

**Commission for Environmental Cooperation of North America
(CEC)**

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

Washington, DC, 28 October 2003

**Consultations for the *Taking Stock 2002* 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 2002* report on North American pollutant releases and transfers and to explore options for reporting of criteria air contaminants (CACs) data. The CEC has prepared a *Taking Stock* report based on data collected through the national pollutant release and transfer registers (PRTRs) annually since the 1995 PRTR data. For the 2002 reporting year, the Canadian PRTR has added the requirement to report on criteria air contaminants. The Commission for Environmental Cooperation of North America (CEC) is holding a public meeting in Washington, DC, USA, on 28 October 2003, as a forum for exchanging ideas and obtaining stakeholder input for the *Taking Stock 2002* report and on issues relating to the new criteria air contaminants data. The aim of this paper is to introduce a range of issues, with relevant background information, as a basis for the discussions at this 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 the CEC in advance of the meeting, if possible, or by **28 November 2003**. Following the public meeting and receipt of written comments, the CEC will prepare a Response to Comments document that will summarize the comments received and outline the proposed approach for the development of the *Taking Stock 2002* report and the analysis and presentation of the criteria air contaminants data.

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, and transfers off-site. The 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 Contaminantes* (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. Future reports will strive to include as much as possible from the additional data being collected by the national PRTRs.

Significant progress has been made in moving towards a mandatory reporting system in Mexico. The RETC is currently voluntary. With the passage of enabling legislation in 2001, work on the supporting regulations continued throughout 2002 and early 2003. Government committees are considering a draft of the final rule for 2004 reporting. Reporting for 2002 and 2003 will remain voluntary. As mandatory Mexican data become available, these consultative meetings will discuss how the Mexican data can be included with the national PRTR data from Canada and the United States.

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 and chemicals, 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 the CEC's ongoing efforts to better meet users' needs. Such improvements include the *Taking Stock* web site, which allows for customized, user-driven analyses of the data sets used in *Taking Stock*.

The CEC invites and encourages interested parties to contribute to the development of the *Taking Stock 2002* 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. The CEC is seeking feedback on a number of ideas, outlined below, and welcomes new ideas.

2 Update on CEC Activities

2.1 Status of Action Plan

Over the past five years, the three governments have collaboratively developed the Action Plan to Enhance Comparability of Pollutant Release and Transfer Registers in North America (available at <www.cec.org>). This plan was adopted by the CEC Council through Council Resolution 02-05 in June 2002. The plan describes a number of areas of PRTRs and proposed actions to increase comparability. Changes in PRTRs have resulted in an increase of approximately 40 to 60 percent in the amount of data that are now comparable. Each year the governments review the Action Plan, discussing ideas and proposing new actions. Progress has been made in the following areas: use of industry classification codes (North American NAICS codes), addition of chemicals, lowering thresholds for some substances such as lead, reporting exemptions,

pollution prevention reporting, mandatory reporting, and reporting on dioxins and furans and PCBs.

2.2 Special feature report on children's health

The three countries have developed a *Cooperative Agenda on Children's Health and the Environment in North America*. This Cooperative Agenda was adopted in June 2002 through Council Resolution 02-06, and has an initial focus on asthma and other respiratory diseases, and the effects of exposure to lead and other toxic chemicals. A report on toxic chemicals and children's health in North America has been developed as one of the planned activities (activity 3.2) described in the *Cooperative Agenda*. This report will be a special feature in the *Taking Stock* series, and will analyze the 2000 PRTR data using a number of lists of chemicals with similar health effects, following the approach used in *Taking Stock*. It will also examine selected chemicals, such as lead, that have long been associated with health effects in children. The report is scheduled for release in winter 2003.

2.3 Update on *Taking Stock 2000 and 2001* reports

Taking Stock 2000, released in April 2003, included data on many persistent, bioaccumulative, toxic (PBTs) compounds reported for the first time, such as dioxins and furans, hexachlorobenzene and PCBs. Some of the key findings of *Taking Stock 2000* included: more than 3.3 million tonnes of chemicals were released and transferred in 2000; on-site releases declined by 17 percent from 1995 to 2000 in North America, with TRI facilities showing generally larger decreases than NPRI; and, facilities reporting smaller amounts of chemicals were generally showing increases in their releases and transfers. This group of facilities reporting relatively smaller releases and transfers represented more than 15,000 facilities. In contrast to this group, those facilities reporting larger releases and transfers, about 3,600 facilities, reported decreases in releases and transfers over time.

The *Taking Stock Online* web site is updated annually and allows customized queries of the matched data sets, time trends and downloading of the report. The site is available at <www.cec.org/takingstock/>.

Taking Stock 2001 is under development, with an expected release in the spring of 2004. Based on discussions at the last Consultative meeting, the report will highlight the recent progress in Mexico and further explore some of the reasons behind the data including differences between facilities reporting smaller and those reporting larger releases and transfers.

With the continued pressure to deliver existing and new programs on a limited program budget, the CEC is interested in discussing options for streamlining the production (and related costs) of *Taking Stock*. Several options are under

consideration that would help to reduce costs while at the same time capitalizing on the evolving ways in which users access and make use of information. During the meeting, the CEC will share options with the Consultative Group and seek their feedback and suggestions.

