Comments of the United States

to the Technical SubGroup

of the Working Group on

Pollutant Release and Transfer Registers

Introduction

The United States supports the decision by the countries of the United Nations Economic Commission for Europe (UNECE) to promote the development of national Pollutant Release and Transfer Registers (PRTRs). The national PRTR system in the United States has proven to be one of its most successful environmental programs, stimulating substantial reductions in the releases of pollutants since 1988, the first reporting year.

PRTR systems can provide previously unknown information about chemicals of concern. They provide governments, the public, industry, researchers and other parties with information to make more informed decisions at the local, regional and national levels. Communities may use the information to work with local facilities to reduce their releases. Governments may use the information to identify environmental hotspots. Researchers may use the information to gain a better understanding of the flow of chemicals in the environment.

UNECE's decision to create common elements that each country would include in their national PRTR also is an important step. Establishing these common elements ensures a degree of consistency across the UNECE countries. This consistency in turn can allow for cooperative actions between the nations, such as comparing data or aggregating data.

The United States offers its recommendations in each of the following areas: 1) Identifying Chemicals; 2) Identifying Chemical Listing and Delisting Criteria; 3) Identifying Reporting Thresholds; 4) Identifying Industry Sectors; and 5) Identifying Transfers. These recommendations are based on the experience of the U.S. and on what has proven to be most effective for the U.S. PRTR. The U.S. intends to provide at a later date comments on data verification.

Identifying Chemicals
for Pollutant Release and Transfer Registers (PRTRs)

The United Nations Economic Commission for Europe (UNECE) Working Group on Pollutant Release and Transfer Registers (PRTRs) has identified as a priority the identification of a list of substances that all UNECE countries would include on their PRTR systems.

Recommendation

The U.S. suggests, based on its experience with the Toxics Release Inventory, that all Working Group countries develop a common subset of chemicals to be included in a PRTR. This would allow for comparability and ensure that certain agreed-upon chemicals are reported in all countries. The following groups of chemicals could be included in the subset of chemicals common to each PRTR.

Ozone Depleting Chemicals
- Carbon Tetrachloride
- Methyl Bromide
- Methyl Chloroform (1,1,1-trichloroethane)
- Chlorofluorocarbons
  - Dichlorodifluoromethane (CFC - 12)
  - Dichlorotetrafluoroethane (CFC - 114)
  - Trichlorofluoromethane (CFC - 11)
  - Chlorotrifluoromethane (CFC - 13)
  - 1,1,2-Trichlorotrifluoroethane (CFC - 113)
  - (Mono)chloropentafluoroethane
- Halons
  - Bromotrifluoromethane (Halon 1301)
  - Dibromotetrafluoroethane (Halon 2402)
  - Bromochlorodifluoromethane (Halon 1211)
- Hydrochlorofluorocarbons
  - Chlorodifluoromethane (HCFC - 22)
  - 2,2-Dichloro-1,1,1-trifluoroethane (HCFC - 123)
  - 1,2-Dichloro-1,1,2-trifluoroethane (HCFC - 123a)
  - 1,1-Dichloro-1,2,2-trifluoroethane (HCFC - 123b)
  - 2-Chloro-1,1,1,2-tetrafluoroethane (HCFC - 124)
  - 1-Chloro-1,1,2,2-tetrafluoroethane (HCFC - 124a)
  - 1,1-Dichloro-1-fluoroethane (HCFC - 141b)
  - 1-Chloro-1,1-difluoroethane (HCFC - 142b)

Benzene

Persistent Organic Pollutants (POPs)
- Aldrin

Chlordane
Heptachlor
Toxaphene
Polychlorinated Biphenyls (PCBs)
Hexachlorobenzene
Dioxins
Furans
DDT
Dieldrin
Endrin
Mirex

