

Threshold determination background information

TURA SAB Deliberations on Carbon Nanotubes and Carbon Nanofibers

- **Listing Petition** (*emphasis added*)
 - Petition: With this petition, Clean Water Action and Public Employees for Environmental Responsibility (PEER) ask the Toxic[s] Use Reduction Institute's (TURI's) Administrative Council to add **carbon nanotubes (single-walled and multi-walled) and carbon nanofibers** to the Toxic[s] Use Reduction Act Toxic or Hazardous Substance List and to **lower the reporting threshold to 100g**. We further ask the Administrative Council to **list CNTs and CNFs as higher hazard substances**.
- **TURA background on reporting thresholds**
 - For each listed chemical or chemical category:
 - Standard reporting thresholds follow EPA TRI rules - 25,000 lb/yr manufactured and processed, 10,000 lb/yr otherwise used.
 - PBT annual reporting thresholds follow EPA TRI rules
 - 0.1 grams - dioxin and dioxin-like compounds
 - Other PBTs - 10 lbs (e.g., mercury) or 100 lbs (e.g., lead)
 - Higher Hazard Substances (HHS) - 1000 lb/yr
- **EPA Rationale for lower TRI thresholds**
 - **Effects at low doses/concentrations:** "...reasonably anticipated to cause serious or irreversible chronic human health effects at relatively low doses or ecotoxicity at relatively low concentrations, and thus are considered to have moderately high to high chronic toxicity or high ecotoxicity."
 - **Persistence and bioaccumulation:** "The nature of PBT chemicals indicates that small quantities of such chemicals are of concern, which provides strong support for setting lower reporting thresholds"
 - **Two tiers distinguishing vPvB vs PB:** "...distinction between persistent bioaccumulative toxic chemicals and highly persistent, highly bioaccumulative toxic chemicals" (lower thresholds for vPvB)
 - **Third tier based on small use quantity (dioxins):** "However, this category of chemicals poses unique problems with regard to setting section 313 reporting thresholds because these chemicals are generally produced in extremely small amounts compared to other section 313 chemicals"
 - **Balancing industry burden with public Right to Know:** "...started with the premise that low or very low reporting thresholds may be appropriate for these chemicals based on their persistence and bioaccumulation potentials only. EPA then considered the burden that would be imposed by lower reporting thresholds..." EPA arrived at 0.1 grams/10 lb/100 lb thresholds after considering this balance.
- **Additional Considerations for low reporting thresholds**
 - **TURA follows EPA by only requiring best engineering estimate for quantities:** "...[i]n order to provide the information required under this section, the owner or operator of a facility may use readily available data (including monitoring data) collected pursuant to other provisions of law, or, where such data are not readily available, reasonable estimates of the amounts involved."
 - **Data Precision:** TURA follows EPA by only requiring 2 significant digits of accuracy in reporting, although most facilities provide more precise quantities. For dioxins (the only TRI chemical with a threshold below 10 lb), EPA added this guidance: "Facilities should report for the dioxin and dioxin-like compounds category at a level of precision supported by the accuracy of the underlying data and the estimation techniques on which the estimate is based. However, the smallest quantity that needs to be reported on the Form R for the dioxin and dioxin-like compounds category is 0.0001 grams (i.e., 100 micrograms)..."

Reference Material: Excerpts from EPA TRI documentation

EPA TRI PBT rule: <http://www.gpo.gov/fdsys/pkg/FR-1999-10-29/pdf/99-28169.pdf>

Towards that end, EPA is increasing the utility of TRI to the public by adding a number of chemicals to the section 313 list of toxic chemicals that persist and bioaccumulate in the environment and by lowering the reporting thresholds for a number of toxic chemicals that have these properties. Toxic chemicals that persist and bioaccumulate are of particular concern because they remain in the environment for significant periods of time and concentrate in the organisms exposed to them. EPA believes that the public understands that these PBT chemicals have the the reporting thresholds for PBT chemicals will ensure that the public has important information on the quantities of these chemicals released or otherwise managed as waste, that would not be reported under the 10,000 and 25,000 pound/year thresholds that apply to other toxic chemicals...

... All of the chemicals proposed for addition were found to be **reasonably anticipated to cause serious or irreversible chronic human health effects at relatively low doses or ecotoxicity at relatively low concentrations**, and thus are considered to have **moderately high to high chronic toxicity or high ecotoxicity**.

