Toxics Use Reduction Institute

Policy Analysis: Recommendation to take no action on certain CERCLA chemicals that have been reported by TURA filers

Statutory amendments to the Toxics Use Reduction Act (TURA) in 2006 required the Science Advisory Board (SAB) and TURI to review the existing chemicals on the TURA Toxic or Hazardous Substance List originating from the CERCLA chemical list and make a recommendation to the Council as to which chemicals should be retained. The Council has until August 1, 2008, to make decisions taking these recommendations into account. The goal of this process is to help facilities focus their efforts more closely on substances that present greater hazards to human health and the environment in Massachusetts.

The SAB has considered the CERCLA chemicals in two broad groups: chemicals that have been reported at some point by TURA filers, and chemicals that have never been reported by TURA filers. This document presents information on those chemicals that:

- Have been reported by TURA filers (or are chemically very similar to those that have been reported), and
- Are recommended for "no action."

The SAB has recommended "no action" on 23 CERCLA substances. Those substances for which the Council takes no action will be delisted under TURA, effective January 1, 2009. This document presents information on all 23 of these substances.

This policy analysis presents the scientific information reviewed by the Science Advisory Board in developing its recommendations. In addition, it summarizes information on the most recent year in which the substance was reported, the number of filers that reported use of the substance in the most recent reporting year, and regulations that apply to these substances at the state, federal, and international levels.

Based on the information presented here, TURI supports the SAB's recommendations to take no action on the 23 substances.

1. Substances recommended for no action or still under consideration

Appendix A is a list of substances recommended for no action on the TURA list.

2. Basis for SAB recommendations

The discussion below provides an overview of the information considered by the SAB. Points discussed by the SAB for each substance are summarized briefly in Appendix A.

Specific data for each substance are shown in Appendix C. In addition to these data, in many instances individual SAB members brought additional scientific information to the meeting.

In general, if there was any reason to retain a substance on the list, the SAB recommended retaining it. Thus, the substances recommended for no action are those for which the SAB saw no particular basis for retention.

In reviewing the substances, the SAB considered the following data:

- International Agency for Research on Cancer (IARC) rating.

    - The SAB recommended retaining any substance that has an IARC rating (Group 1, 2, or 3). Thus, of the substances recommended for no action, none has an IARC rating.

- Data from the EPA PBT profiler (persistence in water, soil, sediment, and air; bioconcentration factor; and chronic toxicity in fish).[1]

    - A number of the substances recommended for no action cannot be profiled on the EPA PBT profiler. Of those able to be profiled and recommended for no action, a number have high persistence in air. The SAB considered persistence in air to be less of a concern than persistence in other media. One substance has high persistent in sediment; however, the SAB considered this to be counterbalanced by data indicating low toxicity.

- Neurotoxicity (based on Scorecard's list of neurotoxicants, and other sources in some cases).[2]

    - Of the substances recommended for no action, none are identified as neurotoxicants.

- Developmental/reproductive toxicity (based on California's Proposition 65 list, and other sources in some cases).[3]

    - Of the substances recommended for no action, none is listed as a developmental or reproductive toxicant on California's Proposition 65 list. For two substances (aluminum sulfate and di-n-octyl phthalate), a search of government databases indicated that there is some basis for concern about reproductive or developmental toxicity.

- Mutagenicity (based on the European Union's Consolidated List of Carcinogens, Mutagens, and Reproductive Toxicants [CMR], and other sources in some cases).[4]

    - Of the substances recommended for no action, none appears on the EU CMR list. For two substances (aluminum sulfate and nitric oxide), a search of government databases indicated that some studies have found some evidence of mutagenicity.

- Lethal dose or concentration information (LD50 and LC50). In general, the LD50 and LC50 for the substances recommended for no action are relatively high, indicating relatively low toxicity.

- Exposure limits required or recommended by Federal agencies
    - Reference dose and reference concentration (RfD and RfC, from EPA Integrated Risk Information System).[5] The reference dose and reference concentration values for the substances

[1] EPA PBT Profiler, available at http://www.epa.gov/oppt/sf/tools/pbtprofiler.htm.
[2] Scorecard's list of suspected neurotoxicants, and the sources used to compile the list, is available at http://www.scorecard.org/health-effects/ (select the link for neurotoxicity).
[3] The California Proposition 65 List is available at http://www.oehha.org/prop65/prop65_list/Newlist.html. Additional information is drawn from the NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) and the New Jersey Department of Health and Senior Services Hazardous Substances Fact Sheet for di-n-octyl phthalate (http://nj.gov/health/eoh/rtkweb/documents/fs/0787.pdf).
[4] The EU Consolidated CMR List is available at http: //www.chemicalspolicy.org/downloads/cmrlist.pdf. Additional information is drawn from the US National Library of Medicine Toxicology Data Network (TOXNET).
[5] EPA Integrated Risk Information System, available at http://www.epa.gov/iris/.

recommended for no action indicate relatively low toxicity. For some substances, these values are not available.