Heavy Metals
Antimony/Antimony Compounds
Arsenic/Arsenic Compounds
Cadmium/Cadmium Compounds
Chromium/Chromium Compounds
Copper/Copper Compounds
Lead/Lead Compounds
Mercury/Mercury Compounds
Nickel/Nickel Compounds
Zinc/Zinc Compounds

Chemicals of Concern for Children's Health
Lead/Lead Compounds (listed above)
Nitrate Compounds
Sodium Nitrite

Chlorinated Organic Chemicals
1,2 Dichloroethane
Dichloromethane
Chlorinated Alkanes (C_{10-13})
Hexachlorobenzene (listed above)
Hexachloro-1,3,- butadiene
α-Hexachlorocyclohexane
Tetrachloroethylene
Pentachlorophenols
1,1,1- Trichloroethane
Trichloroethylene
Trichloromethane (chloroform)

Tributyltin compounds
Tetrabromobisphenol-A

Pentabromodiphenylether
Decabromodiphenylether

In addition, each country should identify a list of additional chemicals to include on their PRTR. The chemical list would consist of chemicals specific to the needs of the individual country and would contain a subset of chemicals that are common to PRTRs in all Working Group countries. The length of each national chemical list will depend on the needs of each country.

Background

Countries would develop a list of chemicals that meet the requirements of the individual countries. The length of the list similarly would be dependent upon the needs of the country and could evolve over time. For example, when the U.S. first implemented its PRTR, the list contained 320 chemicals and chemical categories. Today, over 650 chemicals and chemical categories are included on its list.

Subset of Chemicals Common to PRTRs Across Countries.

The chemicals listed above would form the common set for all national PRTRs. Countries could work together to decide in the future to augment this common set with other groups of chemicals to create an even larger common set.

This common set of chemicals includes those that have been identified by the international community as chemicals of global concern. Two of the groups are the target of a specific international convention or protocol. The two international agreements are the Montreal Protocol of 1990 and the *Stockholm Convention on Persistent Organic Pollutants* (POPS). A subset of the heavy metals group (cadmium, lead, mercury) are the subject of the UNECE Convention on Long Range Transboundary Air Pollution (LRTAP) Protocol on Heavy Metals, The negotiations for each agreement are complete. The focus has now moved to implementation efforts.

The other groups of chemicals have been identified as of concern as well. PRTRs can assist countries in identifying the sources and the quantities of these releases and transfers as well as tracking progress at meeting the reduction goals.

Many of the chemicals in the common set already are on national PRTR chemical lists or on the chemical lists of multi-media emissions inventories. The U.S. PRTR includes heavy metals and their compounds, nearly all of the ozone depleting chemicals (ODCs) listed above, many of the POPs chemicals, most of the chlorinated organic chemicals and various developmental toxins.

The U.S. has focused on these chemicals because there is broad agreement that they pose a significant threat to human health and/or the environment and are subject to long-range

environmental transport. In addition, many of the chemicals in the common set remain in the environment for long periods of time. For these reasons, releases and transfers of chemicals in the common set can be of concern in the country where they are produced, and also in neighboring countries and in countries and regions further afield.

PRTRs could be helpful for countries that become parties to the *Stockholm Convention on Persistent Organic Pollutants* to comply with certain obligations contained in the Convention. Indeed, Article 10 paragraph 5 of the Convention requires parties to "give sympathetic consideration to developing mechanisms, such as pollutant release and transfer registers, for the collection and dissemination of information on estimates of annual quantities of [POPs] chemicals . . . that are released or disposed of." In addition, Article 11 of the Convention requires parties to encourage and/or undertake research, development, and monitoring on, among other things, sources and releases of POPs. PRTRs would be a valuable tool in helping countries comply with this provision.

The international community already has made significant progress in reducing the use and/or release of many chemicals in the common set, many of the chemicals in the common set are still in production. There remains wide-spread use of the heavy metals and the chlorinated hydrocarbons, particularly in industrial activities. Production of hydrochlorofluorocarbons (HCFCs) are allowed, albeit in smaller and smaller amounts, well into the future. This continued production and use results in annual releases and transfers that governments, industry and the public need to track.

