Persistent, Bioaccumulative, and Toxic Chemicals

Introduction

- EPA is developing the RCRA Waste Minimization List of Persistent, Bioaccumulative, and Toxic (PBT) chemicals that will be used to identify and focus waste minimization program initiatives.
- Created to raise government, industry, and public awareness of the potential effects of PBTs on the environment and to incite public and private actions to reduce the generation of these chemicals
- EPA recently (March) held a Roundtable meeting in Boston, MA regarding the addition and removal of chemicals on the current PBT List of 53 chemicals and chemical groups. A finalized list of about 30 - 45 chemicals should be released sometime in June 2000.
- The RCRA PBT List will be used to track the progress towards the goals of the Waste Minimization National Plan (WMNP) and the Government Performance and Results Act (GPRA).

Background

- In 1993, Congress passed the GPRA to improve planning and accountability in the government by requiring federal departments and agencies to define their goals and objectives, and to track their progress towards them.
- November of 1994, EPA published the WMNP.
- The WMNP has provided the framework for strategic planning and for the development of performance goals and measures within EPA pursuant to the GPRA.
- It was based on the premise that:
  1. pollution prevention efforts should be based on risk concerns;
  2. that there should be flexibility in the implementation of pollution prevention activities; and
  3. that pollutant reductions should be on a multi-media basis with no transfers of pollutants across media.
- The WMNP established three national goals for the minimization of "constituents in hazardous waste, or compounds they degrade to, that pose potential threats to human health and the environment" because they are persistent, bioaccumulative, and toxic:
- The three goals are:
  1. To reduce the most persistent, bioaccumulative, and toxic chemicals in hazardous waste streams by 50 percent by 2005, using 1991 as a baseline.
  2. To avoid transferring these constituents across environmental media.
  3. To ensure that these constituents are reduced at their source, whenever possible, or, when not possible, that they are recycled in a environmentally sound manner.

What are PBT chemicals?

- Chemicals that do not easily breakdown or decrease in potency after they are released into the environment.
- Tend to accumulate in the environment, be absorbed or ingested by plants and animals, accumulate in animal and plant tissue, pass through the food chain, and can cause long-term human health or ecological problems.

The Hazardous Waste Section's PBT Reduction Efforts

The North Carolina Hazardous Waste Section (HWS) and the Division of Pollution Prevention and Environmental Assistance (DPPEA) continue to explore different ways to incorporate pollution prevention into its regulatory and compliance assistance activities. The reduction of PBT chemicals is our newest focal point.

- The HWS plans to reduce PBT generation at its RCRA facilities through:
  1. Identifying PBT wastestreams generated in the State;
  2. Successful training of Hazardous Waste Section employees to provide appropriate technical assistance, compliance and enforcement activities when working with PBT generators; and
  3. Targeted training to businesses and industries regarding pollution prevention and waste minimization of PBT chemicals
- The HWS is currently addressing a few challenges:
  1. **Limited data and knowledge** – Using Biennial Report System data provides limited information and applicability in targeting PBT generators. For example, the F and K listed wastes tend to have numerous constituent associations per code. This makes it difficult to determine the presence of PBTs in these waste streams.
     Another challenge is lack of knowledge. Some businesses and industries are unaware that they are using or producing PBT chemicals and some are unaware that these chemicals are being targeted for reduction.
  2. **Training** – Additional training regarding PBT chemicals and potential pollution prevention techniques will help staff members focus on PBT during inspections and compliance activities, as well as when providing technical assistance.

Addressing the Challenges

- The HWS is currently reviewing 1997 and 1999 Biennial Report System data collected from generators. This information will be used to determine which PBTs are generated in NC and the types of industries that produce them.
- This information will be used in addition to EPA's Chemical Ranking Report and currently available pollution prevention technologies and techniques to prioritize the States PBT waste generation.
- We will then work with the Division of Pollution Prevention to identify the top ten generated PBT chemicals and develop industry training opportunities on waste minimization techniques such as source reduction, modifying processes, substituting feedstock, changing management practices, increasing efficiency of machinery, and recycling options.
- The HWS will incorporate PBT reduction in technical assistance, compliance, and enforcement activities as necessary.

Persistent, Bioaccumulative, and Toxic Chemical List

CAS No.	Chemical Name	Ranking
7439921	Lead	1
7440439	Cadmium	2
none	Polycyclic aromatic compounds	3
7439976	Mercury	4
117817	Bis(2-ethylhexyl)phthalate	5
86737	Fluorene	6

7440473	Chromium	7
206440	Fluoranthene	8
7440382	Arsenic	9
87683	Hexachlorobutadiene	10
91203	Naphthalene	11
129000	Pyrene	12
84742	Dibutyl phthalate	13
85018	Phenanthrene	14
71556	1,1,1-Trichloroethane	15
120127	Anthracene	16
67663	Chloroform	17
58899	Hexachlorocyclohexane, gamma-	18
118741	Hexachlorobenzene	19
108952	Phenol	20
120821	1,2,4-Trichlorobenzene	21
7440020	Nickel	22
87865	Pentachlorophenol	23
7440360	Antimony	24
1024573	Heptachlor epoxide	25
7440666	Zinc	26
95501	1,2-Dichlorobenzene	27
72435	Methoxychlor	28
608935	Pentachlorobenzene	29
95943	1,2,4,5-Tetrachlorobenzene	30
83329	Acenaphthene	31
191242	Benzo(g,h,i)perylene	32
7440417	Beryllium	33
7782492	Selenium	34
7440508	Copper	35
75343	1,1-Dichloroethane	36
106467	1,4-Dichlorobenzene	37
85687	Butyl benzyl phthalate	38
57125	Cyanide	39
98953	Nitrobenzene	40
541731	1,3-Dichlorobenzene	41
101553	4-Bromophenyl phenyl ether	42
82688	Pentachloronitrobenzene	43
91576	2-Methylnapthalene	44
732263	Phenol, 2,4,6-tris(1,1-dimethylethyl)	45
208968	Acenaphthylene	46
959988	Endosulfan, alpha-	47
33213659	Endosulfan, beta-	48
95954	2,4,5-Trichlorophenol	49
76448	Heptachlor	50
29082744	Octachlorostyrene	*
none	Dioxins (PCDD)	*
none	Furans (PCDF)	*

*EPA's Chemical Ranking Report for the RCRA PBT List Docket, Final Report, September 30, 1998 was used to rank the above chemicals. To view this document visit: http://www.epa.gov/epaoswer/hazwaste/minimize/chemlist/index.htm

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WEB LINKS

North Carolina Hazardous Waste Section's web page
http://wastenot.ehnr.state.nc.us/HWHOME/HWHOME.HTM

Division of Pollution Prevention and Environmental Assistance web page
http://www.p2pays.org

EPA's Waste Minimization web page
http://www.epa.gov/epaoswer/hazwaste/minimize/