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**PROCEEDINGS OF THE OECD INTERNATIONAL CONFERENCE ON
POLLUTANT RELEASE AND TRANSFER REGISTERS (PRTRs), PART 1**

**PRTR's: NATIONAL AND GLOBAL RESPONSIBILITY
Tokyo, 9-11 September, 1998**

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PRTRs: NATIONAL AND GLOBAL RESPONSIBILITY

Tokyo, 9-11 September 1998

PART 1

**Environment Directorate
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
Paris 1999**

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FOREWORD

Effective environmental policies depend on accurate information concerning the pollutants being released to air, water and soil, as well as transfers off-site for disposal. When only some of this information is available, governments can be left ill-prepared to establish adequate programmes. Among the types of information needed to better understand the impacts of pollutant releases and transfers are: the identity of each pollutant; amounts released and/or transferred; potential risks; and sources of releases, including their exact location. These types of information change over time, making it necessary to carry out regular information collection. A pollutant release and transfer register (PRTR) can help governments obtain the information they need.

PRTRs are proving to be an efficient and dynamic instrument for making important data on pollutant releases and transfers accessible to governments, industry and the public on a regular basis. The publicly accessible information they provide includes the quantities of releases and/or transfers of selected potentially harmful substances, along with their origins and geographic distribution. For this reason, many OECD and non-OECD governments have implemented PRTRs, are developing them, or are considering doing so.

Chapter 19 of Agenda 21, the action programme for sustainable development adopted at the UN Conference on Environment and Development (UNCED) in 1992, calls on governments and industry to establish pollutant emission registers with the co-operation of the public. It also states that industry should provide data on the pollutants they release, specifically the data needed to assess potential risks to human health and the environment. One of the notable features of a PRTR is that the information it contains on chemical releases and transfers is made accessible to government, industry and the public alike.

OECD began work on PRTRs in 1993. As a follow-up activity to UNCED, it was asked by Member countries and the United Nations to prepare a Guidance Manual for national governments that were considering establishing PRTRs. This task was accomplished in co-operation with UN organisations and representatives of Member governments, industry and the public. The Guidance Manual was published in 1996.¹, the same year, an OECD Council Recommendation on implementing PRTRs was adopted.²

There has been a significant amount of international activity during the last five years devoted to PRTR implementation. However, much work remains to be done before many countries have a fully operational system. To take stock of the status and progress of PRTR systems world-wide, and to identify countries' future needs, OECD organised a PRTR conference. Participants were able to share lessons learned in developing existing or emerging PRTRs, especially with regard to impediments and opportunities; evaluating the role of PRTRs as a policy tool for sustainable development; identifying future directions and challenges at the national and international level; and exchanging information on developments in system design and use.

These Proceedings contain presentations given during the conference, a summary of the outcomes of working group sessions, a statement by non-governmental (or environmental citizens') organisations, the conference agenda and a list of participants.

¹ *Pollutant Release and Transfer Registers (PRTRs): A Tool for Environmental Policy and Sustainable Development. Guidance Manual for Governments.* Paris: OECD, 1996.

² Recommendation of the Council on Implementing Pollutant Release and Transfer Registers [C(96)41/Final].

ACKNOWLEDGEMENTS

The OECD wishes to express its appreciation above all to the Environment Agency of Japan for hosting this conference. In addition, the United Nations Institute for Training and Research (UNITAR) and UNEP Chemicals played a prominent role in the conference and its outcomes.

The contributions of the following are also recognised:

- the participants who acted as chairs and reporters during the working group sessions;
- Environment Australia and the United States Environmental Protection Agency, for their extra-budgetary contributions;
- the Environment Agency of Japan, US AID, UNITAR and UNEP Chemicals, for providing direct travel support to some of the participants;
- all those representing national governments, local and regional governments, international organisations, industry, and environmental citizens' organisations, as well as the other experts who took part in the conference.

EXECUTIVE SUMMARY

The OECD International Conference on Pollutant Release and Transfer Registers (PRTRs), "PRTRs: National and Global Responsibility", took place in Tokyo in September 1998. It was hosted by the Environment Agency of Japan. This conference was held in co-operation with the United Nations Institute for Training and Research (UNITAR) and UNEP Chemicals.

The purpose of the conference was to take stock of the progress and status of PRTR implementation world-wide, and to identify future directions for OECD and the international community. The participants from 34 countries included representatives of government, industry, and international and environmental citizens' organisations, as well as other experts.

This conference was the largest and most significant gathering of PRTR experts since the Earth Summit in 1992. It was the culmination of five years of co-operation between OECD and UN organisations in developing guidance and assisting countries world-wide to design and implement PRTRs. Participants discussed ways PRTRs could be better used, and their role in helping governments achieve sustainable development. They also identified international actions needed to enhance support of PRTR implementation over the next five years and recommended that:

- ◀ All countries without PRTRs should take steps, as appropriate, to initiate a national PRTR system as specified in Agenda 21, Chapter 19.
- ◀ OECD countries should continue to set the example in implementing PRTRs, and should take the lead in sharing their experiences world-wide.
- ◀ UNITAR and UNEP should continue their valuable work with industrialising countries and economies in transition, in order to strengthen national capacity to design and implement PRTRs.
- ◀ OECD should review its PRTR *Guidance Manual for Governments* and identify areas where supplemental policy and technical guidance might be needed, in order to:
 - better share techniques for estimating pollutant releases from point and diffuse sources, methodologies for disseminating PRTR data, and techniques used for data presentation;
 - share and improve methods for verifying the data (QA/QC procedures);
 - identify what is needed to standardise reports;
 - develop tools and methods to compare PRTR data across borders;
 - find ways to better indicate opportunities for cleaner technology and technology transfer; and
 - examine methods that users and providers of PRTR data can adopt to ensure more effective use and generation of data.

- ◀ International organisations should work together to identify how PRTRs can be used to monitor commitments set forth in international environmental agreements.
- ◀ International organisations, as well as countries, should develop tools to help integrate national PRTR systems and reporting requirements with international pollution collection and reporting requirements.
- ◀ Multi- and bilateral development co-operation agencies should continue to support work in industrialising countries and economies in transition associated with the design and implementation of national PRTR systems in the initial design phase.
- ◀ OECD should initiate discussions with UN ECE on the Convention for Public Access to Environmental Information about PRTRs and their role in providing the public with information and data about pollutant releases and their sources.
- ◀ Countries should examine the value of linking a PRTR system to a permitting system, such as for integrated pollution prevention and control.

How the conference was organised

The conference was chaired by Tokuhisa Yoshida of the Environment Agency of Japan, Susan Hazen of the United States Environmental Protection Agency and Mark Hyman of Environment Australia. It was opened by Hiroshia Kurihura, Vice Minister of the Environment Agency of Japan, and Joke Waller-Hunter, Director of OECD's Environment Directorate. Nay Htun, Assistant Administrator of the United Nations Development Programme (UNDP), gave the keynote speech.

This was the first time countries had come together to discuss the role and status of PRTRs world-wide. The conference was designed to enable participants to assess how PRTRs are being used to enhance environmental management practices, and to recommend future directions and activities. The first two days focused on sharing lessons learned, identifying successes and challenges in respect to various systems' design and implementation, and evaluating how governments, industry and the public use PRTR data. The third day was devoted to defining the future role and uses of PRTRs.

To help meet the conference objectives, both plenary and working group sessions were organised. Plenary sessions provided participants with background information on the current status of PRTRs, as well as a forum for discussing future needs and activities. Working group sessions focused on specific topics and addressed lessons learned, successes and challenges. The outcomes of the twelve working groups (see "Chairmen's Summaries of the Working Group Sessions") were the basis of discussions during the final session, when needs and ways forward were clarified.

PRTRs in the future

New insight was gained concerning the future role of PRTRs and possible new system components and data uses. The growing environmental management challenges facing countries in the years ahead could lead to the development of systems that collect new types of data and data from different sources. With this in mind, it might be important that governments consider the following:

- the issue of micropollutants, particularly persistent bioaccumulators;
- guidance, methods or standards for integrating PRTR systems and requirements with monitoring and data requirements contained in new international agreements;
- comparison of data across borders, regionally and internationally;

- case studies on future uses and design components, to prepare governments for what is in the pipeline and what might be required to meet future needs, demands and challenges;
- guidance on, or mechanisms for, analysing the current infrastructure for integrating national PRTR requirements with other data reporting requirements and systems (perhaps a self-assessment guide);
- improving the accuracy of release estimations, so that data can be better used by risk assessors;
- addressing the growing challenge of releases from products;
- examination of new data sets that could be combined with PRTR data to meet the growing challenge and information needs of the future.

Throughout the conference, the remarkable progress made by countries over the past five years in increasing the awareness, benefits and uses of PRTRs was demonstrated. However, as noted by environmental citizens' organisations, there is a still long road ahead before many countries have fully operating systems. Representatives of these organisations expressed the need for countries to take concrete steps to develop and implement PRTRs, as called for in Agenda 21, so as to allow more active citizen participation in environmental management activities.