Even for those chemicals for which production has been banned, there continue to be releases and transfers. Dioxins, furans and hexachlorobenzene, for example, are byproducts of combustion. We expect to have more information on the releases and other waste management activities of these chemicals in the United States, when the lower TRI reporting thresholds for persistent, bioaccumulative and toxic chemicals are applied starting with the 2000 reporting year.

Identifying Chemical Listing and Delisting Criteria
for Pollutant Release and Transfer Registers (PRTRs)

The United Nations Economic Commission for Europe (UNECE) Working Group on Pollutant Release and Transfer Registers (PRTRs) has identified as a priority the identification of chemical listing and delisting criteria for the list of substances that UNECE countries would include on their PRTR systems.

Recommendation

The U.S. recommends, based on its experience with the Toxics Release Inventory, that the following criteria be considered by the Working Group's Member Countries for the list of common chemicals. These criteria are based on the inherent hazard of the chemical.

The U.S. experience demonstrates that the criteria for national PRTRs should be determined by the individual countries. However, based on past experience, the U.S. believes that a successful PRTR would include as chemical listing criteria both the criteria listed below for the common set of chemicals and a criterion based on acute human health effects.

Criteria for Common Set of Chemicals

- The chemical is known to cause or can reasonably be anticipated to cause in humans[1] - cancer, teratogenic effects or other developmental effects, reproductive dysfunctions, neurological disorders, heritable genetic mutations, or other chronic health effects, including toxicity to organs such as the liver and kidneys.

- The chemical is known to cause or can reasonably be anticipated because of its toxicity, toxicity and persistence, or toxicity and bioaccumulation to cause a significant adverse effect on the environment. This criterion encompasses the following:

    - The chemical is known to cause or can reasonably be anticipated to cause toxicity in environmental organisms

Suggested Criteria for National PRTRs

The U.S. experience demonstrates that the following criterion is an important national criterion, to be used in conjunction with the criteria listed above because it is applicable to chemicals that

[1]Known to cause or can reasonably anticipated to cause in humans is based on different information sources, including toxicity data in humans, sufficient data in animals and/or Structural Activity Relationship (SAR) analysis.

are of local concern as this criterion requires that the acute effects occur at "concentration levels that are reasonably likely to exist beyond facility site boundaries."

- The chemical is known to cause or can reasonably be anticipated to cause significant adverse acute human health effects at concentration levels that are reasonably likely to exist beyond facility site boundaries as a result of continuous, or frequently recurring, releases.

Background

The criteria for listing and delisting chemicals should be based primarily on the inherent hazard of the chemical, not on an estimated potential risk that the chemical may pose.

The U.S. does not recommend criteria based on generic risk. Considerations of risk generally require site-specific exposure assessments, which may not be applicable when making determinations for the addition of chemicals to PRTRs because these systems generally have both a local and national focus. A national generic risk estimate for a chemical or an assessment based on the site-specific conditions of one locality will not represent the local risks that may result in other localities from releases of the chemical.

One of the purposes of PRTRs is to provide to the public and governments information on releases and transfers so that they can determine if the releases of the chemicals may pose risks within individual communities. Another purpose of PRTRs is to allow communities and governments to track the movement of transfers through communities and across borders.

Another purpose of PRTRs is to track chemicals that have already been identified as posing a significant hazard, *e.g.,* mercury, but for which release information is fairly incomplete. For example, the available release information from non-PRTR systems may be only for a single environmental medium or otherwise inadequate. Therefore, basing the listing on a risk assessment which used incomplete existing data would lead to an incorrect conclusion.

Identifying Reporting Thresholds for Pollutant Release and Transfer Registers (PRTRs)

The United Nations Economic Commission for Europe (UNECE) Working Group on Pollutant Release and Transfer Registers (PRTRs) has identified as a priority reporting thresholds for the list of substances that UNECE countries would include on their PRTR systems.

