

Commission for Environmental Cooperation of North America (CEC)

***Meeting of the Consultative Group for the North American Pollutant
Release and Transfer Register (PRTR) Project***

Montreal, Quebec, Canada, 12–13 December 2001

**Consultations for the *Taking Stock 2000* Report
on North American Pollutant Releases and Transfers**



Discussion Paper

I. Introduction

This paper has been prepared as a starting point for discussion during the Consultations for the *Taking Stock 2000* report on North American Pollutant Releases and Transfers. This public meeting, which will take place in Montreal, Canada, on 12 and 13 December 2001, is being organized by the Commission for Environmental Cooperation of North America (CEC) as a forum for exchanging ideas and obtaining stakeholder input early on in the report development process. The aim of this paper is to introduce a range of issues, including relevant background information for each, as a basis for discussion during the meeting.

If you are not able to attend the meeting but would like to provide input, please send your written comments to Erica Phipps at CEC in advance of the meeting, if possible, or by **15 January 2001**. Following the public meeting and receipt of written comments, CEC will prepare a Response to Comments document that will summarize the comments received and outline the proposed approach for development of the *Taking Stock 2000* report.

The *Taking Stock* report is an annual report providing information on pollutants in North America based on data collected through the national pollutant release and transfer registers (PRTRs). These registers are designed to track the quantities of certain chemicals that are released to the air, water and land. CEC recognizes the importance of these PRTRs—such as the Toxics Release Inventory (TRI) in the United States, the National Pollutant Release Inventory (NPRI) in Canada and the *Registro de Emisiones y Transferencia de Contaminants* (RETC) now being implemented in Mexico—for their potential to enhance the North American environment. Tracking chemicals through PRTRs is essential to:

- increase public and industry understanding of the types and quantities of chemicals released into the environment and transferred off-site as waste;
- encourage industry to prevent pollution, reduce waste generation, decrease releases and transfers and assume responsibility for chemical use; and
- track environmental progress and assist governments in identifying priorities.

The national PRTRs are continually changing and expanding, and each new *Taking Stock* report reflects these developments. In recent years, the expansion of TRI to include new industry sectors and the expansion of NPRI to include additional types of transfers were reflected in the new chapters and new analyses included in *Taking Stock 1998*. For 1999, NPRI added new chemicals that were on the TRI list, such as ozone depleters, and these are included for the first time in *Taking Stock 1999*. Future reports will strive to include as much as possible from the additional data being collected by the national PRTRs.

In Mexico the RETC is currently voluntary. However, the Mexican government has committed to mandatory reporting through legislative changes. As the changes take place and mandatory Mexican data become available, these consultative meetings will discuss how the additional Mexican data can be included and compared with the other national PRTR data.

In previous years, comments from participants in the consultative meetings have resulted in significant changes to the format and content of the *Taking Stock* report. The Consultative Group has identified areas of particular interest that have then been

explored in greater depth through special feature chapters focusing on, for example, specific industry sectors, reporting of pollution prevention activities, and uses of PRTR data by industry and community groups.

The Consultative Group has also provided ideas on ways to better organize and present the information, thereby contributing to CEC's ongoing efforts to continually improve the report and better meet users' needs. Such improvements include the two volume format, comprising the *Summary* document and the more detailed *Sourcebook*, as well as the *Taking Stock* web site which allows for even more detailed analyses.

The CEC invites and encourages interested parties to contribute to the development of the *Taking Stock 2000* report. The meeting of the Consultative Group, which is a public forum open to all interested parties, is a significant opportunity to discuss options, obtain new ideas and refine the report. CEC is seeking feedback on a number of ideas, outlined below, and welcomes new ideas.

II. Update on *Taking Stock 1999* Report

Taking Stock 1999, scheduled for release in spring 2002, includes data on chemicals reported for the first time. NPRI added 73 new substances to its list for the 1999 reporting year. They include ozone depleters, nonylphenols and other substances that appear on the US TRI list and other Canadian lists of substances of concern (such as the priority substance list, the ARET (Accelerated Reduction/Elimination of Toxics) list and Canadian Environmental Protection Act Schedule 1). Forty-seven of the 73 substances were also on the TRI list and, therefore, in the *Taking Stock* matched data set for 1999.

Taking Stock 1999 continues the method of categorizing releases started with the *Taking Stock 1998* report. The releases category includes on-site releases and off-site releases. Chemicals transferred off-site for disposal (generally to landfills), along with metals sent for disposal, treatment, sewage and energy recovery, are categorized as "off-site releases." In the past, people have questioned why chemicals sent to a landfill site at the facility were called a release, while chemicals sent to a landfill site away from the facility were called a transfer. They felt these were similar activities and should be treated in a similar manner. The use of the terms "on-site release" and "off-site release" enables these similar activities to be analyzed together, while still conveying that one occurs at the facility while the other occurs off the site of the facility.

