

Lessons Learned - Persistent Bioaccumulative Toxins (PBTs), Reporting: New SARA Title III Form R Chemicals

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Abstract:

Objective - To present lessons learned while completing the Toxic Chemical Release Report (Form R) during the first year that the new chemicals and compounds, Persistent Bioaccumulative Toxins (PBTs), were required to be reported (July 1, 2001). The Toxic Chemical Release Report is a component of the Emergency Planning Community Right-to-Know Act (EPCRA), also known as SARA Title III.

Scope - Present an overview of the new requirements on PBTs. Discussion of the chemicals and brief history. Discuss affected industries broken down into three major categories including fuel consumption, fuel storage and industrial processes. Process of determining applicability (review of EPA economic analysis, calculations, etc.). Completion of calculations and Form R submittal. Present case studies and essential information (lessons learned) for late submitters or for next years submittals.

Issues - EPA Economic Analysis (with associated emission, discharge and release factors), Applicability determinations, No *De Minimus* Exemptions, Lower Reporting Thresholds

Developments - To be determined between now and July 1st of this year.

Conclusions - Unknown until reports are submitted by July 1st of this year.

Introduction

Facilities required to participate in SARA Title III Section 313 Toxic Chemical Release Reporting (Form R) will have new chemicals and chemical compounds with lower reporting requirements to review when they report on July 1st, 2001 (reporting year 2000). The new chemicals and lower reporting requirements apply to chemicals that have been identified by the EPA as Persistent Bioaccumulative Toxins (PBTs). Additionally, the *de minimus* exemption, available for all other Form R reportable chemicals, is not available for PBTs. These new federal regulations (40 CFR 372.28) were added to the SARA Title III reporting requirements in October, 1999.

Based on economic analysis research conducted by the Environmental Protection Agency (EPA), over 11,000 facilities will be required to submit nearly 20,000 additional Form R reports each year as a result of the changes to the regulations. Approximately 60% of the additional reports will result from fuel consumption at manufacturing facilities and electric utilities.

Background on PBTs

The recent changes are the result of EPA's review of certain chemicals and chemical compounds that have been determined to be "persistent" and "bioaccumulative". EPA concluded that even small quantity releases of PBTs in low concentrations could be damaging to the environment. EPA hopes that industry and the public will have a higher awareness of PBTs since they will now be included in the information made available to the public through Form R reporting.

EPA has described "persistence" as the length of time a chemical can exist before being broken down by natural processes. Information on persistence was reviewed by EPA that identified half-lives of chemicals in water, soil and air. "Bioaccumulation" is the process by which organisms take up and accumulate chemicals within their bodies. Bioaccumulation is measured by bioaccumulation factor (BAF) or bioconcentration factor (BCF). Data reviewed by EPA was available from studies of the BAF/BCF values in aquatic organisms. Chemicals determined to have long persistence and high bioaccumulation values were considered to be included as PBTs.

EPA ultimately identified nineteen (19) chemicals and chemical compounds as PBTs (Table 1). Six (6) PBTs are new and thirteen (13) had previous reporting requirements at the higher reporting thresholds (see Table 1 Note 1). Eleven (11) PBTs have been further characterized as "highly" persistent and bioaccumulative (see Table 1 Note 2) and have the lowest reporting threshold of 10 lbs. With the exceptions of vanadium compounds and dioxin compounds, all other PBTs have the reporting threshold of 100 lbs.

History of Changes to Form R Reporting

The first Toxic Chemical Release Reports (Form R) were required in 1988. Facilities that "manufactured, processing or otherwise used" certain chemicals and chemical compounds were required to review manufacturing and usage inventories to determine applicability. Reporting was required for listed toxic

chemicals above the 25,000 lbs. threshold for chemicals "manufactured/ processed" or above 10,000 lbs. for chemicals "otherwise used". The first major change was the addition of 286 new toxic chemicals and chemical categories in 1994. The next major change was in 1997 when the number of covered facilities was expanded to include previously exempt Standard Industrial Codes (SIC). Also in 1997, the Form A (short form) was introduced to allow for a "certification statement" as an alternative to completing the Form R (regular form). The most recent change is the addition of PBTs with lower reporting thresholds.