Recommendations

The U.S. recommends, based on its experience with the Toxics Release Inventory, that 1) reporting thresholds be based on the activity (*e.g.*, use) of the chemical at the facility; 2) the total number of different thresholds be limited. For example, there may be different activity thresholds for different groups of chemicals, but not a different threshold for each chemical; and 3) exceeding the reporting threshold requires reporting of all releases and transfers of the chemical at the facility.

Background

Thresholds should be based on activity

Reporting thresholds for PRTRs generally are based on the quantity of a chemical undergoing a particular activity (*e.g.*, use or processing) that occurs at the facility rather than the quantity of the substance that is released. For example, the U.S. PRTR thresholds are based on the amount of the chemical that is manufactured, processed or used at the facility. Once the reporting threshold for the substance has been exceeded, the facility must report on all releases and transfers for the chemical. This insures that a fairly complete picture of releases and transfers is reported to the PRTR.

In contrast, basing the thresholds on the quantities released or transferred will provide an incomplete picture of the actual releases of the substance. First, absent PRTR data, for many substances there is limited information on the quantities being released or transferred. Thus, setting a release threshold based on the belief that the threshold will result in the reporting of some percentage of the releases will be incorrect. Even where a government believes it has complete national data, this may prove false. It has been the experience of the U.S. that even media specific experts have incomplete information. In the U.S., for example, the government had constructed what it believed was a thorough assessment of mercury in the country. PRTR data from gold mines, which began reporting for the first time in 1998, showed that this industry is a significant source of mercury emissions -- a fact unknown to the government. Finally, setting a reporting threshold based on release or transfer rather than activity can lead to the development of different thresholds for different media. Setting a threshold for air that is separate from a reporting threshold for water, which similarly is separate from a reporting threshold for land, severely limits the usefulness of a PRTR program. Such an approach prevents a country from obtaining a full multi-media perspective of releases, which is one of the most fundamental characteristics of a PRTR system.

Limited Number of Reporting Thresholds Across Chemicals

The U.S. believes that PRTRs should have a limited number of different reporting thresholds in order to reach the objectives of the PRTRs without creating excessive burden for those required to report. In the U.S., for over 630 of the TRI listed chemicals, there is a single set of thresholds. For a second set of chemicals (fewer than 20) that have been designated as persistent, bioaccumulative and toxic (PBT), the U.S. has established thresholds that are significantly lower than the thresholds for the other 630 chemicals. Further, minimizing the number of thresholds allows for fairly accurate comparisons of releases for different chemicals, thus improving the utility of the data for the public, researchers, governments and other users.

Identifying Industry Sectors for Pollutant Release and Transfer Registers (PRTRs)

The United Nations Economic Commission for Europe (UNECE) Working Group on Pollutant Release and Transfer Registers (PRTRs) has identified as a priority the identification of a common set of industrial sectors that UNECE countries would include on their national PRTR systems.

Recommendation

The U.S. recommends, based on its experience with the Toxics Release Inventory, that all Working Group countries develop a common subset of industry sectors. This would allow for comparability among all countries.

Background

A benefit of this common set of industries will be the ability to analyze PRTR data for similar industries across many different countries and continents. It will be possible to compare the releases and transfers of pollutants between different countries, assessing the degree to which regulatory regimes or other factors are impacting the amounts reported. This would also allow for the assessment of national and regional impacts by industry sector.

U.S. Experience

The United States has listed below the industrial sectors that presently are subject to reporting to the U.S. PRTR.