2.4 Update on international PRTR activities

Several international organizations have active PRTR programs. The Organisation for the Economic Co-operation and Development (OECD) has a task force on PRTRs, which assists member countries in fulfilling the OECD recommendation encouraging all OECD countries to implement a PRTR. The task force produces documents dealing with: the experiences of countries that have developed PRTRs; current and emerging uses of PRTR data; how PRTRs differ; and the identification, selection and adaptation of estimation techniques that industry uses to calculate PRTR releases and transfers. An update of an OECD report on the use of PRTRs is in progress. For more information on OECD activities, see <www.oecd.org>.

In May 2003, 36 countries and the European Union (not including Canada, Mexico and the United States) signed a global protocol on PRTRs developed under the Aarhus Convention. This legally binding protocol was developed through eight negotiating sessions since 2001 and sets minimum requirements for reporting. The full text of the new protocol is available at <www.unece.org/env/pp/prtr.htm>.

The Inter-Organisation Programme for the Sound Management of Chemicals (IOMC) PRTR Coordinating Group has prepared a report on the status of PRTR developments worldwide for the upcoming Intergovernmental Forum of Chemical Safety (IFCS) Forum IV in Bangkok in November 2003. For more details on the IOMC PRTR Coordinating Group, see <www.who.int/iomc> and for IFCS, see <www.who.int/ifcs>.

Canada and United Nations Institute for Training and Research (UNITAR) have hosted a workshop in Chile to share experiences about PRTRs. UNEP Chemicals hosted a regional PRTR workshop in Brazil and plans are underway for a workshop in Costa Rica.

In the last year or two, several countries have implemented a PRTR, including Japan, Korea, Sweden and the European Union (see Table 1).

Table 1. Countries with PRTRs		
Organization	Web Source	Description
Australia's National Pollutant Inventory	www.npi.gov.au/	Data on amount of substances released annually to air, water and land. Searches by facility, substance, industry/other sources, geographic location.
Canada's National Pollutant Release Inventory (NPRI)	www.ec.gc.ca/pdb/npri/	Data on total amount of pollutants released annually to air, water, land and amounts transferred off-site from major industrial sites in Canada. Searches by facility, substance, postal code, name of community, industry sector code. Provides data on CACs from diverse sources for geographic searches.
European Pollutant Emission Register (EPER)	Europa.eu.int/comm/environment/ipcc/eper/	Requires member countries to report emissions (air and water) information from industries regulated under IPPC every three years (2002 was first year). Central Data Repository at < cdr.eionet.eu.int >
Ireland Pollutant Emissions Register (PER)	www.epa.ie/licences/ipc.htm	Annual Environmental Report required for permitted facilities includes mass balance for substances. Available to public, but not available on Internet. Air and water emissions have been submitted to EPER.
Japan PRTR	www.env.go.jp/chemi/prtr/risk0.html and www.prtr-info.jp/	Japanese Ministry of Environment summarizes PRTR data and information on the new reporting system.
Korean Toxics Release Inventory	www.me.go.kr	Korean Ministry of Environment operates its Toxics Release Inventory, modeled on the US TRI.
Netherland's Emission Inventory System	www.mep.tno.nl/	Data on air, water and waste from large industrial facilities. Collective Emissions Inventory includes general survey of emissions from smaller companies and diverse sources. Database maintained by TNO-MEP (independent research institution).
Norwegian Pollutant Release and Transfer Register (INKOSYS)	www.sft.no/bmi/Main/english.asp	Annual emissions to air and water of regulated substances by facilities with discharge permits. Used by government for compliance assurance and in State of the Environment reports. PRTR data and permits, permissible pollutant production volumes, types of waste generated, energy consumption can be retrieved by company name or map search.
Sweden's Pollutant Release and Transfer Register (PRTR)	www.naturvardsverket.se/prtr	Data on air, water, waste and product from large industrial facilities for 70 substances or groups of substances. First reporting year 2001. Can search by facility, substance, county/city, industry sector.
United Kingdom's Pollution Inventory (PI)	www.environment-agency.gov.uk/pi	Data on total amount of pollutants released annually to air, water, and sewers from major industrial sites in England and Wales.
United States Toxics Release Inventory: TRI Explorer	www.epa.gov/triexplorer/	Data on total amount of substances released annually to air, water, land and amounts transferred off-site from major industrial sites in US. Searches by facility, substance, geographic division, industry sector code.

Table 1. Countries with PRTRs

Organization	Web Source	Description
United States Toxics Release Inventory: Windows to My Environment	www.epa.gov/wme/	Searches by postal code or city, produce map with TRI facilities and other regulated sites (hazardous waste, water dischargers). Can obtain reported amounts of substances.