Final statement

At the close of the conference, participants agreed on a final statement:

The OECD International Conference on PRTRs, through a dialogue involving participants from governments, industry and public interest groups of OECD countries and other UN Member States,

- *re-emphasises the recommendations of Agenda 21 and the OECD Council Recommendation on implementing PRTRs and encourages countries to establish PRTR systems and community right-to-know programs;*
- *recognises the progress made in many countries towards the development and implementation of national PRTR systems;*
- *encourages all countries without PRTR systems to consider the initiation of national PRTR design processes, and to ensure that all affected and interested parties participate in these processes and have the knowledge and capacity to ensure effective participation;*
- *encourages the OECD to continue to take the lead in facilitating the international exchange of experience on important issues of PRTR design and implementation;*
- *calls upon multi- and bilateral development co-operation agencies to support developing countries and countries with economies in transition in securing the incremental cost requirements associated with the design and implementation of national PRTR systems in the initial phase;*
- *calls upon UNITAR, UNEP and other relevant international organisations, as well as countries with existing PRTR systems, to increase assistance to developing countries and*

countries with economies in transition to strengthen national capacities and capabilities to design and implement national PRTR systems; and

- *calls upon the OECD Secretariat in preparing the 1999 report to Council to provide an analytical description of existing and developing PRTRs, identifying key features that may contribute to success based on experience to date.*

SUMMARIES OF THE WORKING GROUP SESSIONS

Summaries of the Working Group Sessions

Building on the presentations and discussions during the plenary sessions,³ twelve working groups focused on designated topics. Each working group served as a forum in which participants could share lessons learned in developing and operating PRTRs (including successes); evaluate the role of PRTRs as a sustainable development policy tool; and identify challenges and recommend ways forward.

Chairs were responsible for preparing outlines, and for organising and managing the working group discussions. The following summaries of the outcomes of the working groups were produced during the conference by the chairs and rapporteurs.

SESSION III - SHARING LESSONS LEARNED

Working Group A - Implementing an Effective PRTR Design Process

Chair: Achim Halpaap, UNITAR

Objective: To review experiences gained by countries in implementing a PRTR design process, and to draw generic conclusions that may assist other countries in initiating the process of developing a national PRTR system.

Countries with operating PRTR systems, or those developing PRTRs, have chosen different ways to design them. Many valuable lessons have been learned through the different approaches taken. A key question addressed in this session was: which of these approaches have achieved intended objectives, which ones have not, and why?

Subsequent to the discussions of the working group, the following recommendations were made. These recommendations, based on lessons learned, should be taken into account by governments when designing a PRTR:

1. The importance of raising awareness and building capacities for effective participation of all stakeholders as early as possible

There is a need to raise awareness and build the capacity of all interested/affected parties early on, even prior to the start of the consultative process, to ensure that all stakeholders can participate effectively in the design process.

³ Sessions I, II, IV, VII and VIII were plenary sessions; Sessions III, V and VI were working group sessions, during each of which three “parallel” working groups met (see the conference agenda included as an annex to these Proceedings).

2. Ensure balanced participation and respect for the outcomes of the multi-stakeholder process, as a key to successful PRTR development

A multi-stakeholder process is key to the design and implementation of a PRTR. It is important to ensure equal participation of all interested and affected parties, including public interest groups. The decisions made through such a process should be fully respected throughout the design and implementation stages. Stakeholders can include: all levels of government; industry representatives; labour groups; citizens', environmental, research and public interest groups; academics; and other experts.

3. Ensuring commitment to the identified objectives and features of the PRTR

There is a need for commitment at the outset to a clear set of objectives for the PRTR, as well as for the scope and boundaries of a PRTR system. Objectives should be consistent throughout design and implementation of the PRTR and should be understood by all.

4. Importance of conducting a pilot study

A pilot study can be a useful starting point. It can aid in:

- educating, and raising awareness among, interested parties concerning the aims/potential benefits of the PRTR;
- identifying design issues/challenges and allowing these to be addressed prior to full system implementation;
- identifying anticipated resource requirements for both government and industry; and
- reducing apprehension about the PRTR from the perspective of reporting industries.

5. Right-to-know as an important feature and aim

Embodying the right-to-know in the PRTR is important. It must be recognised, however, that the right-to-know has different contexts in different countries.

6. Need for a strong driving force

It is important that there be a strong driving force for the PRTR, e.g. political, information needs, public demand, other priorities or obligations. In particular, the lack of a sufficient legal basis for the PRTR can be a serious obstacle.

7. Link PRTRs to the existing infrastructure and policy context

The PRTR's relationship to existing regulatory schemes needs to be taken into account, as does the overall national risk management strategy and other factors, such as the regional/international policy context. Self-assessment of a country's data collection programmes and requirements can be a first step towards helping it link or integrate the PRTR with other programmes.

8. Build flexibility into the PRTR system

Flexibility should be built into the PRTR system's design, so that it can be modified to meet changing needs and priorities as environmental management practices and activities evolve. Mechanisms for receiving/incorporating feedback should be considered.

Working Group B - PRTR Implementation

Chair: François Lavallée, Environment Canada

Objective: To build on the experience of countries in dealing with issues that arise during the implementation and operation of PRTR programmes.

Issues that arise during the implementation of PRTRs can affect the acceptance of the programme by stakeholders and the quality of the information collected. The principal activities of a functioning PRTR programme are:

- identifying potential reporting facilities;
- providing reporting guidance, including information for estimating releases;
- enforcing reporting requirements;
- ensuring data collection methods and methodology;
- ensuring quality assurance/quality control (QA/QC) of data;
- processing and analysis of data;
- ensuring public access to data: and
- storing data.

The following is a list of issues that arise in regard to PRTR implementation. Particular challenges and ways to overcome these challenges are noted. This list resulted from the working group discussions.

- Ensure accountability
 - Develop standardised methodologies and techniques with industry for estimating releases;
 - Public disclosure drives better data from industry;
 - QA/QC by governments is needed.
- Capacity building
 - Build the capacity for government, industry and the public to collect, generate and use the PRTR;
 - Carry out a feasibility study on capabilities for developing and operating a PRTR;
 - Identify resource needs up front.

- Establish a list of agreed system objectives with affected and interested parties
 - An agreed list facilitates comprehension of the needs and roles of all those involved in implementation;
 - Reporters will understand what to report, which in turn facilitates implementation.

- Integrate with systems that have operational pollution prevention and control programmes. Future implementation will need to consider micropollutants and adjusting thresholds to accommodate them.

- Make sure systems are standardised, particularly in regard to:
 - list of pollutants and reporters;
 - standard reporting criteria;
 - standard forms.

Working Group C - Outreach, Training and Education Programmes

Chair: Susan Hazen, USEPA

Objective: To present existing and tested strategies for outreach, training and education; to discuss the effectiveness of each strategy and the conditions under which it has proven effective; and to identify areas where new strategies need to be developed, tested and implemented.

Outreach, training and education programmes for affected and interested parties are a vital component of a PRTR programme.

A PRTR facilitates outreach to the public, industry *and* government, and increases dialogue between them about the state of the environment. Outreach, training and education are as important for data providers (industry) as for data users in ensuring the success of a PRTR. For example, data providers need to know what data to collect and how, while data users need to know where to find the data and how to use it.

The following summarises the main findings of the working group discussions:

- The visibility of current PRTR programmes can be increased through published reports (in which data are put into context) and through outreach to the press;
- Governments should provide (at low or no cost) easy access to PRTR data through, for example, libraries, web sites, CD-ROMs, user assistance services and published reports;
- An outreach and education programme should be established to 1) inform the public that the PRTR data exist, 2) ensure easy public access, and 3) provide information, education and training concerning the use of the data;
- It is important to ensure public access to unabridged data. This enables the public to draw their own conclusions, which might very well be different from those of government, industry *and* NGOs;

- To effectively communicate the information provided by a PRTR, it is essential that advances in information technology are explored, developed and used (e.g. mapping, ranking, the Environmental Defense Fund's "scorecard"), while ensuring access to anyone (whether or not access to a web site is possible);
- Communication of the PRTR's limitations helps provide a context for the data: for example, what we do and do not know about hazards and risks of certain chemicals, the scope of coverage, etc.;
- Since no data or information on exposure are collected by the PRTR, it is not in itself a good tool for risk communication. However, the data from a PRTR serves as an input for risk and exposure assessments.
- Comparability with PRTRs in neighbouring countries should be taken into account when developing or updating a system;
- Comparisons among countries can be used to help set national and international priorities with respect to pollution prevention and control.
- The right-to-know, as specified in Agenda 21, entails providing environmental information and data to the public. Making useful data on pollutant releases and transfers available to the public requires the following: the data should be facility-specific; all environmental media (air, water and soil) should be covered; the set of substances should be comprehensive; data should be pollutant/chemical-specific; and

Working Group D - Generating and Reporting PRTR Data

Co-Chairs: Dorothy Bowers, Merck & Co., United States
Tadao Iguchi, Mitsubishi Chemical Corporation, Japan

Objective: To identify an array of alternatives to generating and reporting of data, from the perspective of both reporters and regulatory bodies, and to examine the issues and controversies that have arisen with respect to these alternatives in operating PRTR systems.