In addition, certain analyses in *Taking Stock 1999* include an adjustment factor. When considering total releases, releases are "adjusted" to avoid counting the amounts released more than once. Chemicals can be generated by one facility and then shipped off-site to another facility for disposal on-site. Chemicals, when shipped off-site for disposal, are called releases off-site. When the same chemicals are received by another facility for disposal, they are reported as released on-site. Adjusted releases are total on- and off-site releases minus those off-site releases that are also reported as on-site releases by another NPRI or TRI facility. By way of analogy, this is equivalent to reading a book and lending it to a friend. Two people have read the book, but there is only one book. *Taking Stock 2000* will also present adjusted releases to take into account these chemical transfers.

In other analyses in *Taking Stock*, such as total releases and transfers, releases are not adjusted in order to assess total amounts as actually reported. This is the closest estimate we have of total amounts of the chemicals requiring handling or management. In this case, it is analogous to counting the number of readers of a book rather than just the number of books. Questions such as what kinds and types of waste are being sent off-site, what portion of materials are being recycled or transferred for disposal, what portion of chemicals are being released on-site or which states or provinces account for the largest share of the chemicals being managed can be answered when all types of releases and transfers are considered.

The new *Taking Stock* web site was launched with the *Taking Stock 1999* report. This web site, which will be updated annually, currently allows customized queries of the matched data sets for 1995-1998 and downloading of the report. The site is available at www.cec.org/takingstock/.

III. Opportunities for the *Taking Stock 2000* Report

CEC is proposing the following topics as a starting point for discussion during the meeting, with a view to identifying those opportunities and potential analyses that are of greatest interest.

Taking Stock 2000, as did *Taking Stock 1998* and *1999*, will feature a two-volume format. The "Summary" volume provides an overview and highlights of the information and data, while the "Sourcebook" contains the detailed tables covering industry sectors, chemicals, geographic jurisdictions and facilities. In response to previous suggestions from the Consultative Group, the CEC has also initiated a series of stand-alone special feature reports as part of the *Taking Stock* series.

Opportunity One: Adding Persistent Bioaccumulative Toxics

Taking Stock 2000 has a significant new opportunity to analyze data on persistent bioaccumulative toxics, which will be reported for the first time in 2000.

Each year *Taking Stock* develops a "matched" data set. This set of data contains the common set of chemicals and industry sectors that reported to both NPRI and TRI. This allows data from the national programs to be compared. Information from Mexico's currently voluntary RETC program will be added once comparable data become available.

Beginning with the 2000 reporting year, both NPRI and TRI have made many changes: new substances have been added and reporting thresholds have been changed. A reporting threshold is the amount for an individual substance which, when met, triggers reporting by the facility.

The number and complexity of these changes pose new challenges for the *Taking Stock 2000* report. For example, many substances added to the NPRI for the 2000 reporting year have an "alternate threshold." These "alternate thresholds" are based on amounts released or transferred, whereas the original thresholds (in NPRI and TRI) are based on the amount manufactured, processed or otherwise used. (All of Mexico's RETC reporting is based on amounts released on-site.) These thresholds are not inherently compatible

and so analyses of the data as reported will have to be done to determine if and how comparable data can be analyzed.

Of the chemicals newly added for the 2000 reporting year, seven are on both TRI and NPRI. However, of the seven chemicals:

- three (acrolein, mercury and xylenes) have the same reporting thresholds in NPRI and TRI
- three (benzo(g,h,i)perylene, phenanthrene and hexachlorobenzene) have different thresholds and
- one (dioxins/furans) has a different reporting definition.

The first three chemicals, acrolein, mercury and xylenes can be added to the matched data set. Facilities report mercury at a lower threshold of approximately 5 kilograms in both NPRI and TRI, which will provide an important, new picture of releases and transfers of mercury in Canada and the U.S. Mercury and mercury compounds can have significant environmental and health impacts at relatively low levels.

Mercury has previously been reported at a higher threshold of approximately 10 kilograms in both countries. Environment Canada estimates that lowering the mercury threshold to 5 kg will capture 95% of known mercury releases, from approximately 160 facilities, compared to the approximately 18 facilities that now report mercury.

The second group of chemicals, benzo(g,h,i)perylene, phenanthrene and hexachlorobenzene have different reporting thresholds. Benzo(g,h,i)perylene, and phenanthrene are polycyclic aromatic hydrocarbons (PAHs) that may be incidentally manufactured. Many of the chemicals in the PAH group meet criteria for persistence, bioaccumulation and toxicity. Benzo(g,h,i)perylene and phenanthrene are required to be reported at approximately 50 kilograms in NPRI but at different thresholds in TRI. In TRI, the threshold is 4.5 kg for benzo(g,h,i)perylene and 11,340 kg for phenanthrene.