2.5 Update on criteria air pollutant activities in the CEC Air Program

Since 2001, the CEC has been supporting the development of a national criteria air emissions inventory in Mexico that uses a common reporting format and comparable estimation methods as employed in Canada and the United States. This will be the first-ever national criteria air emissions inventory in Mexico, and is a collaborative effort between the CEC, the *Instituto Nacional de Ecología* (INE), the Western Governors' Association, and the US EPA. The inventory includes the air pollutants, sulfur dioxide (SO₂) nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), ammonia and particulate matter—both 2.5 microns (PM_{2.5}) and 10 microns in diameter (PM₁₀). The inventory coverage includes large point sources, small point (area) sources, on-road and off-road mobile sources, and natural sources (e.g., soil dust and vegetation). In August 2003, the inventory development team presented a draft inventory for the six northern Mexico border states at a meeting in Chihuahua. In 2004, the team will extend this work to the remaining Mexico states for a full national inventory.

In a related effort, the CEC began an activity in 2003 to demonstrate the feasibility of using a web browser to access air emissions information contained in remotely located databases as an aid in facilitating public access to this information. To demonstrate the concept, the activity will identify, collect, and review existing power plant emissions, and build and demonstrate a relational database and web browser tool to query, retrieve, and explore emissions data from these distributed databases.

3 The Promise and Challenge of Integrating Pollution Data

Governments, industry and facilities face challenges to explain pollution data every day. Are things getting better or worse? Is this program working or not? What should we be doing? The public is also seeking a deeper understanding of pollution data. Are these emissions possibly one of the reasons my child has asthma? What do all these numbers mean? Is pollution up or down?

The purpose of this discussion is to:

- understand the efforts to integrate pollution data in each country,
- learn from each others' experiences, and
- gain input from the Consultative Group on possible future efforts in this area.

In this section, the existing pollution data systems in each country are identified, the ongoing efforts to integrate data, reporting mechanisms and public access are summarized, and a few possible areas for future work are proposed. Because the countries are beginning to integrate data, this presents new opportunities for CEC actions.

Traditionally, pollutants have been placed into one of three groups: toxic chemicals, criteria air pollutants (“contaminants” in Canada) and greenhouse gases. Toxic chemicals include some metals, pesticides and solvents. Criteria air pollutants include sulfur dioxide, nitrogen oxides, carbon monoxide, volatile organic compounds and particulates. Greenhouse gases include carbon dioxide, methane, nitrous oxide, chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) and perfluorocarbons (PFCs) and sulfur hexafluoride.

Over the years, a number of different tools have been used to understand these three groups of pollutants, including:

- ambient monitoring stations with equipment to provide real-time, hourly and daily measurements,
- requirements for point sources to report on releases and transfers through PRTRs,
- modeling of emissions to predict fate and transport, and
- inventories with estimates or direct measurements of emissions from a variety of sources, including: mobile sources (such as cars and trucks), point sources (such as manufacturing facilities and power plants), area sources (small numerous sources such as dry cleaners and gas stations) and natural sources. These source emissions are totaled for a state, region or national summary.

For this discussion, we focus on two of these possible tools—estimating releases and transfers from PRTRs and emission inventories—and examine current and future integration in North America.

All three countries have committed themselves to conduct PRTRs. In the US, the Toxics Release Inventory (TRI) is collecting its sixteenth year of data on releases and transfers of over 650 chemicals from over 20,000 facilities for 2002. In Canada, the National Pollutant Release Inventory (NPRI) collects data on releases and transfers of over 250 chemicals from over 2,000 facilities. In Mexico, over 170 facilities reported voluntarily to the *Registro de Emisiones y Transferencia de Contaminantes* (RETC), which is expected to become mandatory for the 2004 reporting year.

The three countries have also committed themselves to develop emission inventories of criteria air pollutants and greenhouse gases. Inventory data can be used to develop, assess and revise policies and programs. Because it provides an overall picture of total sources, it is possible to estimate the effect of a new policy, and of how effective such a policy might be in driving overall reductions. Inventory data are also used to track trends over time, provide projections of future trends and develop “what if” scenarios.

Some criteria air pollutants can remain in the atmosphere for long periods of time, and be carried hundreds of kilometers by winds from area to area and country to country, often affecting places far away from the sources of pollution. The pollutants contribute to environmental problems such as smog, acid rain, and regional haze, and affect public health by aggravating respiratory disease and cardiovascular stress—leading to lost work and school days, increased hospital admissions, and even premature death. Children, the elderly, those suffering from respiratory disease such as asthma are particularly at risk.

In Canada, the Criteria Air Contaminants (CACs) Emission Inventory includes air emissions of ammonia, CO, NO_x, SO_x, total particulate matter and the smaller fractions of particulate matter, less than 10 microns (PM₁₀) and 2.5 microns (PM_{2.5}) from six main categories (industrial sources, non-industrial fuel combustion, transportation, incineration, miscellaneous and open sources). The most recent inventory is from 1995. Data on emissions of CACs from point sources will now come from the new requirement for facilities to annually report CACs to NPRI starting with the 2002 reporting year. The inventory can be viewed at <www.ec.gc.ca/pdb/>.