Underpinning any PRTR system are the data on which the register is based. But how the data are generated by the reporter, and how they are tabulated and released, are often given less attention in the design and development phase.

Based on lessons learned, the items on the following list should be addressed during PRTR design and development:

- Goals should be set very carefully, as they determine what the data requirements will be, e.g. what type of data are collected, who generates the data, what level of accuracy is needed, how the data are collected, who collates and treats the data, etc.;
- The limits of release estimation techniques should be recognised. The level of precision and accuracy needed will depend on the goals of the system;
- The diversity of industry and the variety of sources can affect the type and quality of data received;

- Good guidance for industry on estimating releases and transfers is needed. Industry should be involved in the development of this guidance;
- The confidentiality issue should be addressed early on in the design process;
- PRTR results are not the “whole story”. In a pressure state response, PRTR is part of the “pressure”. The response needs to be used as input to the decision-making model;
- Industry performs best when there is certainty that what it is doing is correct, and when what is expected has been made clear. There is an absolute need for clear programme objectives, and for clarity as to who reports and how; and
- Pilot programmes are an effective mechanism for defining key data issues.

SESSION V - EVALUATING THE ROLE OF PRTRs AS AN ENVIRONMENTAL POLICY TOOL

Working Group E - Role of a PRTR Nationally and Globally: Focus on Governments

Chair: Luis R. Sánchez-Cataño, Instituto Nacional de Ecología, Mexico

Objective: To assess the usefulness of a PRTR for setting priorities, measuring progress and enhancing the reduction of the pollution burden, from a government point of view.

The goal of any PRTR is not simply to collect data, but also to provide information that can be used by government, industry and the public to improve sound management of chemicals. The use of a PRTR can provide considerable benefits to a government, such as establishing environmental priorities, measuring the progress of environmental policies, and providing information that can be used to meet the requirements of other environmental regulations.

The outcome of the working group was as follows:

Governments recognise their responsibility and opportunities related to PRTR development and operation. As an environmental management tool, a PRTR can contribute to sustainable development through aiding:

- environmental priority setting, toxic substances control, integrated pollution prevention and control, state of the environment assessment and reporting (analysing release trends on a national, regional, substance and sectoral basis), compliance with international agreements, provision of information to local and state governments, and building of public accountability for governmental decision-making;
- chemicals management at facility level, source reduction, pollution prevention (including voluntary programmes), corporate reporting and integrated reporting; and

- monitoring progress of environmental programmes, triggering voluntary programmes, increasing public awareness, risk assessment/risk communication, promoting cleaner production, and tracking the state of the environment.

Working Group F - Role of a PRTR Nationally and Globally: Focus on the General Public and Non-Governmental Organisations

Chair: Warren Muir, Hampshire Research Institute, United States

Objective: To identify the best ways to address public data needs in countries with a PRTR, to develop a PRTR, and to consider a PRTR; and to explore what is and is not working in meeting public needs for PRTR data.

The public and non-governmental organisations have been major users of PRTR data where such data exist. In addition, representatives of the public and of NGOs are participating in national committees in most of the countries seeking to design such systems. Citizens' environmental rights, including the right to environmental data and information such as that provided by a PRTR, are increasingly being defined internationally,

The following recommendations of the working group address key characteristics of a PRTR that meets the needs of the public:

1. Ensure that NGOs have a full role in multi-stakeholder development of PRTRs. At the same time, it is acknowledged that consultative processes are time-consuming and resource-intensive. It is therefore very important to set specific ground rules for the process before consultations begin, including to:
 - involve all key constituencies and ensure balance among the constituencies represented;
 - ensure that representatives can speak for their constituencies;
 - find resources to help citizens' environmental organisations to participate;
 - begin with a commitment to set minimum standards in establishing a PRTR; and
 - do the "homework" and reset to find out how best to educate the public and participants in the process.
2. Minimum standards (elements) for a PRTR include:
 - The legal basis for enforceable, mandatory reporting;
 - consistent national programmes;
 - facility-specific information;
 - comprehensive scope (broad range of chemicals, industries and thresholds);
 - careful definition of trade secrets;
 - multi-media information (air, water, soil) including transfers (as in PRTR);
 - public right-to-know as a goal;

- periodic, timely, standardised reporting; and
- ready, electronic management and access to underlying data in an easily accessible format.

Participants in the working group also agreed that it would be important to:

1. address information on chemicals in products and intermediates;
2. recognise the fundamental role played by NGOs in interpreting and communicating PRTR information;
3. establish an on-going community awareness and education programme;
4. support developing countries in establishing PRTRs, especially in ways that address cross-border pollution issues;
5. document and communicate environmental and public health problems that drive public interest in right-to know about sources of pollutants;
6. meet the needs of the community, defined broadly to include emergency planning and response, local governments, NGOs, resource centres, etc.;
7. take advantage of technical advances to manage and communicate PRTR information (e.g., the Environmental Defense Fund (EDF) “Scorecard”⁴), while ensuring access to anyone, including those without access to computers and other relevant technologies; and
8. support broad public access to the Internet;

They also agreed that:

9. as an international legal framework on public access to environmental information has been negotiated as part of the UN ECE-sponsored Aarhus Convention (which has been signed by 35 countries and specifically addresses PRTRs), OECD, UNITAR and UNEP should establish links with UN ECE as this convention goes into force.

⁴ The website is <http://www.scorecard.org/>

Working Group G - Role of a PRTR at the Community Level

Chair: Robert Hogner, Florida International University, USA

Objective: (1) To examine, through lessons learned, how PRTRs are used as a tool for community right-to-know; and (2) to discuss how effective PRTRs have been in empowering communities to stimulate pollution reduction.

A rich history of community uses of PRTR's is being developed as PRTR's are adopted and developed. The unique effectiveness of PRTRs for serving a multiplicity of "sustainability related" issues originates in community involvement in national PRTRs as they are developed, implemented and improved over time.

The findings of the working group were that:

- One *goal* of a PRTR is to enhance global progress towards sustainable development;
- The *goal* of the community, as seen through the eyes of its citizens, is to provide a better life, e.g. increased level of health and increased well-being (life and livelihood) for themselves and their children. This shows itself in an awareness of local impacts on people's day-to-day lives, including a desire for confidence in the quality of the community's physical environment;
- ***What, therefore, enhances the effectiveness of PRTRs?*** Simply, this means ensuring that the public in a community is knowledgeable enough about their physical environment to make informed decisions that are relevant to their lives. This translates into ensuring that PRTRs, as they are improved and developed:
 - include detailed, site-specific data;
 - are comprehensive in nature;
 - treat chemicals in products as releases to other media;
 - adopt as a goal the integration of PRTR databases with health exposure and risk assessment databases;
 - ensure in early developmental and implementation stages, as well as in operational stages, that there is adequate investment in training and resources to ensure the presence of community and NGO participation in balance with that of other stakeholder groups;
 - recognise that community use of PRTRs does not occur naturally but is stimulated as the result of rare chemical-related accidents or, barring such accidents, by policies aimed at developing and enhancing community involvement;
 - recognise the role journalists perform in translating PRTR data for the community, and consequentially ensure that journalists are trained to recognise and accurately interpret PRTR stories and issues; and
 - include journalists as an important PRTR stakeholder group.

Working Group H - Role of a PRTR Nationally and Globally: Focus on the Industry Sector/Reporters

Chair: Phillip Roberts, ICI Chemicals and Polymers Limited, UK

Objective: (1) To identify and describe how the collection of information for, and use of data from, PRTRs supports (or detracts from) company-wide environmental goals, and (2) to identify elements of a PRTR system that promote (or hinder) better environmental management.

Over the last few years, there has been tremendous growth in the amount of environmental information companies are providing to the government and the general public. In some cases, this has been in response to requests made by government; in other cases, companies have taken it upon themselves to voluntarily collect and publicly report environmental data.

The working group agreed that:

- PRTRs help set priorities for emission reductions;
- PRTR data needs to be put into context, e.g. using summary reports, company reports, fact sheets, etc.;
- Internal guidance is needed on the scope and consistency of data reporting by industry;
- Methods for communicating information to the public need to be reviewed and evaluated on a regular basis;
- Permit or licensing systems can be integrated with the PRTR. UK companies report release data via Integrated Pollution Control Authorisations;
- Confidentiality issues have to be addressed in the PRTR;
- Trade associations can play a key role in the transfer of capabilities to small and medium-sized enterprises to estimate releases and report PRTR data; and
- Technology transfer from developed countries to assist emission reduction programmes should be addressed by OECD.

