance-specific threshold at which 90 % of emitting sources would be captured. These thresholds were: 20 tonnes for NO_x (as equivalent NO₂), SO₂, CO and TPM; 10 tonnes for VOCs; 500 kg for PM₁₀ and 300 kg for PM_{2.5}.