In Mexico, several major cities have criteria air pollutant emission inventories (including the Mexico City region, Monterrey, Guadalajara, Toluca, Ciudad Juarez, Mexicali and Tijuana). These inventories generally cover CO, total hydrocarbons, NO_x, total suspended particulates, SO₂, and some include PM₁₀. Each city has a different inventory year. Currently, there is no national inventory of CACs in Mexico, but the CEC is supporting a collaborative effort to develop a 1999 emissions inventory. Inventories can be viewed at <http://www.semarnat.gob.mx/estadisticas_ambientales/estadisticas_am_98/atmosfera/atmosfera01.shtml>. Facility-specific data on criteria air pollutants are not generally available from these city inventories. Facilities do report on some CACs to the integrated reporting system, the *Cedula de Operación Anual* (COA), but these facility reports are not generally publicly available. With the passage of enabling legislation, facilities will be required to report emissions of criteria air pollutants to the COA, probably for the 2003/2004 reporting year.

In the US, the National Emission Inventory (NEI) contains data on criteria air pollutants such as ammonia, CO, NO_x, PM₁₀, PM_{2.5}, SO₂ and VOCs and also approximately 188 hazardous air pollutants (HAPs). The most recent inventory is for 1999 (draft version 3), and is expected to be updated every three years. Facility-specific emissions of criteria air pollutants are available from NEI. The inventory can be viewed at <www.epa.gov/ttn/chief>. The Scorecard web site <www.scorecard.org> also provides data for each facility on toxics from TRI and criteria air pollutants from NEI.

Each country also has a greenhouse gas inventory, often compiled using methodologies recommended by the Intergovernmental Panel on Climate Change. This standardization of methodologies aids in the comparability of these

inventories. However, facility-specific data on greenhouse gases are not available from these inventories. Sector- and chemical-specific information is available. For information on data from Canada, Mexico and the US collected under the United Nations Framework Convention on Climate Change, see <<http://ghg.unfccc.int/>>. For Canada's inventory, see <www.ec.gc.ca/pdb/ghg/1990_00_report/foreword_e.cfm>. For the US greenhouse gas inventory, see <www.yosemite.epa.gov/oar/globalwarming.nsf/content/ResourceCenterPublicationsGHGEmissionsUSEmissionsInventory2003.html>. For Mexico's greenhouse gas inventory, see <www.ine.gob.mx/ueajei/publicaciones/consultaPublicacion.html?id_pub=362&id_tema=1&dir=Consultas>.

Table 2 summarizes each country's system for collecting facility-specific data on releases of criteria air pollutants, toxics and greenhouse gases.

Type of pollutant	Sources of data for releases from facilities		
	Canada	Mexico	US
Criteria air pollutants	<ul style="list-style-type: none"> • Provincial, regional and national inventories • Facility data now required to be reported to NPRI 	<ul style="list-style-type: none"> • Some facility data through some city inventories • Some facility data through COA 	<ul style="list-style-type: none"> • National Emission Inventory (NEI) • State and regional inventories • Power plant data in E-GRID • Scorecard web site
Toxic Pollutants	<ul style="list-style-type: none"> • Facility data through NPRI 	<ul style="list-style-type: none"> • Some facilities voluntarily report to RETC 	<ul style="list-style-type: none"> • Data on approximately 200 hazardous air pollutants through NEI • Facility data through TRI
Greenhouse Gases	<ul style="list-style-type: none"> • National inventory has limited facility data • Proposal to add reporting of greenhouse gases to NPRI for 2004 	<ul style="list-style-type: none"> • National estimates for international treaties, these have limited facility data 	<ul style="list-style-type: none"> • National inventory has limited facility data

Historically many countries have established three separate inventories of pollution emission data: one for toxics to answer questions about contamination, one for criteria air pollutants to answer questions on air pollution such as smog, and one for greenhouses gases to answer questions about climate change. While this approach has the advantage of being easy to administer, there are growing limitations to this approach and a growing need for integration of pollution emission data. Limitations to the separate inventory approach include:

- many sources emit all three groups of pollutants;
- regulatory programs are often geared to a particular industry sector, and it is important to understand the effect of a program on multiple pollutants;
- facilities need to report separately to three different authorities, often with different reporting deadlines, methodologies, staff and systems;
- it is difficult to get an overall picture of releases from one facility or sector or area when the data are found in three separate systems;
- some pollutants can have multiple environmental effects, and so do not fit neatly into just one group;
- some inventories require reporting of one form of a pollutant. Often, these pollutants can interconvert into different forms and may be present in a mixture; and

- some international treaties now call for reporting on greenhouse gases and criteria air pollutants, or toxics and criteria air pollutants.

Ideally, pollution data systems would be comprehensive, comparable, current, consistent, accurate, transparent, and publicly accessible. These systems could be administered separately, but would be able to be linked together to provide facility-specific information on all three groups of pollutants.

Pollution data can be integrated in a variety of ways. It can be integrated across:

- countries to provide information on one group of pollutants (such as *Taking Stock* for toxic chemicals, CEC work to integrate criteria air pollutant inventories, greenhouse gas inventories required for international treaties) and/or
- all three groups of pollutants, to provide information by facility, sector and area.