SESSION VI - IDENTIFYING FUTURE DIRECTIONS AND CHALLENGES

Working Group I - New and Evolving Uses of PRTR Data

Chair: Susan Hazen, USEPA

Objective: (1) To present some of the innovative uses of PRTR data, (2) to highlight the flexible nature of PRTR systems, and (3) to show how PRTR data is information that can be used to meet the respective needs and goals of governments, industry and the public.

One of the most important features of a PRTR is its flexibility. This flexibility encourages new and innovative uses of the PRTR system and its data to address environmental concerns. There are two aspects to this flexibility: the design of the PRTR system, and the ability of each sector of society to use data for its particular needs.

While it is vital to note that PRTR systems must be designed to meet each nation's needs and goals, it also should be noted that a PRTR system can meet both international and local objectives. It is possible, for instance, for a group of nations to decide to establish baseline data that each nation should collect. The goal is to allow them to track and compare progress internationally. Similarly, local governments can build on their national PRTR system to gather additional data. These data, collected from local facilities, can help local governments address local concerns.

The second aspect of the flexibility of a PRTR is the ability for each sector of society to use the data for its particular needs. PRTR data can be used in conjunction with other information to better understand an environmental situation. There is a strong history of governments, the public and industry having used PRTR data with other information to reduce and better manage releases and transfers of chemicals. It is how each of these stakeholders has used the PRTR data to achieve specific objectives and results that leads to the many new and innovative uses of these data.

This working group session highlighted new ways that industry and local governments are using PRTR data to achieve more focused use and application to meet their particular needs.

The main findings of the working group were:

- PRTRs can be used to indicate priorities, and to set environmental objectives and targets for pollution prevention and reduction. The data can also be used to help industry set priorities for environmental protection expenditures;
- PRTRs can be used to measure the progress of an environmental programme, and to indicate where further reductions might be needed;
- PRTR data are potentially useful as an input to risk and exposure assessments;
- PRTR data, combined with Geographic Information System data and other graphic tools and data, can be useful in enhancing risk communication among stakeholders, particularly at the local level;

- PRTR data can be used with other data to reach conclusions on relative environmental burdens, so as to measure significance of emissions;
- Public access to PRTR data can be used to bring attention to, and exert pressure in regard to, the reduction goals set by industry;
- PRTR data can be used to analyse chemical use versus waste generation;
- PRTR results can be used to track commitments and progress in regard to international agreements; and
- International attention to comparability of PRTRs across borders, or a PRTR convention, could be used to bring about changes to national PRTRs.

Working Group J - Estimation Techniques for Small Point and Diffuse Sources

Chair: Chris W. Evers, Ministry of Environment, The Netherlands

Objective: To examine the relevance and estimation of the environmental burden from other than large point sources (for which a reporting obligation is not feasible), and to discuss the need for harmonisation of methodologies for estimating emission data.

Most PRTRs are based on reported, calculated or estimated emission data that is dependant on the nature and size of the polluting source. Polluting sources can be categorised according to their size as follows:

- large point sources of large industrial facilities;
- small point sources of small and medium-sized enterprises; and
- diffuse sources of traffic and transport, agriculture and residents.

Based on lessons learned, the following recommendations were made by the working group:

- To estimate total national releases, PRTRs should include significant small and medium point sources and diffuse sources, in addition to large point sources;
- Estimation begins with careful identification of categories (agriculture, traffic, households) and appropriate estimation techniques;
- Estimating emissions/releases from small point and diffuse sources includes two different approaches:
 - “top down”, using nation-wide data sets
 - “bottom-up”, using local counting data; and
- Estimation techniques and methods should be updated periodically and approved.

For diffuse sources, it was found that:

- SME emissions can be estimated using process-specific emission factors;

- Traffic emissions estimates make use of counting rates and vehicle-specific emission factors;
- Agricultural emissions estimates (e.g. methane from rice paddies, pesticides runoff) can be improved by remote sensing, Geographical Information Systems and modelling; and
- Household emissions are related to population density, lifestyles, product use and similar factors.

Working Group K - Use of PRTR Data on the Regional and International Level

Chair: Osmany Pereira, UNEP Chemicals

Objective: To explore existing and potential uses of PRTRs as a tool for measuring the progress of implementation of national commitments to international environmental initiatives; and to identify key issues, challenges and opportunities in regard to sharing PRTR data on the regional and international level.

Background: Benefits from a PRTR can go beyond national considerations. There are a number of regional and global environmental agreements and conventions that could be monitored using PRTR data. A properly design PRTR can provide important data about the progress a country is making towards its commitments and target in international environmental agreements and conventions. In addition, comparing PRTR data across borders can provide a new set of data and insights concerning the environmental burden and help governments to jointly address areas of concern.

The findings of the working group were:

- Comparison of PRTR data between facilities, industrial sectors and across borders can drive environmental improvement;
- Existing PRTRs are one possible mechanism for reporting on international obligations;
- A convention could call for use of a PRTR for monitoring of targets and commitments;
- Supplying data and meeting targets in international agreements is a driving force for developing countries to establish a PRTR;
- Properly designed PRTRs could provide data and information reflecting the progress a country is making towards its commitments, and provide a mechanism for other countries to monitor the progress of all parties towards fulfilling an agreement.
- The experience gained from preparing the Commission for Environmental Co-operation report “Taking Stock”, which presents PRTR data on chemicals in common between the US and Canada, provided the following:
 - The report was an example of a methodology used to compare data from two different countries;
 - Comparison of data between the two countries was found to be value added in that it increased public awareness of the national PRTR;
 - Data must be released in a timely manner.
 - An EU pollutant emission register is under development:

- Future issues concerning development of this system are: (1) transparency of the data; (2) methodologies for estimating releases; and (3) standardisation of the system.

Working Group L - PRTR Development in Transitional and Industrialising Nations

Chair: Achim Halpaap, UNITAR

Objective: (1) To identify opportunities and challenges of introducing PRTRs as an environmental management tool in transitional and industrialising countries, and (2) to develop practical recommendations that specifically address the needs of these countries in regard to developing and implementing national PRTR systems.

A growing number of developing countries and countries with economies in transition have initiated, or expressed interest in developing, a national PRTR system. In reviewing the experience gained in these countries, the motivating factors for initiating national PRTR systems seem to be manifold and to include, *inter alia*, the possibility for PRTRs to:

- provide all interested and concerned parties, both inside and outside government, with consolidated information on local and national pollutant releases and transfers;
- identify opportunities for pollution prevention opportunities at the source;
- assist national decision-makers in setting priorities for reduction of risk associated with priority pollutants;
- streamline existing reporting requirements into one single, multi-media emission inventory; and
- meet reporting obligations under international and/or regional conventions.

At the same time, however, transitional and industrialising countries have identified certain obstacles they expect to face once they move from the PRTR design stage to the implementation of a national PRTR system.

The recommendations of the working group were:

1. Development of PRTRs in developing and industrialising countries, and countries with economies in transition, can provide important opportunities and benefits, such as:
 - providing a potential means of integrating existing reporting schemes into a multi-media inventory;
 - promoting awareness of environmental and chemicals management issues;
 - fostering pollution prevention and risk reduction measures within industry; and
 - providing information as a basis for building partnerships and trust among government, industry and communities;
2. Challenges and constraints related to PRTR development in developing and industrialising countries, and countries with economies in transition, may include:

- environmental issues not being considered of priority importance (politically);
 - necessary financial and human resources not being available;
 - difficulty in identifying chemicals of priority concern due to insufficient data, etc.; and
 - stability of the infrastructure;
3. Ensuring a sufficient legal basis for a PRTR, including the right-to-know, can be important to successful implementation of PRTRs in developing and industrialising countries, and in countries with economies in transition;
 4. PRTR systems should be designed in a flexible manner so as to allow for further development of the system in light of emerging priorities;
 5. Generating the necessary political support, as well as raising awareness and building capacities for effective participation of all interested and concerned parties, are critical to the successful design and implementation of a PRTR;
 6. Chemical- and facility-specific information, such as that provided through existing PRTRs, is of potential interest and use in developing and industrialising countries and countries in economic transition, and thus should be made available. In order to meet the needs of various user groups, the information may also need to be provided in other formats, e.g. in a simplified form, accompanied by contextual information, etc.;
 7. While a PRTR should be tailored to a country's individual needs, there are also potential benefits that ensure some degree of similarity with other PRTR systems, e.g., to facilitate comparability of PRTR data among countries in a region, to make effective use of the work done by countries with existing PRTR systems, etc.;
 8. International agreements, recommendations and voluntary initiatives can serve as a driving force for PRTR development in developing and industrialising countries and countries in economic transition;
 9. Multinational corporations could play a role in fostering PRTR development by voluntarily reporting PRTR data in countries where they have operations; and
 10. International and bilateral support, including financial resources, expertise and capacity-building activities, are needed to support the development of PRTRs in industrialising and developing countries and countries with economies in transition.