Hexachlorobenzene (HCB) is a by-product of industrial and combustion processes. NPRI specifies certain activities—such as incineration, smelting and wood preservation—that must report HCB regardless of the amount of HCB released or transferred. In addition, for some activities, the employee threshold also does not apply. For TRI, the threshold is 4.5 kg and applies for all industrial processes that otherwise must report to TRI.

The third group of chemicals, dioxins and furans, have been identified for reduction by many governments due to their health and environmental effects. The reporting of dioxins and furans, newly added for 2000 by both NPRI and TRI, is not the same. NPRI limits reporting of dioxins/furans to specific activities or processes and reports the amount as toxic equivalent (TEQ). TEQ is an index number that is derived by taking each type of dioxin/furan, multiplying the amount by its toxic equivalency factor and adding the resulting amounts together for one number. TRI does not limit reporting to specific activities and reports the total amount (without multiplying each by its toxic equivalency factor). Analysis on the distribution of the dioxins/furans that some facilities report to TRI will have to be done to assess whether the NPRI and TRI data on dioxins/furans can be compared. If it proves difficult to match these categories, the data can be presented separately. Dioxins/furans are on the RETC list, subject to a release threshold. They would be reported as in TRI, but subject to a different threshold for reporting.

A recent CEC report developed a dioxin inventory for Mexico and put together the Canadian and US inventories to analyse rates of deposition of dioxin in the Arctic. These inventories could be used in conjunction with PRTR data, to determine areas where the data indicate similarities and differences between data sets and countries. The chapter could also include a general description of the characteristics of dioxins and furans and brief overview of current regulatory programs designed to reduce dioxin and furan emissions.

Issues for discussion: Which chemicals are of interest for special study? Are there particular analyses of the set of newly added substances that would be of interest? How might the new substances be compared? Any suggestions for how to bridge the gaps in reporting or quantity thresholds? What changes in the methodology are needed to make the comparisons? What other data are available on chemicals of interest that could be put together with PRTR data?

Opportunity Two: Taking a more in-depth look at the reasons behind the data

Now that *Taking Stock* has been reporting comparable data for the US and Canada for six years, many questions arise about some of the reasons behind the trends seen in PRTR data. We could explore some of these questions, such as:

- What or who is driving the increase in off-site releases?
- What or who is driving the decreases shown in releases?
- Why do some sectors show such large differences in average releases/transfers between countries or from year to year?
- What factors contribute to large amounts of recycling within a state or province?
- Have facilities reporting pollution prevention contributed to decreases?
- Why are some facilities no longer reporting and how does this influence decreases?
- Are some trends due to changes in the methods used to manage the substances, rather than overall decreases or increases in the amounts managed (i.e., have decreases in on-site releases been accompanied by increase in off-site transfers)?
- Are the trends for facilities reporting the smaller volumes (which make up the majority of facilities reporting) similar to or different from the facilities reporting the largest volumes (which dominate the amounts and determine the trends in the total database)?
- Are some changes due to changes in methods of estimation?

Some of these questions would require more detailed analysis of PRTR data while others would require developing additional data. This opportunity focuses on the PRTR data now available, i.e., Canadian and U.S. data. However, some of the results, such as the look into pollution prevention reporting or the impact of methods of estimation or differences in industry sector reporting, would likely be useful information for facilities and other interested parties in Mexico.

Issues for discussion: Are there any particular trends that should be explored? Are there particular analyses of the reasons behind the PRTR data that would be of interest? What approaches might be used to address those questions that will require obtaining information beyond the PRTR data sets?

Opportunity Three: Hazardous Waste and Cross-border Transfers

In previous *Taking Stock* reports, we have presented analyses on the transfers of chemicals sent across national boundaries. Data on transfers of hazardous waste for disposal and treatment and substances sent for recycling and energy recovery are part of the NPRI and TRI databases. The locations to which the transfers are sent are also reported. There will be three years of matched data for NPRI and TRI for transfers to disposal, recycling, energy recovery and treatment for use in *Taking Stock 2000*.

In the next *Taking Stock* report we could expand this analysis in several ways. This chapter could discuss the regulatory systems governing cross border transfers, and identify chemicals, facilities and industrial sectors transferring large quantities or specific chemicals across borders. Of special interest would be areas that receive the wastes. Mapping of cross-border transfers could also be considered, e.g. as a potential feature of the *Taking Stock* website. Also, hazardous waste management facilities report on the management and disposal of such wastes that they receive. It may be possible to assess how much of the wastes reported as managed by these hazardous waste management facilities are captured in the reporting by other facilities in the PRTRs.