Integrating pollution data poses both a promise and a challenge. The promise of integration includes:

- the potential to simplify reporting requirements,
- the potential to report using one window,
- the potential for various programs to share information and approaches,
- an increased understanding of all pollutants from one source,
- an increased ability to understand tradeoffs from the control of one pollutant and the effects of others,
- an increased ability to reduce pollutants from the same source,
- an increased ability to see the “whole picture,” and
- an increased ability to communicate more broadly.

The challenge of integrating pollution data includes:

- technical barriers, such as differences in data estimation methodologies, years of data collection, definitions of terms, chemical lists, geographic coverage, data structure, computer systems and data analysis;
- social barriers, such as differences between users, applications for the data, histories and methods of public communication and public outreach; and
- political and governmental barriers, such as differences in government departments, goals, budgets, programs, work cultures, clients and data confidentiality.

Each country has taken steps along the path of pollution data integration. In Canada, the NPRI is expanding from covering only the traditional toxic chemicals to including criteria air contaminants in 2002 and potentially adding greenhouse gases in 2004. In Mexico, the COA has always been an integrated approach, with reporting of toxics, criteria air pollutants, greenhouse gases, hazardous waste management and water and energy use. The US has three pillars of pollution data: TRI for toxics, the National Emission Inventory for criteria air pollutants and hazardous air pollutants, and international reporting for greenhouse gases. Some efforts are being made to bring these programs together through the Sector Facility Indexing Project and State of the Environment reporting.

Two case studies are presented to give insights into both the promise and challenge of integrating pollution data.

Case Study 1: Integrating pollution data on categories of chemicals: Canada's addition of criteria air contaminants to NPRI

In Canada, there were many pressures to begin integration of criteria air contaminants into NPRI, including:

- the growing realization that the inventory for criteria air contaminants needed to be updated more frequently;
- demands for new air quality models that would include additional information on stack heights, locations and emissions not traditionally available;
- the desire to collect national criteria air contaminant data using common methods and make this data publicly available,
- the need to collect information to fulfill domestic and international commitments, including those of the Canada-US Ozone Air Quality Agreement;
- the need for increased emission information on the several criteria air contaminants recently declared toxic under the Canadian Environmental Protection Act, and added to the priority substances list; and
- the need to harmonize federal requirements with Ontario's new air monitoring regulations.

In December 2000, Canada and the US signed the Ozone Annex to the 1991 Air Quality Agreement. This annex commits Canada to reduce NO_x and VOC emissions from power plants and transportation sources, and take initial actions on industrial sources. The information collected on criteria air contaminants through the NPRI will be used to track Canada's progress in meeting its commitments under the Ozone Annex.

In 2000, the Ad Hoc Work Group supported the addition of the criteria air contaminants to NPRI, and this addition was also supported during stakeholder consultations. The criteria air contaminants meet the decision factors outlined in the permanent process for modifying the NPRI. In February 2001, Environment Canada notified stakeholders of proposed changes for the 2002 and 2003 reporting years, including the proposed addition of criteria air contaminants. Environment Canada prepared a discussion paper and asked a new multi-stakeholder work group to focus on the best means to add CACs. This multi-stakeholder group of approximately 20 people had representatives from reporting facilities, NGOs and federal and provincial governments. In July 2001, this work group made recommendations on definitions of criteria air contaminants, thresholds for them, removal of previous exemptions so that combustion equipment such as boilers, vehicle painting, stripping and major overhauls and fuel terminals would now be required to report, and also on other changes for 2002.

Adding the criteria air contaminants was more complicated than previous chemical additions because they are a complex group of chemicals reported to only one medium (air), which are produced in significant quantities from sources not previously reporting to NPRI, and the type of information required (such as stack parameters) had not been previously reported to NPRI. Because of these unique aspects, adding criteria air contaminants often required an examination of the fundamental framework of NPRI. Questions arose such as: Were the existing exemptions still valid? How can significant new sources of criteria air contaminants, such as boilers, best be included? How could double counting of VOCs be avoided? How could thresholds be set to be compatible with other programs and jurisdictions? How could the traditionally multimedia NPRI best handle information on releases to just one media? How could the data be communicated to the public given the differences in tonnages, toxicities and effects for criteria air contaminants and traditional toxic chemicals? How could NPRI handle the increased number of facilities that would be reporting? How could facilities be provided with guidance?

Following public comment, on the proposed changes, Environment Canada published a document outlining the reasons for its decisions and responding to the suggestions from the work group. In December 2001, the final 2002 reporting requirements were published. These documents are available under “consultations” on at the Environment Canada web site <www.ec.gc.ca/pdb/npri/>.

The process required significant investment of time and energy from stakeholders and government. The discussions of the work group, consideration by government and publication of the regulation was completed within approximately one year to meet the 2002 deadline. Decisions on how to speciate VOCs (required for air quality modeling) were made for the 2003 reporting year.

A number of information sessions were held across Canada to assist facilities with the new requirements. Three new reporting guidance manuals were developed, one for criteria air contaminants, one for the wastewater sector and one for wood preservation facilities. Environment Canada expects to publicly release the 2002 NPRI “raw” data in winter 2003, followed by release of quality-controlled data in spring 2004.