SESSION I - OPENING OF THE CONFERENCE

Opening Speech of the International PRTR Conference

Hirohisa Kurihara, Parliamentary Vice Minister, Environment Agency of Japan

Good morning. I am Hirohisa Kurihara, Parliamentary Vice Minister of the Environment Agency of Japan. Mr. Kenji Manabe, the Director General of the Environment Agency was to have made this address, however urgent business of the National Diet forced him to change his schedule. In his place, I would like to say a few words of greeting at the opening of this International Conference on PRTRs.

I would like to express a warm welcome to the 90 people who have come to Japan from about 40 countries around the world to participate in this meeting, including Joke Waller-Hunter, Director of the Environment Directorate of the Organisation for Economic Co-operation and Development and Nay Htun, Asia-Pacific Regional Director of the United Nations Development Programme, and to the many participants from within Japan.

This Conference is sponsored by the OECD, with co-operation from the United Nations Environment Programme and the United Nations Institute for Training and Research. The Environment Agency of Japan has been co-operating fully in the preparations up to this day. In addition, we have provided support to promote participation from Asian countries.

The objectives of this Conference are to share the experiences of various countries relating to Pollutant Release and Transfer Registers, which are new and important tools for environmental policies for sustainable development, and to discuss how each country and the international community should further develop PRTRs.

As you know, PRTRs are systems which compile information on the release to the environment of toxic chemicals and provide it publicly, based upon information provided by industries.

A PRTR system was introduced first in the United States in the 1980s, followed by Canada, England and the Netherlands. Then in 1992, Agenda 21 was adopted at the Earth Summit, and with the Directors' Recommendation of the OECD in 1996, the opportunity for introduction of PRTRs grew considerably world-wide. This year a PRTR system was established in Australia, and I note that many other countries are now undertaking steps to do the same.

Efforts to introduce PRTRs are well underway in Japan as well. For example, since last summer the Environment Agency implemented a pilot project. This was to raise the public understanding of PRTRs, and to deal with the various issues that must be addressed to introduce a system in Japan, through discussion between the various sectors concerned, including academics, industry, and citizen representatives. The offer to hold this Conference in Japan is an expression of Japan's enthusiasm for PRTRs.

Chemical substances provide many benefits for humanity, but at the same time we have experienced the negative impact of environmental pollution on human health and ecosystems. PCBs in the past were called miracle chemicals, but their superior chemical stability has brought calamity, as they have polluted the environment as far as Arctic and Antarctic regions, and have accumulated in living organisms around the world. And to the misfortune of this country, there have been many health victims of PCBs. Today the use of PCBs is banned by countries around the world, but through the experience of dealing with PCB issues, humanity was forced to learn the horrors of chemical pollution of the environment.

However, since then, the use of chemicals has grown, and as research progresses, we know that the issue of environmental pollution by chemical substances is casting an ever greater shadow upon us. Environmental pollution by dioxins is an extremely important issue for policy makers in every country. There are still many unanswered scientific questions about endocrine disrupting chemicals, a new and important issue relating to environmental protection. However, the pollution problems connected to these chemical substances may be only a small part of the total picture. Pollution by chemical substances has become a global problem that must be solved through international co-operation and collaboration, and it is one of the most important issues for humanity to deal with as we approach the 21st century.

As we now proceed to grapple with the complex and diverse issues relating to chemical substances, we must foster PRTR systems, which are new tools for environmental protection, and expand their use world-wide. In order to do this, we must clarify the roles which PRTRs have played so far, keep in mind the roles they must fulfil in the future, and find ways to bring them to reality.

In this context, I hope that this International Conference will be fruitful for all countries and international organisations undertaking the introduction and implementation of PRTRs, for industry, and for non-governmental organisations.

Opening Address: PRTRs as a Tool for Achieving Sustainable Development

Joke Waller-Hunter, Director, OECD Environment Directorate

Good morning ladies and gentlemen. It is a great honour to be here today, on behalf of the OECD, to open this important conference on PRTRs and to contribute to the on-going dialogue of ways to promote sustainable development.

At the outset, I want to thank Japan's Environment Agency for kindly hosting this Conference and for making all of the arrangements. I would also like to thank UNEP and UNITAR who have worked closely with OECD on this Conference and other PRTR activities.

Agenda 21

As many of you know, the major impetus to the creation of PRTRs by national governments was the United Nations Conference on Environment and Development -- UNCED. Agenda 21, which was adopted at UNCED, lists actions that need to be taken in order to achieve sustainability in the 21st century. Chapter 19 of Agenda 21, concerning the Sound Management of Chemicals, calls on governments to implement and improve databases about chemicals, including inventories of emissions, with the co-operation of industry and the public. It says that industry should provide data on the pollutants they release -- specifically those data needed for assessing potential risks to human health and the environment. These data should be made available to national authorities, international bodies and other interested parties involved in hazard and risk assessment.

Benefits

When we were negotiating Chapter 19 of Agenda 21 prior to UNCED, and I had the pleasure at that time to chair those negotiations, few, including myself, envisaged that a PRTR would become so soon such a dynamic instrument in the management of environmental problems. One reason for this is that a PRTR provides, in one place, a set of data critical to governments for environmental management: information about who is generating potentially harmful releases or transfers to various environmental media; what pollutants are being released or transferred; how much is being released or transferred over time; and what is the geographic distribution of the releases and transfers. With this information, government authorities can set priorities for reducing or even eliminating the most potentially damaging pollutant releases. In countries with PRTR systems in place, PRTR data has stimulated potentially affected and interested parties to ask questions of firms whose performance is significantly below normal for their sector and to demand improvements.

The PRTR reporting process itself has promoted pollution prevention by making those who report data aware of the amount of valuable material resources being released as pollutants and thus simply wasted. This is particularly important for small and medium-sized enterprises. In some countries with a PRTR system in place, this information alone has spurred firms to cut this wastage which has resulted in avoiding costs, increasing efficiency and reducing environmental harm simultaneously. We have often heard corporate and environmental group spokespersons alike say that in this respect PRTRs have had a greater impact than many regulatory programmes, even though a PRTR does not mandate environmental improvements.

There is a growing trend toward using a PRTR as an indicator of performance for voluntary initiatives by industry and bilateral agreements with governments. To this end, PRTR data can be used to

establish emission baselines, set reduction targets and monitor progress. One example of a programme was US EPA's 33/50 programme -- one of its most successful voluntary emission reduction programmes. EPA made PRTR data a central component of this activity. By using 1988 PRTR data as a baseline, certain industries were invited to reduce emissions of 17 chemicals by 33 per cent by 1992 and by 50 percent by 1995. Annual PRTR reports were then used to track progress. What is most impressive about this programme is that by 1994, the overall emission targets had been met -- one full year ahead of the 1995 deadline!

The design, development and implementation of a PRTR has served as an agent for change in the way governments, industry and the public interact. With the growing "right-to-know" movement, stakeholders have a better understanding of the value of the information derived from PRTRs and are active in working together to ensure that these systems meet the needs of everyone.

Another important development we have seen as a direct result of the introduction of PRTRs, is the growing participation by local communities in environmental policy decision-making. Historically, residents that live near industrial facilities have had very little information about the environmental situation in their communities, and what was available was not always understandable. As you will hear later in this Conference, in some countries, special efforts are being made to actively provide such information to the public in an easy to understand format. This has empowered an interest group which before had rarely participated in environmental policy-making, and provided a new perspective on environmental management issues.

Industry has also responded by opening its doors to local residents to explain PRTR data and the steps they are taking to manage pollutant releases. Many companies are also issuing annual environmental reports, like financial reports, which highlight, using PRTR data, their achievements during the year.

For firms pursuing ISO 14 000 certification, PRTR data, collected and verified by government and made available to the public, is one way that companies can indicate that improvements to their environmental management systems have resulted in actual environmental performance.

What is the role of OECD in developing PRTRs?

As a follow-up to UNCED, the OECD was asked in 1993 by its Member countries and UN organisations involved in implementing Chapter 19, to prepare a guidance manual for use by governments considering establishing a Pollutant Release and Transfer Register. At that time, only a few of the 29 OECD Member countries had implemented a PRTR.

With the help of our Member countries and in close co-operation with other international organisations -- particularly UNEP and UNITAR -- the "Guidance Manual for Governments" was published in 1996. The Manual has been translated into French, Japanese, Russian and Spanish and is available on the Internet. It addresses the key factors countries should consider when developing a PRTR such as: why should a PRTR be established; what are the goals and objectives of the system; how to select chemical substances which should be the subject of reporting; how should the data be disseminated; and how should a PRTR system be implemented.

After the completion of the Manual, OECD, in conjunction with UNITAR and UNEP, held a series of Regional PRTR Workshops to inform non-OECD member countries in the Asia-Pacific Region, Central and Eastern Europe and the New Independent States of the Former Soviet Union and Central and Latin America, about the benefits and uses of a PRTR for environmental management. The OECD PRTR Guidance Manual for Governments was a central component to these workshops. Latter today, UNITAR

will discuss the progress of several countries that were represented at the workshops such as South Africa, Argentina and the Slovak Republic, in developing a PRTR.