- NIOSH Recommended Exposure Limit (REL); Threshold Limit Value – Time Weighted Average (TLV-TWA); and Threshold Limit Value – Short Term Exposure Limit (TLV-STEL).[6] For several of the substances, these values indicate moderate toxicity.

- Flash point. For those substances on the list that have a flash point, the values are intermediate to high, indicating that flash point is not a major concern for any of these substances.

- The SAB did not consider specific data points related to sensitization or the potential to cause or exacerbate asthma. However, in response to a recommendation from the Advisory Committee, TURI checked the list of substances recommended for no action against a list of asthmagens compiled by UMass Lowell researchers based on information from the Institute of Medicine, the Association of Occupational and Environmental Clinics, and other sources. TURI also checked a list of substances identified as sensitizers in the EU (EU Risk Phrase 42).[7] None of the substances is listed as either a sensitizer or an asthmagen.

3. Use Information

As shown in Appendix B, the majority of the substances recommended for no action have been reported by TURA filers within the last three years for which data are available (2003 to 2005). A few of the substances have not been reported in recent years, or have never been reported. The number of filers for a given substance in the most recent reporting year ranges from one to eleven.

4. Regulatory Context

Appendix B shows selected regulatory information for each of the substances recommended for no action.

- One of the substances, di-n-octyl phthalate, is identified as an EPA Clean Water Act Priority Pollutant. All but three of the substances are identified on the EPA Clean Water Act 311 List of Hazardous Substances.
- Two of the substances (nitric oxide and di-n-octyl phthalate) are found on the EPA Superfund Amendments and Reauthorization Act (SARA) 302A Extremely Hazardous Substances List.
- Two of the substances (nitric oxide and ethanol,2,2-oxybis,dicarbamate) are listed as hazardous constituents under the Resource Conservation and Recovery Act (RCRA).
- None of the substances have maximum contaminant levels (MCLs) under the Safe Drinking Water Act. None are regulated as criteria air pollutants under the Clean Air Act.

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[6] REL, TLV-TWA, and TLV-STEL are drawn from the National Institutes of Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards, available at http://www.cdc.gov/niosh/npg/.

[7] EU risk phrase information is available at http://ecb.jrc.it/classification-labelling/search-classlab/ (choose "search Annex 1" and "Risk phrase 42"); viewed March 2008. Information on asthma is drawn from the following sources: (a) Association of Occupational and Environmental Clinics, "Explanatory Protocol: Criteria for Designating Substances as Occupational Asthmagens on the AOEC List of Exposure Codes." Revised April 2005. Accessed 11-2-07 at: http://www.aoec.org/tools.htm.. (b) Janssen S, Solomon G, Schettler T., "Chemical Contaminants and Human Disease: A Summary of Evidence," 2004. Accessed 11-2-07 at: http://www.protectingourhealth.org/corethemes/links/2004-0203spreadsheet.htm. (c) Institute of Medicine (IOM), Committee on the Assessment of Asthma and Indoor Air, Division of Health Promotion and Disease Prevention, 2000, *Clearing the Air: Asthma and Indoor Air Exposures*. Washington, D.C., National Academy Press, http://books.nap.edu/books/0309064961/html.; (d) Malo J-L, Chan-Yeung M. Appendix: Agents Causing Occupational Asthma with Key References. In: Bernstein LI, Chan-Yeung M, Malo J-L, Bernstein DI (eds). *Asthma in the Workplace.* 3rd Ed. New York: Taylor & Francis, 2006.

- The majority of the substances are on the New Jersey Right-to-Know list. All but one are on the Pennsylvania Hazardous Substances list.
- Seven of the substances meet the categorization criteria for the Government of Canada's Domestic Substances List categorization, indicating that there is a need for further attention to these substances based on human health and/or environmental criteria. These are: ammonium bicarbonate; ferrous ammonium sulfate (anhydrous); aluminum sulfate; butyric acid; isobutyl acetate; ammonium chloride; and ammonium sulfamate.