The end result will be the reporting of emissions of criteria air contaminants from approximately 5,000 facilities across Canada. It will mark the first time that Canada has national, publicly accessible, and current emissions data on these chemicals from facilities. Integration will assist in the meeting of domestic, international commitments and programs, give increased ability to analyze for co-benefits and allow the public, industry and government to further understand emissions of CACs from facilities.

Case Study 2: Integrating pollution data across jurisdictions: Mexico’s efforts to blend federal and State RETC Programs

As in many countries, in Mexico the responsibilities for environmental protection are shared between the federal and state governments. Eleven industrial sectors are under federal jurisdiction and are currently covered by the voluntary reporting to the federal *Registro de Emisiones y Transferencia de Contaminantes* (RETC) (petroleum, chemical and petrochemicals, paints and dyes, metallurgy (includes iron and steel industry), automobile manufacture, cellulose and paper, cement and limestone, asbestos, glass, electric power generation and hazardous waste management). Under the Program of Institutional Environmental Development (*Programa de Desarrollo Institucional Ambiental*), environmental responsibilities can be given to the states. As of 2003, about half of the 33 Mexican states are participating in this program and will establish their own state RETC-like system. The state PRTRs will cover additional industrial sectors under state jurisdiction, including vegetable and animal products, food products, textiles and dressmaking, printing products, metal products and graphic arts. Some service facilities such as hospitals, laundries and restaurants are also required to report.

The states are in various stages of developing their PRTRs, from establishing the local legal framework, and the reporting format, to collecting and analyzing data. One of the most advanced is the state of Aguascalientes, which recently published its first annual report on 2000 emissions. For 2004, Aguascalientes, the Distrito Federal, Tamaulipas, and the Estado de México, are planning to collect data for the 2003 reporting year, as may the states of Nuevo León, Quintana Roo, Durango, and Guanajuato.

The plan is for state pollution data to be forwarded to the federal ministry of environment, Semarnat, for inclusion in the federal pollution data. The 2004 RETC report may contain data from some of the states.

There are many challenges to integrating the state and federal RETC data. To date, the legal framework, reporting format and regulations for both federal and state RETC systems have been under development. The federal and state governments are developing the RETC systems with limited staff and resources. Some states are developing legal frameworks, reporting formats and reporting systems that are different than the federal system, which will pose barriers to data integration in the future. Provisions for business confidentiality and public access to data also vary among states and the federal government. The federal government has hosted a series of federal and state workshops in 2003 to share information and coordinate efforts.

4 Discussion on Integrating Criteria Air Pollutants Data In North America

4.1 A proposal for a new analysis of emissions of criteria air pollutants in North America

This year, a new opportunity exists to begin to integrate data on air releases of criteria air pollutants across North America. While each country reports on criteria air pollutants, there is not yet an overview of emissions of these chemicals in North America. The opportunity to create such an overview has arisen due to the new requirement for facilities to report criteria air pollutants to NPRI. This will mean that facility data on emissions of criteria air pollutants are now available from Canada and the USA and some data also exist from Mexico.

Criteria air pollutants include sulfur dioxide, nitrogen oxides, carbon monoxides, volatile organic compounds, and particulates. Some of these chemicals are associated with smog, acid rain, urban air quality, health effects and climate change.

Because of the significant health and environmental effects associated with criteria air pollutants and the increasing availability of emissions data for them in North America, it now seems timely to begin to analyze these emissions on a North American basis. In recognition of this, the CEC Council adopted Resolution 01-05, "Promoting Comparability of Air Emission Inventories," that included a call for periodic CEC reports summarizing publicly available information on criteria air pollutant emissions in North America.

A CEC report can be developed to bring together such emissions data from the new NPRI data, the US NEI data, and the Mexican COA inventory data. The report could:

- provide a brief description of environmental and health effects of criteria air pollutants,
- provide an overview of criteria air pollutant regulations, programs and activities in the three countries,

- present criteria air pollutant data by country for Canada, Mexico and the US (analyses would include emissions of these substances by regions, sectors, facilities and each pollutant, to the extent possible),
- present integrated criteria air pollutant data for North America (analyses would include emissions of these pollutants by regions, sectors, facilities and each contaminant to the extent possible), and
- describe future areas of opportunity and challenges.

This report would serve several useful purposes, including:

- provide a framework for government, industry and the public to understand emissions of criteria air pollutants in a North American context,
- create a forum for countries to learn from each other,
- illustrate areas where integration could be improved and propose suggestions to increase integration, and
- fulfill CEC Council Resolution 01-05.

This report could take various forms, including:

- a stand-alone report under the air program,
- a joint report of the air and PRTR programs,
- a special feature report in the *Taking Stock* series, and/or
- a trimmed down version could be a section in the *Taking Stock* report.

4.2 A proposal for a new analysis integrating emissions of criteria air pollutants and toxics in North America

There is also the possibility of beginning to integrate data for criteria air pollutants with those for toxic substances on a North American basis, wherever possible. Such a report would expand the previous proposal. The analysis could begin to examine the emissions of both criteria air pollutants and toxics by region, sector and facility on a North American basis. This report would have some of the benefits achieved from integrating data, including:

- the potential to learn from other programs,
- an increased understanding of all pollutants from one source,
- an increased ability to understand tradeoffs between control of one pollutant and the effect of others,
- an increased ability to reduce pollutants from the same source,
- a broader view of “the whole picture” of pollutants, and
- an increased ability to communicate more broadly.