Affected Industries

An extensive economic analysis was completed by the EPA to determine the cost for PBT reporting and potentially affected industries. Because PBTs are identified with fuel consumption, including coal, fuel oil, natural gas and wood, companies consuming large quantities of fuel will be required to report. The PBTs identified with fuel consumption are vanadium, mercury, PACs, hexacholobenzene, benzo (g,h,i) perylene and PCBs. Facilities that store residual or distillate fuel (SIC code 5171, Petroleum Bulk Plants and Terminals) would also be required to report on PBTs since there is a high throughput of fuel and no *de minimus* exemption. The EPA had stated that it would review the possibility of exempting SIC code 5171, however no determination has been made on that exemption.

Many other industries are included in the economic analysis, however they are more directly associated with industry specific operations and the PBTs that may result from producing or handling certain chemicals. An example would be pulp and paper mills that generate dioxins as a by-product of the manufacturing process. Some other industries that were identified as producing PBTs were hazardous waste treatment, solvent recovery services, chemical production and computer production.

Difficulties in Determining Applicability

Some companies may have difficulty determining whether PBTs are present in chemical mixtures since they may be in *de minimus* concentrations and are not required to be included on Material Safety Data Sheets (MSDS). The OSHA Hazard Communication Standard requires a chemical manufacturer to provide a hazard determination on chemical mixtures. If a hazardous component of the mixture is less than 1% or less than 0.1% as a carcinogen (*de minimus* concentrations), the hazard determination would not be required on a MSDS. Prior to the most recent changes, companies could review inventory records and MSDS to determine whether a Form R submittal would be required. The "exemptions" section of the regulations (40 CFR 372.38) does not require reporting for chemicals in mixtures below these concentrations. However, PBTs are not subject to this exemption. Since the new reporting chemicals may not be included on the MSDS, facilities required to report may not realize that their chemical mixtures contain one or more of these PBTs.

EPA received comments on the burden to industry that could result because the *de minimus* exemption will not apply to PBTs. EPA responded that MSDS are not the only source of information on the concentration of PBT chemicals in mixtures and that the concentrations established under the exemption are too high for chemicals with such toxic characteristics.

Additional Changes

The following additional changes have taken effect in regard to reporting on PBTs:

- The Form A certification (short form) will not be available;
- Range reporting will not be available (for Form R); and
- Elimination of reporting "zero" (rounding down) for releases of 0.5 lb. or less.

Proposed Benefits identified by EPA

EPA believes that two (2) significant benefits will be realized from reporting associated with PBTs. The first benefit would be the availability of information about the "release and waste management" of toxic chemicals that is not currently available to the public. The second benefit would be the expected "change in behavior" that would result including reduction in the release of toxic chemicals as well as changes in the management of those chemicals.

Summary

PBTs and their associated reporting requirements will affect a range of industries, but will most likely result in increased reporting for companies that are involved with fuel storage or combustion. Other companies that may be required to report on PBTs in mixtures may have difficulty determining applicability since the *de minimus* exemption is not available. Some comments received by the EPA from the industrial

community have indicated that the new reporting requirements are seen as an undue burden, however EPA believes that the benefits to the community and environment are justified.

**Table 1
Persistent Bioaccumulative Toxins**

Reporting Changes¹	Chemical Name	Reporting Threshold²
L	Aldrin	100 lbs.
N	Benzo(g,h,i)perylene	10 lbs.
L	Chlordane	10 lbs.
L	Heptachlor	10 lbs.
L	Hexachlorobenzene	10 lbs.
L	Isodrin	10 lbs.
L	Mercury	10 lbs.
L	Methoxychlor	100 lbs.
N	Octachlorostyrene	10 lbs.
L	Pendimethalin	100 lbs.
N	Pentachlorobenzene	10 lbs.
L	Polychlorinated biphenyl (PCBs)	10 lbs.
N	Tetrabromobisphenol A	100 lbs.
L	Toxaphene	10 lbs.
L	Trifluralin	100 lbs.
	Chemical Categories	
N	Dioxin and dioxin-like compounds (see 40 CFR 372.28 for more detailed description)	0.1 grams
L	Mercury Compounds	10 lbs.
L	Polycyclic aromatic compounds (see 40 CFR 372.28 for more detailed description)	100 lbs.
S	Vanadium, Vanadium compounds	10,000/25,000

Notes:

¹ Reporting changes key:

N - New Chemical with Lower Reporting Thresholds

L - Lower Reporting Thresholds (not new chemical)

S - New Chemical with Regular Reporting Thresholds

² Reporting Thresholds for Persistent PBTs and Highly Persistent PBTs is 100 lbs. and 10 lbs., respectively. Exceptions include Dioxins and Vanadium.