Additional data from all three countries also could be incorporated into this chapter. All three countries have a hazardous waste reporting system in place, which requires waste to be manifested. While there are differences among the three countries' hazardous waste tracking systems, the data nevertheless could be analyzed. The areas of similarities and differences to PRTR reporting could be noted, and the trends over time described. The Mexican government collects data on a semi-annual basis from hazardous waste generators, transporters and treatment facilities. There also exists a database for cross border transfers. However, this database does not have standardized forms or electronic submissions. The Mexican annual report from industrial facilities, *Cédula de Operación Anual (COA)*, has a voluntary section on hazardous waste generation and treatment that is expected to serve as an adjunct to other data reporting requirements. The Canadian and US regulatory systems are a combination of provincial/state and federal requirements.

This special feature chapter may give insight into reporting on hazardous waste management in the three countries, the differences in the annual PRTR reports and the manifest systems. It could show the role and strengths/uses of each and explain how they relate in order to give a more comprehensive picture of the movement of hazardous wastes within North America and the role that PRTR data play in enriching that picture.

Issues for discussion: Are there particular analyses of hazardous waste and cross border transfers that would be of interest?

Opportunity Four: Watershed- or Ecoregion-based Analyses

When reporting their data on releases to water under the national PRTR programs, facilities are required to specify the receiving water body. Thus, the PRTR data can be a

useful source of information on loadings of listed chemicals into specific rivers, streams, lakes or marine areas. An analysis of PRTR data by receiving water body or watershed could be a useful starting point for identifying possible chemical contamination issues, gauging the relative contribution of industrial facilities to toxic loadings, or for tracking improvements.

While the cross-boundary analyses in *Taking Stock* have typically focused on transfers of chemicals sent for treatment, disposal or recycling between the three countries, rivers and other water systems represent other pathways by which pollutants may cross borders. Examples include the St. Lawrence River, which constitutes the Canadian and US border for hundreds of kilometers; the Columbia River system flowing from southwest Canada to the northwestern US; and the Rio Grande forming the border between Texas in the US and several Mexican states.

This topic was discussed at the previous consultative meeting. Participants were particularly interested in a watershed-based analysis since it can provide a regional picture of PRTR data, integrate other sources of information and provide additional context to PRTR data. Some specific suggestions from the previous meeting for watersheds to examine were: the Mississippi River, the Great Lakes, coastal waters, and the Gulf of Maine and the Bight of California—areas where CEC is already involved. It was noted that Environment Canada is pursuing a Great Lakes report so another watershed might be more appropriate for the CEC work.

An analysis of PRTR data by receiving water body or watershed could look at annual trends, industrial sectors and/or particular chemicals of interest. PRTR data can provide information on loadings of toxic chemicals within air and watersheds, but data on water quality, other pollutants and permits must be obtained from other sources.

Looking at PRTR data from an ecoregion perspective is another option that could be explored. The CEC's biodiversity program has identified the "Baja-to-Bering" ecoregion as a priority, and is building a GIS system that will enable users to look at a range of environmental factors for that region, e.g. pollution sources and concentrations, distribution of plant and animal species, etc. The PRTR data could be mapped on an ecoregion basis, as a source of data on point-source pollution.

Issues for discussion: Would an analysis of PRTR data by watershed, air shed or ecoregion be of interest? Which watershed(s) or ecoregion(s) should be studied? What might be some of the issues to be considered in undertaking such an analysis?

Opportunity Five: Air Shed Analysis

PRTR data can also be grouped by air shed. Mapping air sheds can be a more significant challenge than mapping watersheds. Watersheds are physically confined by geography and are the same no matter what the pollutant since they are defined by drainage area. Air sheds are defined more by the pollutant than by geography. The "air shed" usually depends on how long the chemical survives in the air and, therefore, will differ for chemicals with different lifetimes in the atmosphere. For a substance with a

very long lifetime, the “air shed” is essentially the globe. For a substance with a lifetime of a few days, the air shed is a few 100 kilometers downwind.

This topic was also discussed at the previous consultative meeting. Participants were very interested in air shed-based analyses, noting work done by the IJC on one- and two-day air sheds around the Great Lakes, and how this had expanded the zone of interest around the Great Lakes.

An analysis of PRTR data by air shed could look at annual trends, industrial sectors for particular chemicals of interest. PRTR data can provide information on loadings of toxic chemicals within air sheds, but data on air quality, wind and deposition patterns, and other pollutants must be obtained from other sources.

Issues for discussion: Would an analysis of PRTR data by air shed be of interest? Which chemicals in which air shed(s) should be studied? What might be some of the issues to be considered in undertaking such an analysis?

Opportunity Six: Your Ideas

Participants are invited and encouraged to come to the meeting with other ideas for special analyses or areas of interest that could be considered for the *Taking Stock* report or which might form the basis for separate special feature analyses. CEC will also be gathering ideas from the discussions taking place in the other sessions on other CEC programs and their links to the PRTR program. Feedback on the format of the report and the website is also welcome.

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