Because all PBT chemicals persist and bioaccumulate in the environment, they have the potential to pose greater exposure to humans and the environment over a longer period of time (Refs. 75 and 76). **The nature of PBT chemicals indicates that small quantities of such chemicals are of concern, which provides strong support for setting lower reporting thresholds** than the current section 313 thresholds of 10,000 and 25,000 pounds. **For determining the levels at which reporting thresholds should be set for these chemicals, EPA adopted a two tiered approach. EPA made a distinction between persistent bioaccumulative toxic chemicals and highly persistent, highly bioaccumulative toxic chemicals** by proposing to set lower reporting thresholds based on two levels of persistence and bioaccumulation potential. EPA proposed to set a manufacture, process and otherwise use threshold of 100 pounds for PBT chemicals and a threshold of 10 pounds for that subset of PBT chemicals that are highly persistent and highly bioaccumulative toxic chemicals. One exception to this is the reporting threshold for the dioxin and dioxin-like compounds category, see the discussion in Unit IV.D.2.

In determining the appropriate reporting thresholds to propose for PBT chemicals, EPA started with the **premise that low or very low reporting thresholds may be appropriate for these chemicals based on their persistence and bioaccumulation potentials only**. EPA then considered the burden that would be imposed by lower reporting thresholds and the distribution of reporting across covered facilities. Considering the factors described above, in addition to the purposes of EPCRA section 313, EPA proposed to lower the manufacture, process, and otherwise use thresholds to 100 pounds for PBT chemicals and to 10 pounds for that subset of PBT chemicals that are highly persistent and highly bioaccumulative. EPA presented the proposed section 313 reporting thresholds for each of the PBT chemicals considered. For purposes of section 313 reporting, threshold determinations for chemical categories are based on the total of all toxic chemicals in the category (see 40 CFR372.25(d))...

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category of dioxin and dioxin-like compounds are highly persistent and highly bioaccumulative toxic chemicals. **However, this category of chemicals poses unique problems with regard to setting section 313 reporting thresholds because these chemicals are generally produced in extremely small amounts compared to other section 313 chemicals**. In response to EPA's original proposal to add dioxin and dioxin-like compounds, EPA received numerous comments suggesting that the reporting threshold for this category be set at zero. EPA stated its belief that rather than setting a zero reporting threshold it would be better to set a very low threshold that provides facilities with a clear indicator of when they are required to report. EPA proposed a manufacture threshold of 0.1 gram for the category. EPA expressed its intent to develop reporting guidance for industries that may fall within this reporting category...

... The two levels include setting section 313 manufacture, process, and otherwise use thresholds at 100 pounds for PBT chemicals and at **10 pounds for that subset of PBT chemicals that are highly persistent and highly bioaccumulative**. One exception is the dioxin and dioxin-like compounds category. The dioxin and dioxin-like determination required special consideration because these highly persistent and highly bioaccumulative compounds are manufactured in extremely small amounts compared to other section 313 chemicals. In order to capture release and other waste management data, EPA is setting the threshold for the dioxin and dioxin-like compound category at 0.1 gram.

EPA TRI rules - no additional testing required

[i]n order to provide the information required under this section, the owner or operator of a facility may use readily available data (including monitoring data) collected pursuant to other provisions of law, or, where such data are not readily available, reasonable estimates of the amounts involved. Nothing in this section requires the monitoring or measurement of the quantities, concentration, or frequency of any toxic chemical released into the environment beyond that monitoring and measurement required under other provisions of law or regulation

https://ordspub.epa.gov/ords/guideme_ext/f?p=guideme:gd::::gd:dioxin

Section 1.6.1: Data Precision

Facilities should report for the dioxin and dioxin-like compounds category at a level of precision supported by the accuracy of the underlying data and the estimation techniques on which the estimate is based. However, the smallest quantity that needs to be reported on the Form R for the dioxin and dioxin-like compounds category is 0.0001 grams (i.e., 100 micrograms).

Example: If the total quantity for Section 5.2 of the Form R (i.e., stack or point air emissions) is 0.00005 grams or less, then zero can be entered. If the total quantity is between 0.00005 and 0.0001 grams then 0.0001 grams can be entered or the actual number can be entered (e.g., 0.000075).