Manufacturing

- Food and Kindred Products
- Tobacco Products
- Textile Mill Products
- Apparel and Other Finished Products made from Fabrics and Other Similar Materials
- Lumber and Wood Products, Except Furniture
- Furniture and Fixtures
- Paper and Allied Products
- Printing, Publishing, and Allied Industries
- Chemicals and Allied Products
- Petroleum Refining and Related Industries
- Rubber and Miscellaneous Plastics Products
- Leather and Leather Products
- Stone, Clay, Glass and Concrete Products
- Primary Metal Industries
- Fabricated Metal Products, Except Machinery and Transportation Equipment
- Industrial and Commercial Machinery and Computer Equipment

Electronic and Other Electrical Equipment and Components, Except Computer Equip.
Transportation Equipment
Measuring, Analyzing, and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks
Miscellaneous Manufacturing Industries
Metal Mining
Coal Mining
Electric, Gas and Sanitary Services
Wholesale Trade – Nondurable Goods
Chemical Wholesalers
Petroleum Terminals and Bulk Stations
Solvent Recovery
Treatment, Storage and Disposal of Hazardous Waste

The legislation that created the U.S. PRTR selected the manufacturing sectors as the first industries that were required to report. The legislation, however, provided the U.S. EPA with the authority to expand the coverage to include other industries. As it turned out, the manufacturing sector represented a small slice of the industrial sources of pollutants.

In subsequent years, the types of industries that must submit PRTR reports has expanded to include industries that provide resources to the manufacturing sectors (i.e. electricity generating facilities, petroleum bulk storage facilities, chemical wholesale facilities, coal and metal mines) and industries that receive wastes from the manufacturing sector (i.e. treatment/storage/disposal facilities, solvent recovery facilities).

The amount of information provided from these newly added industries greatly expands the knowledge base for the government, public and industry. The reporting by the new industry sectors provided a fuller picture of releases and transfers in communities, and for some communities these industries contribute more than the manufacturing sector to the releases in their neighborhoods. This broader scope increases the utility of the PRTR data.

Identifying Transfers
for Pollutant Release and Transfer Registers (PRTRs)

The United Nations Economic Commission for Europe (UNECE) Working Group on Pollutant Release and Transfer Registers (PRTRs) has identified as a priority the identification of the types of transfers that UNECE countries would include on their PRTR systems.

Recommendation

The U.S. recommends, based on its experience with the Toxics Release Inventory, that 1) transfers include both off-site and on-site transfers; 2) off-site transfers include all off-site transfers for further waste management, specifically disposal, treatment, energy recovery, and recycling; and 3) on-site transfers, at a minimum include on-site transfers for treatment, but that the group also consider the inclusion of on-site transfers for energy recovery and recycling.

The U.S. recommends that reporting of transfers be of the amount of the chemical in the waste, rather than of the amount of the waste.

The U.S. recommends that the group define disposal, treatment, energy recovery and recycling and provides examples of each below. (The U.S. also provides examples of each of these waste management types below).

Background

Reporting for All Off-site transfers.

Facilities transfer chemicals in waste for disposal, treatment, energy recovery, and recycling to waste handlers. The U.S. experience shows that as a practical matter, there is little difference in the steps that a facility must take to differentiate between transfers for disposal or treatment and transfers for energy recovery or recycling. Many waste handlers in the U.S. require that generators develop a profile of the waste so that the waste handlers can properly treat, store or dispose of the waste. Profiles typically provide information on the constituents present in the waste, including concentration ranges. Variants of this type of system is generally used by all members of the hazardous waste management industry. The information contained in profiles is often analogous to information on chemical constituents contained in the material safety data sheets developed by chemical manufacturers.

The information on transfers is valuable because it provides a picture of the chemicals that are being transferred through communities and across borders. Providing information on only the quantities of the chemical that are transferred for disposal and treatment, rather than all transfers, *i.e.*, transfers for recycling and energy recovery in addition to treatment and disposal, provide an incomplete picture of the movement of these chemicals. In addition, the quantities of the chemicals that are being transferred for recycling are often larger than the quantities of the chemical transferred for disposal.