In February 1996, an OECD Council Recommendation was adopted calling for Member countries to take steps to establish PRTR systems using as a basis the principles and information set forth in the Guidance Manual. As you will hear in the upcoming sessions, a number of countries, like Mexico and Australia, have recently established a PRTR using the Guidance Manual and many more are under development.

Sustainable development

One of the main themes of this Conference is to discuss how PRTRs can be further used as a tool for achieving sustainable development. Sustainable development is quite germane to much of what we currently are doing in OECD's Environment Programme and in the Organisation as a whole. The OECD is making sustainable development a key component of its work. As a multi-disciplinary international organisation with a focus on economic development, OECD is indeed uniquely placed to work on the necessary integration of economic, social and environmental policies.

Last year, the OECD Secretary General made sustainable development one of the five major strategic directions for the organisation. The OECD Council, which oversees the work of the Organisation, agreed to a number of horizontal, organisation-wide projects to see how economic, social and environmental policies can be integrated. Four projects have been initiated to address: climate change; a review of the impact of support measures, taxes and resource pricing; technology and sustainable development; and measuring performance or indicators of sustainable development. We expect the results of these projects at the end of next year.

In April of this year, OECD Environment Ministers met and reaffirmed the leadership role and special responsibilities of OECD countries in the world-wide pursuit of sustainable development. In their final communiqué, the Ministers stated that participation, transparency, and accountability in environmental policy-making are key elements in the implementation of sustainable development. To this end, the Ministers agreed, by endorsing a Council Recommendation on environmental information, that the public should be ensured ready access to environmental data and that environmental reporting by public authorities and industry be improved. This Recommendation calls on Member countries to intensify efforts to upgrade the quality of environmental data and information dissemination systems to support effective policies for achieving sustainable development. Countries will promote effective and periodic reporting by enterprises of appropriate and timely information on the environmental implications of their activities, and they will disseminate relevant information to enable the public to assess the environmental consequences of these activities.

These last two policy goals are at the heart of PRTR systems. Comprehensive information of good quality is needed to both monitor progress in achieving sustainable development and also promote change where necessary. In the field of environmental management, PRTRs are one of the most powerful and effective tools available to obtain the critical information, and therefore, OECD attaches much importance to this conference which helps to promote the use of PRTRs and develop the concept further so that it can become an even better tool to achieve sustainable development.

Finally

This brings me back to this Conference. There have been a number of workshops and meetings on PRTRs following UNCED, but none quite like this Conference. This Conference has established the ambitious objectives of examining the lessons learned from existing and emerging PRTRs; evaluating the

national and international role of PRTRs as an environmental policy tool for sustainable development; and identifying future directions and challenges nationally and globally. Extensive efforts have been made to bring together representatives from a broad spectrum of interests including: countries with PRTRs and those considering PRTRs; developed and industrialising countries; industry and environmental organisations; representatives with technical backgrounds and those with policy perspectives.

It is quite fitting that this Conference is held in Japan and at this particular time. As you will hear later in this Conference, Japan's Environment Agency has conducted a pilot PRTR activity to determine the best way to design a PRTR system in this country. Japan's approach to developing a PRTR is commendable. Throughout the design of the pilot project and the analysis of the results, the Environment Agency has actively sought the participation of industry and the public. It has recognised the importance of these stakeholders for designing an effective PRTR. We are encouraged by the progress made to date and look forward to hearing more about it in the future.

This Conference has been designed to reflect on some of the on-going trends I just discussed, and consider what needs to be done to ensure that PRTRs fulfil their full potential as an efficient and effective tool for achieving sustainable development and to recommend what can be done in the OECD in this respect. I expect this Conference to be an important milestone in the evolution of PRTRs world-wide, and a chance for us all to contribute toward a sustainable future.

I wish you all success with achieving this challenge during this conference.

Thank you.

Keynote Address: The Governance of Chemicals and the Evolution of PRTRs

**Nay Htun, UN Assistant Secretary-General
UNDP Assistant Administrator and Regional
Director for Asia and the Pacific**

I am very honoured to be invited to give the keynote address at this important OECD international Pollutant Release and Transfer Register Conference, hosted by the Environment Agency of Japan and held in co-operation with UNEP and UNITAR.

The central role of chemicals in economic development, increasing standards of living and improving the quality of life is well recognised. Without chemicals there can be no development.

Chemicals also play a critical role in the ecosystem. Chemicals such as methane are the very fundamental building blocks for life and evolution of the biosphere. The increasing quantities of chemicals that are used is causing concern, particularly chemicals that are potentially toxic, carcinogenic, remain persistent for considerable length of time and cause irreversible changes to the functioning of life-support systems.

The imperative need for development that will be sustainable requires a concerted and comprehensive account of the role of chemicals, particularly those that are potentially toxic. An inventory of the quantity of chemicals released, what they are, and where they are released is an important first step. Pollutant Release and Transfer Registers (PRTRs) are useful mechanisms for safer management of chemicals.

At the 1992 UN Conference on Environment and Development held in Rio de Janeiro, there was clear recognition that a prerequisite for chemical safety requires the broadest possible awareness of the risks posed by chemicals. It was also accepted that the community and workers have the right to know what these risks are. There was also recognition, that this principle and practice need to be balanced with industry rights to protect proprietary confidential business information.

A review of the documents available on PRTRs as well as the papers to be presented at this International Conference shows that PRTRs can have a number of objectives, including providing information to the public, improving environmental performance, promoting cleaner production, supporting and enforcing normative measures; meeting international requirements.

For industrialising countries, with limited resources, human as well as financial, it is important to be clear on what the objective of the PRTRs will be, so that the appropriate model, procedures and operations will be designed and implemented. Analysing, collecting, collating, maintaining and operating a registry is not an inexpensive undertaking. It will be a very expensive proposition and indeed wasteful use of resources, if PRTRs do not meet intended purposes.

A clear objective for PRTRs help determine the: scope; whether it should address only point source and/or diffuse and non-point sources; range of chemicals and wastes; the *type* of receiving media; and targets.

The OECD PRTR Guidance Manual for Government is a useful document, providing good, pragmatic advice on developing and operating PRTRs which are useful tools for managing chemicals.

The management of chemicals need to be addressed within the context of governance that provide transparency, participation and accountability.

This is particularly important in considering the benefits and risks posed by chemicals. With respect to risks, the basic issue is who and what modalities are needed in deciding the level of risk that will or will not be unacceptable. As countries and communities globally are moving towards more open and participatory governance systems it can be expected that, this trend will also be required with chemicals.

A related fundamental issue concerns the community and workers right to know. What guidelines and procedures need to be in place to ensure transparency and credibility? How should such information and data be made available and communicated? In what and how many languages? Should these be primarily in the language of the major producer countries or should such information be translated into the language of the country that is importing and using the chemicals? How should the information be presented so that the average person can readily comprehend and understand how that particular chemical must be safely stored, transported and used? What happens when the users of the chemicals are illiterate even in their own national language? Labels and symbols, from the internationally recognised skull and cross-bones denoting poison, have been used. What more can and should be done?

These issues relating to chemical risk acceptance, decision-making and communications have important implications on the design and operation of PRTR's.

In this increasing age of communication capabilities and expanding websites and homepages, how will these be used to improve and increase the accessibility of information? What type of user-friendly presentation needs to be incorporated so that illiterate people living in poverty that are exposed to chemicals, for example from pesticides and waste dumps, are not further disadvantaged and marginalised because they lack access to such communication means?

It would seem that the preventive and no regrets policy need to be more vigorously encouraged through all means, particularly in the use of economic incentives and tools. The overuse of chemicals poses as great a problem economically and ecologically, as its misuse. The application of cleaner production throughout the life cycle of a product is a strategy in the right track.

In assessing the potential risks of chemicals and its persistence, there is a need to increasingly take into account the social and human parameters in addition to the biological, physical and chemical aspects. Furthermore, in assessing impacts, effects on global commons need also to be taken into account. Without such a holistic account, the concept and objective of ability cannot be achieved. A very good example is that of chlorofluorocarbons. When these were first introduced, about half century ago, they were considered an ideal chemical because of its pressure, temperature, volume characteristics; as well as being odourless, noncorrosive and non-flammable. With these characteristics it was a key chemical substances in the plastics and refrigeration industries. It should also be remembered that these applications contributed to improving standards of living, for example, by providing better preservation of perishable food; maintaining the quality of pharmaceutical products, such as vaccines; better packaging materials, etc. At that time there was little awareness and hence concern with the ozone layer and its depletion, climate change and Greenhouse gases, of which the chlorofluorocarbons represent one such major gas.

There have been many lessons learned and experience gained in designing and operating PRTRs. In the continuing evolution of PRTRs, which are a key component for improving management of chemicals, the very concept of management needs also to evolve within the broader context of better governance. Without this change, there will continue to be misunderstandings and conflict over chemical use and the benefits and risks associated with it.

The scope of PRTRs also needs to be carefully considered. For example, should antibiotics, such as those used in animal feeds, be included, as these will eventually get into and move up the food chain to human beings, with health consequences.