As the three countries also increase the amount of data on facility releases of greenhouse gases, there will be the potential to integrate data on criteria air pollutants, toxics and greenhouse gases on a North American basis.

Either a criteria air pollutants report or an integrated criteria air pollutants/toxics report would need to overcome technical barriers, including differences in reporting years, coverage, estimation methodologies, source classification, data structure, contaminants covered and public access.

Issues for Discussion

- What could a criteria air pollutants report contain? Should it focus on a subset of key pollutants and/or industry sectors? If so, which ones?
- Mobile sources (cars, trucks, off-road vehicles) are important sources of criteria air pollutants that don't report annually. Should such a report try to include some accounting for these sources?
- How could a report best contribute to policy development?
- Should the criteria air pollutants report be a stand-alone product or should the CEC develop an integrated criteria air pollutants/toxics report, either now or in the future?
- If a combined report is selected, how can toxics and criteria air pollutant data best be presented to set the proper context for possible large differences in the mass amounts of criteria air pollutants relative to toxics released by the same facilities?
- Any suggestions on the form of the report—e.g., by facility, by sector, by local jurisdiction, by criteria air pollutant, some other grouping?
- What role could a web site play?

5 Opportunities for the *Taking Stock 2002* Report

Each year special analyses are undertaken, based on the data in the *Taking Stock* report. The 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.

Each year *Taking Stock* develops a “matched” data set. This 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 RETC program will be added once comparable data become available under the mandatory system.

What has changed in the TRI/NPRI/RETC programs for the 2002 reporting year?

In the past five years, there have been huge changes in both NPRI and TRI, which in turn have presented significant opportunities for *Taking Stock*. In 1998, new source sectors such as power plants and hazardous waste management/solvent recovery facilities were added to TRI, and became a dominant part of the

matched data set. In 1999, NPRI added over 70 chemicals, and over 40 of these matched with TRI, thereby greatly increasing the number of chemicals analyzed in *Taking Stock*. In 2000, PBTs of particular environmental and health concern, such as dioxins and furans and hexachlorobenzene, were reported for the first time. For the 2001 reporting year, TRI added lead and lead compounds to the list of PBTs reported under alternate thresholds.

The 2002 reporting year represents a milestone for NPRI. This year, for the first time, reporting on criteria air contaminants (NO_x, SO₂, CO, particulates, VOCs) is required. This is expected to double and perhaps triple the number of facilities reporting to NPRI. Other changes include lowered reporting thresholds for several metals, including arsenic, cadmium, and chromium, lower thresholds for incinerators, a new threshold for wastewater treatment plants, reporting required from maintenance and repair of transportation vehicles and fuel storage terminal operations, and revised reporting for pollution prevention.

In 2001, Mexico published a voluntary guideline (NMX-AA-118-SCFI-2001), which specifies the list of chemicals, the reporting format and the reporting procedures for the current RETC program. With the passage of enabling legislation in 2001 and 2002, Mexico is now developing regulations for a mandatory reporting system for toxics. Several Mexican states have been developing state-level RETC systems. Reporting on toxics to the RETC will remain voluntary for 2002/2003 but mandatory reporting of some criteria air pollutants from certain industrial sectors at the federal level will continue to be required.

Opportunity one: Lead—trends and challenges

Lead is a carcinogen, a neurotoxin and a developmental toxin. This section could focus on lead and its compounds, and provide a more detailed look at releases and transfers, time trends and projections. As of the 2001 reporting year, both TRI and NPRI have lowered the threshold for reporting of lead from approximately 10 tonnes to 50 kilograms. This enhanced reporting will provide a new look at lead releases and transfers. Any information on lead emissions in Mexico could also be included.

This section could also draw from the CEC's Children's Health and the Environment program by discussing common sources, pathways and health effects from lead on children of North America. Some examples of the progress made in all three countries in reducing lead emissions could be discussed.

Issues for Discussion

- ◆ What specific types of analyses would be interesting for lead?
- ◆ What other types of information could be included?
- ◆ What activities, programs or actions should be included?

Opportunity two: Focus on air releases

Often reporters and the public are particularly interested in air releases. It may be timely to devote a special feature to the detailed analysis of air releases. The majority of releases from facilities covered in the matched data set are to the air (over 850,000 tonnes in 2000). While releases to the air decreased from 1995–2000, two topics may be worthy of further investigation. The first topic would deal with the difference between TRI and NPRI in the rate of decrease from 1995–2000. TRI posted a 31 percent decrease, much greater than the five percent decrease shown by NPRI. Some of the same sectors that report in both countries generally report larger decreases to TRI than to NPRI. In addition, when looked at on a per facility basis, there remains a large difference in the average releases per facility to air in NPRI compared to TRI, and this ratio has not improved over the years. The NPRI/TRI ratio of average releases to air in 1995 was 2:1 and was still 2:1 in 2000.