5. Implications for the TURA Program

If the Council chooses to take no action on these substances, they will be removed from Toxic and Hazardous Substance List as of January 1, 2009. This means that TURA-covered facilities will no longer be required to report, pay a fee, and do toxics use reduction planning as a result of using these substances. The goal of this change is to help facilities focus their efforts more closely on substances that present more significant hazards to human health and the environment in Massachusetts.

According to the 2005 TURA data, there were filers for 14 of the substances that are designated for "no action". There were a total of 58 Form S's for these 14 substances. Thus, an expected 58 facilities will save $1,100 per year in annual fees. Most facilities will continue to report and plan for other substances. One facility will drop out of the program completely.

The total reduction in fees for these 58 Form S's is $63,800 ($1,100 per Form S). The single facility that will drop out of the program completely will also stop paying an annual base fee of $1,850. Thus, the total expected reduction in toxics use fees across all affected filers is expected to be $65,650.

Appendix A: CERCLA substances recommended for no action				
CAS#	**Chemical Name**	**Synonym**	**Date(s) Considered by SAB**	**Justification** Note: Unless otherwise noted, votes were unanimous.
1066-33-7	Ammonium bicarbonate		7/16/2007	No important concerns identified.
7705-08-0	Ferric chloride	Iron chloride hexahydrate	3/20/07; 4/23/2007; 7/16/07	Board discussed worker exposure issues as principal concern; deemed not significant.
10028-22-5	Ferric sulfate			Board discussed worker exposure issues as principal concern; deemed not significant.
10045-89-3	Ferrous ammonium sulfate (anhydrous)			Board discussed worker exposure issues as principal concern; deemed not significant.
7758-94-3	Ferrous Chloride			Board discussed worker exposure issues as principal concern; deemed not significant.
7720-78-7	Ferrous sulfate			Board discussed worker exposure issues as principal concern; deemed not significant.
7782-63-0	Ferrous sulfate	Iron Sulfate Heptahydrate		Board discussed worker exposure issues as principal concern; deemed not significant.
10043-01-3	Aluminum sulfate	Alum	12/19/2007	Compared to ferrous and ferric sulfate. Mild irritant.
10102-43-9	Nitric oxide	NO	12/19/2007	Transient existence. 5 voted to take no action, 2 opposed, 1 abstaining.
107-92-6	Butyric acid		10/17/2007	Nuisance smell and persistent in air.
110-16-7	Maleic acid		6/25/07; 10/17/2007	No important concerns identified.
110-17-8	Fumaric acid		10/17/2007	Food additive.
110-19-0	iso-Butyl acetate		10/17/2007	The flammability and flash point were discussed for iso-butyl acetate. Flash point is 64°F and it has a low vapor pressure.
117-84-0	Di-n-octyl phthalate		6/25/07; 10/17/07; 12/19/2007	This substance is often confused with other phthalates, such as DEHP. Principal concerns relate to possible binding with estrogen receptors. Data indicate that the substance does not bind with estrogen receptors.
12125-02-9	Ammonium chloride		10/17/2007	Ammonium chloride is found in shampoo, adhesives, candies, and anti-perspirants. Ammonium chloride is an upper respiratory tract irritant. Persistence in air is 180. TLV is nuisance dust standard.
123-86-4	Butyl acetate		10/17/2007	The flammability and flash point were discussed for butyl acetate. The flash point is 72°F. The vapor pressure is low.

124-04-9	Adipic acid		6/25/07; 10/17/2007	Chronic fish toxicity and RfD are high. ScoreCard ranked this chemical in the lowest percentile. TLV 5mg – same as nuisance dust. It is used in plasticizers and is also a food ingredient in jelly.
124-41-4	Sodium methylate		10/17/2007	Persistent in air; no other concerns.
540-88-5	tert-Butyl acetate		10/17/2007	The flammability and flash point were discussed for tert butyl acetate. The flash point is 72°F. The vapor pressure is low.
5952-26-1	Ethanol,2,2-oxybis,dicarbamate (diethylene glycol,dicarbamate)		6/25/07; 12/19/2007	This chemical has a high persistence in sediment; however, its LD50 is very high and does not present other concerns.
628-63-7	Amyl acetate		12/19/2007	Amyl acetate is used for fit testing respirators. It has a high explosion limit (100 ppm), is an eye irritant, and is persistent in air. 5 votes to take no action, 2 abstaining.
7773-06-0	Ammonium sulfamate		12/19/2007	Ammonium sulfamate is a nuisance dust issue. It does not present other concerns.
7681-49-4	Sodium fluoride		6/4/07; 6/25/07; 7/16/2007	For sodium fluoride, it was noted that two 2-year studies showed it was negative for carcinogenicity but also showed reproductive effects. It is approved for use in toothpaste, and is regulated by EPA as a pesticide and insecticide. About 30 to 40 drinking water systems in the state use it for fluoridating water.