There needs to be a transition, sooner rather than later, towards the greater application of cleaner production. It is through preventative measures where the greatest gains will be made in lowering and eliminating the release and transfer of potentially toxic and resistant chemicals while enabling their use for improving standards of living and promoting economic development. Greater use of economic initiatives to augment normative measures will help spur a faster transition towards cleaner production and thereby close the waste cycle.

As we are on the threshold of entering the new millennium, there is sufficient knowledge and experience to make better informed choices on the use of chemicals, balancing the imperative needs for economic development, employment generation and poverty alleviation, while ensuring that there will be continued and sustained benefits for future generations. Increasing experience, knowledge and information of the risks and benefits involved need to be supported with the necessary political will to progress towards a sustainable world.

**SESSION II - PRTR SYSTEMS:
EXPERIENCES IN DESIGN AND
DEVELOPMENT**

The National Pollutant Emission Register in the Netherlands

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Since 1974 an integrated database of emissions and supporting information is present in The Netherlands. This database has developed into the national register containing all information about emissions that all actors in the field have agreed upon. This national Pollutant Emission Register or Emission Inventory System can be considered as the equivalent of the national Pollutant Release and Transfer Register (PRTR) in The Netherlands. The Pollutant Emission Register has become one of the main tools in the monitoring of target groups and is the main source of information about emissions on a regional, national and international level. The emission data in the central national database will be disseminated to all interested parties including the public by means of CD-ROM and Internet.

1. INTRODUCTION

The national Pollutant Emission Register (PER), also called the Emission Inventory System (EIS), comprises the registration, analysis, localisation and presentation of emission data of both industrial and non-industrial sources in The Netherlands. The PER is used as the national instrument to monitor the emissions from all source categories to all compartments on a (sub-) national scale [1]. Emissions are gathered from all source categories, being industry, public utilities, traffic, households, agriculture and natural sources. Agreement about definitions, methods and emission factors, based on reports by expert groups, is achieved in the Co-ordination Committee for the Monitoring of Target Groups (CCDM).

The emission data are updated every year. The results are reported yearly in a joint publication with the other actors in the field and stored in the central national database, from which information for policy or research applications is provided. The aim of the emission inventory is to support the environmental policy of the government and to monitor the progress of environmental policy. The annual update of the emission data enables to analyse trends in the emission data and to assess in what respect environmental targets are achieved. These environmental targets have been set in the National Environmental Policy Plan recently revised in 1998 [2].

Governmental authorities at a national, regional and local level have access to all information relevant to their area. Information on the level of individual industrial processes is restricted to the regulatory bodies. All other information, including localised emission data on all pollutants, can be obtained on a site by site basis for each company and is freely available to the public. The information is also widely used in research projects, frequently sponsored by a governmental agency. Users are directed to a central information office, where they can be assisted in defining their questions and obtaining the information for their specific applications. This information is provided without charges.

The Inspectorate for Environmental Protection (IMH) is owner of the Pollutant Emission Register (PER) and is responsible for overall management and co-ordination of all activities with respect to the PER. Part of the operational activities has been commissioned to other institutes. The

Organisation for Applied Scientific Research (TNO) collects emission data of the large point sources and carries out the processing and publication of the emission data. The National Institute for Public Health and Environment (RIVM) carries out maintenance of the information systems. Both TNO and RIVM are contractors in commission of the Inspectorate.

All activities by the Inspectorate, TNO and RIVM are subject to a quality system according to ISO 9001. This quality system has been introduced in 1997 to ascertain the quality of the monitoring process related to the PER. The function of the quality system will be assessed periodically.

2. OBJECTIVES OF THE MONITORING SYSTEM

At present, the objectives of the Pollutant Emission Register (PER) are the following:

- to monitor annually the emissions of air and water pollution as well as the waste flows from all sources on a (sub-) national scale;
- to verify the progress of environmental policy;
- to provide the official emission data to national and international bodies;
- to disseminate the emission data to the public and to pollution modelling.

To fulfil its objectives, the monitoring system of the PER has the following tasks:

- to collect and diagnose all emissions to air, water and soil from both industrial and non-industrial sources in The Netherlands and to store the emission data in a central database; in the near future waste data will be included too;
- to analyse the emission data with respect to pollutant, target group and industrial branches, to environmental theme and to the location of the sources;
- to assess the effects of environmental policy and to evaluate to what extent policy targets for emission reduction are achieved;
- to ascertain trends in the emission data by evaluating the results for the subsequent inventory years;
- to provide emission data to national (e.g. provinces) and international (e.g. ECE) authorities and to other interested parties and the public.

The monitoring system of the PER comprises two connected information systems:

- the individual system (IEI), containing emissions to air, water and soil for industrial large point sources. In 1998 waste data will be incorporated too. For most industries the emissions are registered individually based upon detailed information of each individual plant;
- the collective system (CEI), which is a geographical information system (GIS), containing spatial resolved emission data and in the future also waste flows. This system includes emissions from all sources, industrial as well as non-industrial. The emissions of the small and medium-sized enterprises as well as non-industrial diffuse sources are calculated collectively with statistical data on specific activity rates and emission factors.

3. POSITION WITHIN MONITORING

The progress of emission reductions, as mentioned in the National Environmental Policy Plan, will be controlled by monitoring the emissions of the different source categories or target groups. This process is monitored by target group oriented expert groups and co-ordinated by the Co-ordination Committee for the Monitoring of Target Groups (CCDM). Annually the CCDM establish the list of pollutants to be incorporated in the target group monitoring programme. For each target group an expert group is elaborating the procedures and methods of the complete monitoring process into a protocol. All parties involved have to agree on the content of that protocol.

The CCDM is the national co-ordination committee for the activities of seven expert groups dedicated to the following source categories:

- Agriculture, including non-anthropogenic sources
- Traffic and transport, including road, rail and air traffic and shipping
- Facilities, including industrial sites and small and medium-sized enterprises, power plants, oil refineries and waste incinerators
- Waste disposal sites or landfills
- Consumers, including all residential-related emissions
- Other small source categories, e.g. drinking-water companies, sewage treatment plants, research institutes, trade and government
- International aspects, concerning the supply of monitoring data to the European Union and other international bodies.

Each expert group has the task to formulate a protocol for the entire monitoring process with respect to its specific target group. The monitoring process comprises the following five steps:

- 1. Data collection** The information flow from the stakeholders to the regulatory bodies or the competent authorities is described. This description includes details about the nature of the data.
- 2. Data validation** The quality of the data is verified. This includes the quality assurance by the supplying party as well as the quality control by the regulatory bodies or other competent authorities.
- 3. Data storage** The Inspectorate for Environmental Protection makes appointments with all suppliers of information about polluting sources and gathers the required data. These data are implemented into the central database of the Emission Inventory System containing the national emission data.
- 4. Data management** In close co-operation with the competent authorities the Inspectorate for Environmental Protection will handle the emission data in such a way, that presentation on different levels of aggregation is possible to fulfil the requirements of the stakeholders or other users.
- 5. Data dissemination** Data from the central national database is publicly available and is reported in the annual National Emission Report, edited by the

Inspectorate for Environmental Protection. Furthermore the effort is aimed at the dissemination of emission data to the public on CD-ROM as well as by using the technical possibilities of data warehousing to provide data to the Internet.

4. ACT ON ENVIRONMENTAL REPORTING

The purpose of the monitoring system is to support the environmental policy of the government, comprising the monitoring of the progress of environmental policy. The yearly update of the emission data enables to analyse trends in the emission data and to test in what respect environmental targets are achieved.

The greater part of the emissions of toxic substances from industrial sources is controlled by licenses granted by the competent authorities. These regulatory bodies are in most cases provinces, water board authorities or municipalities. So far, the Department for Monitoring and Information Management of the Inspectorate for Environmental Protection is provided yearly with the nation-wide emission data of about 500 major facilities (with altogether about 2100 plants) on a voluntary basis. Reduction of the emissions is controlled by covenants of industrial sectors and government. Based on these covenant agreements environmental business reports are drawn up by individual industrial sites. The information about the industrial emission data from these environmental business reports is imported into the central national database.

A close connection exists between target group monitoring and the annual environmental reports that the large industrial sites will have to produce. These annual reports will be part of the legal framework and should be made public before April 1st of each year. In the near future these annual environmental reports will be the main source for the emission data of the target group "industry". Recently an act on environmental reporting has been accepted by parliament. Starting in 1999, large companies will be obliged to report their emissions annually in an environmental report that will be publicly available. The environmental report will concern about the 320 most polluting companies in the country, and will be mandatory from the reporting year 1999 onwards.

In the environmental report a facility is obliged to report yearly on its environmental performance as well as on its environmental management system. These two topics have to be presented both in a report to the public and in a report to the government. The reports may be combined, but differences in presentation are allowed. The report for the government must present quantitative data for all relevant pollutants emitted or released by the facility. The public report has to obey the European standards for the EMAS declaration, while the report for the government has to provide all necessary information to monitor the progress of emission reductions as agreed between industry and government. The government report should be an integral source of all reporting obligations from industry to government. As above mentioned, the first mandatory reports will be published by facilities in the year 2000 giving emission data for the year 1999.