The second topic would follow up the special feature on benzene in *Taking Stock 2000*, which found large differences between countries in the amounts of benzene emitted as fugitive releases versus emissions from the stack. Fugitive releases are those coming from leaking pipes, valves, and storage tanks. They are important from a community perspective, as they often originate close to the ground and may be released routinely, and in large quantities. The air data could be broken down into fugitive and stack releases and these then further analyzed by chemical, sector and facility, and trends over time. The reasons that air emissions at particular facilities increased or decreased could also be explored.

The special feature could provide a detailed “drill down” on the air data. Types of analyses could include: which chemicals were released to air in the largest quantities; changes in which chemicals were released to air over time; changes in sectors and facilities with respect to air releases; average releases per facility on a sectoral basis; trends in average air releases per facility; trends in carcinogen, respiratory toxin, and neurotoxin releases over time; stack versus fugitive releases per chemical, sector and facility; and a link to other toxic data, such as the US hazardous air pollutants data.

Issues for Discussion

- ◆ Would an analysis of PRTR air emissions data be of interest?
- ◆ Which chemicals or sectors could be studied?
- ◆ How could the data be presented?
- ◆ What might be some of the issues to be considered in undertaking such an analysis?

Opportunity three: Pollution prevention

Pollution prevention, a national priority in all three countries, focuses on avoiding the creation of pollution in the first place, rather than its management and control once it has been created. TRI, NPRI and RETC require facilities to report the type of pollution prevention activities that are used at the facility. For example, a facility may report using product substitution or reformulation to reduce the releases and transfers of a particular chemical.

For 2002, NPRI has changed its reporting of pollution prevention activities, which has made it more similar to TRI. This new level of comparability would allow an analysis of the most commonly reported types of pollution prevention activities, including which sectors and jurisdictions make the most use of pollution prevention and which chemicals are most and least addressed by pollution prevention activities. The analysis could also look at the difference in pollution prevention reporting between facilities with larger amounts of releases and transfers and those with smaller amounts.

The *Taking Stock 1997* report examined pollution prevention in detail, and some of this analysis helped form the basis of the NPRI changes. That report found pollution prevention to be effective in reducing releases and transfers. Facilities that reported pollution prevention activities reported large declines over time in their releases and transfers, while those not reporting these activities showed increases. It would be interesting to see if this trend still holds true, especially given the longer time trend of the data set now available.

Issues for Discussion

- ◆ Would an analysis of PRTR data on pollution prevention efforts be of interest?
- ◆ Are there any particular analyses that would be of special interest?
- ◆ How could the data be presented?
- ◆ What issues might be considered in undertaking such an analysis?

Opportunity four: Learning from each other

As NPRI, TRI and RETC continue to evolve, there is ever more congruence among the three systems. The matched data are the focus of the *Taking Stock* reports. However, some data do not match among the three systems, and this unique data can also yield valuable insights. For example, reporting on dioxins and furans differs under TRI and NPRI, and both countries have reviewed the findings of each system in order to revise reporting. For NPRI, proposed dioxin

and furan reporting will be based on a quantity threshold similar to that used by TRI and also include reporting in grams on the amounts of each member of the dioxin and furan family. TRI, on the other hand, proposes to require reporting in both grams and also toxicity equivalents. This will increase the comparability of dioxin and furan data in the future.

This special feature could explore the data that are unique to each system. Examples other than dioxins include: TRI collects data on some sectors such as mining in a different way than NPRI, for different elements such as on-site recycling, energy recovery and treatment, and for different chemicals such as pesticides. For NPRI, unique elements include reporting from some sectors such as incinerators burning municipal waste, wastewater treatment plants (POTWs), upstream oil and gas wells, and different chemicals such as nonylphenols.

This feature would highlight the unique features of each system, which may be helpful in considering future changes to the other national systems.

Issues for Discussion

- ◆ Would an analysis of the data unique to TRI, NPRI and RETC be of interest?
- ◆ Are there particular elements of TRI, NPRI and RETC that would be of special interest?

Opportunity five: Exploring reporting changes

This special feature could examine several cases where PRTR reporting has changed and explore the outcomes of this changed reporting. Some potential case studies include: the change from voluntary to mandatory reporting of recycling and energy recovery data in NPRI from 1998 to 1999, the delisting of acetone and phosphoric acid from TRI and NPRI, the increased reporting of power plants and sewage treatment plants in NPRI, the change to filing only a TRI certification form without release and transfer amounts for chemicals used in smaller amounts, and the changing threshold for reporting of mercury and lead in NPRI and TRI. This chapter could examine the role of mandatory reporting, adding chemicals, lowering thresholds and compliance promotion activities.

Issues for Discussion

- ◆ Are there any particular changes that should be explored?
- ◆ Are there particular analyses of the data that would be of interest?
- ◆ Would any sectors, facilities, groups or individuals be interested in sharing their knowledge of some of the effects of the changes?

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. The CEC will also be gathering ideas from the discussions taking place with other CEC program managers on potential links to the PRTR program.

Your feedback and suggestions on the format of the report and the web site are also welcome.

For additional information or to provide comments, please contact:

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