Reporting Off-site Transfers and On-site Transfers

On-site transfers include treatment, energy recovery, and recycling that is carried out at the facility. To fully understand how industry in general, or a single facility in particular, is managing a chemical in waste, it is essential to collect data on how that chemical is managed on-site as well as off-site. Collecting both on-site and off-site waste management data provides a comprehensive picture of waste management. It can indicate, for example, the degree to which a facility is relying on treatment versus recycling for a particular chemical. Data over time can show trends, such whether an industry is moving from disposal to recycling. This picture is often useful for facilities that have traditionally only considered single-media releases. Assembling total waste management information in one report allows them to develop an overview of the fate of their chemicals - either released and or otherwise managed as waste. Facilities have used this information to help identify opportunities for source reduction.

Starting with On-site Transfers for Treatment

As a starting point, countries could collect data on the amounts of chemicals that are treated on-site. After releases, treatment is the least preferable method of waste management. Collecting data on on-site treatment, therefore can help governments and other parties understand amounts of chemicals in waste that are treated versus released. The amounts treated on-site can be significant. The U.S. PRTR, for example, shows that on-site treatment equaled more than 3.4 billion kilograms, while total releases equaled slightly less than 3.4 billion kilograms.

Reporting Amounts of Chemicals, Not the Amount of Waste Containing the Chemical

Transfers for waste management, whether it is for disposal, treatment, energy recovery, or recycling are often viewed as transfers of waste rather than transfers of toxic chemicals in waste. However as noted above, the generator of the waste containing the toxic chemical often speciates the waste and provides the waste handler with information on the specific components of the waste.

Reporting on the quantity of the waste rather than on the quantity of the chemical in the waste will result in releases and transfers being based on two different units of measure – kilograms of chemical and kilograms of waste that contains the chemical at some concentration. It is therefore preferable, as stated in the recommendations above, to report on the amount of chemical that is being transferred.

Attachment A

Transfers to Disposal. Chemicals in waste that are transferred off-site for disposal generally are either released to land at an off-site facility, including through land treatment surface impoundment, or landfill or are injected underground. Often included in this category is storage. Generally, a toxic chemical is sent off-site for storage because there is no known disposal method. One example is toxic chemicals in mixed hazardous and radioactive waste. This method is considered as a form of disposal because the waste containing the chemical will remain there indefinitely.

Transfers Off-site to Treatment. Chemicals in waste that are transferred off-site may be treated through a variety of methods, including biological treatment, neutralization, incineration, and physical separation. These methods typically result in varying degrees of destruction of the chemical.

Transfers Off-site to Energy Recovery. Chemicals in waste sent off-site for purposes of energy recovery are combusted off-site in industrial furnaces (including kilns) or boilers that generate heat or energy for use at that location. The U.S. does not consider treatment of a chemical by incineration to be energy recovery.

Transfers Off-site to Recycling. Chemicals in waste that are sent off-site for the purposes of recycling are generally recovered by a variety of recycling methods, including solvent recovery and metals recovery. Once they have been recycled, these chemicals may be returned to the originating facility for further processing or made available for use in commerce.

Examples of waste management activities grouped by transfer-type are provided below

<u>Disposal</u>
Storage Only
Solidification/Stabilization—Metals and Metal
Category Compounds only
Wastewater Treatment — Metals
and Metal Category Compounds only, including at Publicly Owned Treatment Works
Underground Injection
Landfill/Disposal Surface Impoundment
Land Treatment
Other Land Disposal
Other Off-Site Management
Transfer to Waste Broker — Disposal
Unknown

<u>Treatment</u>
Solidification/Stabilization (Other than metals)
Incineration/Thermal Treatment

Incineration/Insignificant Fuel Value
Wastewater Treatment, including at Public Owned Treatment Works
Other Waste Treatment
Transfer to Waste Broker — Waste Treatment
Sludge Treatment

Energy Recovery
Energy Recovery
Transfer to Fuel Blender
Transfer to Waste Broker — Energy Recovery

Recycling
Solvents/Organics Recovery
Metals Recovery
Other Reuse or Recovery
Transfer to Waste Broker — Recycling