Appendix B - Additional information on substances recommended for no action or on agenda for further discussion												
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Regulatory Data												
Cas #	Chemical Name	Synonym	Last Reported	Number of Filers	EPA Clean Water Act 126 Priority Pollutants	EPA Clean Water Act 311 List of Hazardous Substances	EPA SARA 302A Extremely Hazardous Substances List	Hazardous Constituents (Resource Conservation and Recovery Act)	Hazardous Air Pollutants (Clean Air Act)	NJ Right to Know List	PA Hazardous Substances List	Meets Canadian substances categorization criteria
1066-33-7	Ammonium bicarbonate		2005	2	-	Y	-	N	-	Y	Y	Y
7705-08-0	Ferric chloride	Iron chloride hexahydrate	2005	10	-	Y	-	N	-	Y	Y	N
10028-22-5	Ferric sulfate		2005	2	-	Y	-	N	-	Y	Y	N
10045-89-3	Ferrous ammonium sulfate (anhydrous)		n/r	n/r	-	Y	-	N	-	Y	Y	Y
7758-94-3	Ferrous Chloride		2005	1	-	Y	-	N	-	Y	Y	N
7720-78-7	Ferrous sulfate		2004	1	-	Y	-	N	-	Y	Y	N
7782-63-0	Ferrous sulfate	Iron Sulfate Heptahydrate	2005	1	-	Y	-	N	-	N	Y	-
10043-01-3	Aluminum sulfate	Alum	2005	8	-	Y	-	N	-	Y	Y	Y
10102-43-9	Nitric oxide	NO	2002	1	-	-	Y	Y	-	Y	Y	N
107-92-6	Butyric acid		1997	1	-	Y	-	N	-	Y	Y	Y
110-16-7	Maleic acid		2005	1	-	Y	-	N	-	Y	Y	N
110-17-8	Fumaric acid		2005	1	-	Y	-	N	-	Y	Y	N
110-19-0	iso-Butyl acetate		2005	4	-	Y	-	N	-	Y	Y	Y
117-84-0	Di-n-octyl phthalate		2000	1	Y	-	Y	N	-	Y	Y	N
Key: Y = found on list; N = does not meet criteria; - = not found on list or in database; 307A = substance located on EPA Clean Water Act 307A Toxic Pollutants list												

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(continued from previous page)												
Regulatory Data												
Cas #	Chemical Name	Synonym	Last Reported	Number of Filers	EPA Clean Water Act 126 Priority Pollutants	EPA Clean Water Act 311 List of Hazardous Substances	EPA SARA 302A Extremely Hazardous Substances List	Hazardous Constituents (Resource Conservation and Recovery Act)	Hazardous Air Pollutants (Clean Air Act)	NJ Right to Know List	PA Hazardous Substances List	Meets Canadian substances categorization criteria
12125-02-9	Ammonium chloride		2005	3	-	Y	-	N	-	Y	Y	Y
123-86-4	Butyl acetate		2005	11	-	Y	-	N	-	Y	Y	N
124-04-9	Adipic acid		2005	5	-	Y	-	N	-	Y	Y	N
124-41-4	Sodium methylate		2003	1	-	Y	-	N	-	Y	Y	N
540-88-5	tert-Butyl acetate		1992	1	-	Y	-	N	-	Y	Y	N
5952-26-1	Ethanol,2,2-oxybis,dicarbamate (diethylene glycol,dicarbamate)		1996	1	-	-	-	Y	Y	-	-	-
628-63-7	Amyl acetate		2005	2	-	Y	-	N	-	Y	Y	N
7773-06-0	Ammonium sulfamate		2005	8	-	Y	-	N	-	Y	Y	Y
7681-49-4	Sodium fluoride		2004	1	-	Y	-	N	-	Y	Y	N
Key: Y = found on list; N = does not meet criteria; - = not found on list or in database; 307A = substance located on EPA Clean Water Act 307A Toxic Pollutants list												