5. CENTRAL DATABASE WITH NATIONAL EMISSION DATA

All emission data of the Pollutant Emission Register are updated annually. The structure of the central database with the national emission data has the following three dimensions, which enables the presentation of the emission data at different levels of aggregation:

1. Pollutants: The database contains the necessary information about the emissions of all relevant species or compounds, for which an environmental policy or emission reduction target

has been formulated. Added to this group of pollutants are substances for which international obligations require reporting and a list of pesticides monitored for agricultural policies. In 1998 this includes the emission data for about 170 different substances including waste, listed in the appendix. The information about individual substances can be aggregated to the level of environmental themes distinguished in the National Environmental Policy Plan. With respect to the emissions relevant environmental themes are the following:

- climate change (due to CO₂, CH₄, N₂O, SF₆ and CFCs);
- ozone depletion (due to CFCs);
- acidification (due to SO₂, NO_x, NH₃);
- eutrophication (due to N- and P-compounds);
- dispersion (due to pesticides and other toxic substances).

2. Sources: The database contains plant specific emission data for all large point sources as well as activity rates and emission factors for all small and medium-sized enterprises and diffuse sources. Both industrial and non-industrial sources are included, so that all sources and activities are incorporated. The information about the polluting sources can be aggregated to the level of target sectors or source categories. The most important target sectors are determined in the National Environmental Policy Plan to be as follows:

- refineries;
- power plants;
- industry, including small and medium-sized enterprises;
- waste disposal sites;
- traffic and transport;
- agriculture;
- consumers;
- miscellaneous, including nature.

3. Locations: The database is linked to a Geographical Information System. This GIS supports the interconnection of emission data to the location of the sources. Both large point sources and small and diffuse sources are localised in a grid of 1*1 km². This enables the information system to present the emission densities of spatially resolved emission data. The emissions in the individual grid cells can be aggregated to the level of the twelve different provinces in the country, to the various watershed regions and of course into national totals.

6. COLLECTION AND DISSEMINATION OF DATA

The data collection into the central national database of the PER follows two different pathways:

Large point sources

Emission data for most of the pollutants is collected for each individual facility on a site by site basis. Only combustion emissions are collected for each individual plant due to regulations of the European Union. From 1999 onwards these data will be reported mandatory by about 320 facilities to the regulatory bodies, i.e. the provinces. The provinces will validate the reported data and send them to the Inspectorate for Environmental Protection to be inserted into the central database of the PER. The combustion emissions of the large combustion plants are reported annually to the European Union.

Small and diffuse sources

The emission data for these sources is calculated by applying statistical information about the activity rates of the different activities. By multiplying activity rates with emission factors, the emissions are estimated and updated in the central database of the PER. The estimation of the waste data occurs by a similar approach.

After processing, the data in the national database is fixed for a specific reporting year and published in the annual Emission Report both on paper and on CD-ROM. This publication is a joint result of the efforts of all parties involved in the process of collecting and handling the emission data. Therefore the Emission Report is a co-production of the Ministry of Housing, Spatial Planning and the Environment, the Ministry of Transport, Public Works and Water Management, the Ministry of Agriculture, Nature Management and Fisheries, the Central Bureau for Statistics and the National Institute for Public Health and Environment. Moreover, a copy of the database is provided to the institutes preparing environmental reports and also to the provinces to be introduced into their own information systems. In this way the goal has been achieved to use only one consistent dataset for all kind of environmental reports within the country.

In the near future a selection of the national database of the PER will be extracted into a datawarehouse to be accessed by all interested parties. By connecting the datawarehouse to the Internet the emission data of the PER will be accessible to the public.

7. INTERNATIONAL CONTEXT

As a result of the UNCED conference in Rio de Janeiro in 1992 the OECD took the initiative to promote the introduction of a national Pollutant Release and Transfer Register (PRTR) in all countries. After five workshops the design of a PRTR has been conceived and formulated into a guidance manual for governments. This PRTR guidance document was accepted by the OECD countries in 1996, together with a Council Recommendation on implementing PRTRs. The PER/EIS system in The Netherlands has to be considered as the Dutch equivalent of the PRTR.

Basic characteristics of the PRTR in general are the following:

- a PRTR is a national integrated environmental database;
- a PRTR is an effective tool for pollution prevention;
- a PRTR is an instrument to reduce duplicative reporting;
- PRTR data should be used by government in the assessment of environmental policy;
- PRTR results should be made accessible to the public.

Besides the development of a PRTR, co-operation occurs with other bodies like the European Union and European Environmental Agency (EEA). Periodically emission data are provided to the EEA as an input for the European information system CORINAIR. Furthermore, contributions are made to the Atmospheric Emission Inventory Guidebook, aiming at agreement within Europe about methods and emission factors. Finally, the department for Monitoring and Information Management acts as the National Reference Centre for Emissions for the benefit of the EEA, to supply emission data to international emission inventories and information systems.

8. REFERENCES

- 1) Ministry of Housing, Spatial Planning and the Environment, Emission Data for The Netherlands, 1996 and estimates for 1997, Publication Series Emission Inventory n. 46, The Hague (1998).
- 2) National Environmental Policy Plan 3, Second Chamber, session 1997-1998, SDU, The Hague (1998).

**APPENDIX:
LIST OF SUBSTANCES INCORPORATED IN THE MONITORING PROGRAMME IN 1998**

Threshold values have been defined for reporting obligations of individual emissions. The reporting threshold values are given in the tables both for emissions to air and to water in kg/year.

1. ANORGANIC COMPOUNDS

1.1. Metals and metalloids (10)

Threshold values in kg

	Threshold Air	Threshold Water
Antimony	1	1
Arsenic	1	1
Cadmium	1	1
Chromium	10	10
Copper	5	10
Mercury	1	1
Lead	100	10
Nickel	50	10
Selenium	1	1
Zinc	100	50

1.2. Anorganic compounds (14)

Threshold values in kg

	Threshold Air	Threshold Water
Ammonia	5000	-
Nitrogen oxides	100000	-
Dinitrogen oxide	10000	-
Asbestos	1	-
Chlorides	5000	500000
Sulphur hexafluoride	10	1
Fluorides	1000	10000
Hydrogen sulfide	1000	-
Sulphur dioxide	100000	-
Carbon dioxide	100000	-
Carbon monoxide	100000	-
Cyanides	50	10
Fine dust (PM ₁₀)	10000	-
Coarse dust	10000	-

2. ORGANIC COMPOUNDS

2.1. Specified non-halogenated organic compounds (17)

Threshold values in kg

	Threshold Air	Threshold Water
Acrolein	1	-
Acrylonitrile	100	-
Ethene	1000	-
Formaldehyde	100	-
Methane	100000	-
Methyloxirane	100	-
Oxirane	100	-
Benzene	500	10
Toluene	10000	10
Styrene	1000	1
Xylenes	1000	5
Ethylbenzene	10	1
Isopropylbenzene	10	1
Dibutylphthalate	1	1
Diethylphthalate	100	1
Phthalates-total	100	1
Phenols-total	100	10

2.2. Specified halogenated organic compounds (24)

Threshold values in kg

	Threshold Air	Threshold Water
1,2-Dichloroethene	-	-
1,2-Dichloroethane	100	5
Dichloromethane	1000	1
Epichlorohydrin	50	1
Hexachlorocyclohexane	1	1
Tetrachloroethene	1000	1
Tetrachloromethane	100	1
1,1,1-Trichloroethane	1000	1
Trichloroethene	1000	1
Trichloromethane	10	1
Vinylchloride	50	1
Methylbromide	1	-
Hexachlorobutadiene	10	1
Chloroanilines	-	-
Chlorobenzenes non-specified	50	1
Chloronitrobenzenes	-	-
Hexachlorobenzenes	1	1
Trichlorobenzenes	1	1
2-Chlorotoluene	-	-
4-Chlorotoluene	-	-
1,4-Dichlorobenzene	-	-
Dioxins (Teq)	0,001	-
Pentachlorophenols	1	1
Chlorophenols non-specified	-	-

2.3. PAH, CFC, HCFC, HFC, and halones (31)

Threshold values in kg

	Threshold Air	Threshold Water
Polycyclic aromatic hydrocarbons (Min. of VROM selection)	500	1
Polycyclic aromatic hydrocarbons (Borneff selection)	500	1
Naphthalene	-	-
Phenanthrene	-	-
Anthracene	-	-
Fluoranthene	100	1
Chrysene	-	-
Benzo(a)anthracene	-	-
Benzo(a)pyrene	-	-
Benzo(k)fluoranthene	-	-
Benzo(g,h,i)perylene	-	-
Chlorofluorocarbons non-specified	1000	-
CFC 11	-	-
CFC 12	-	-
CFC 13	-	-
CFC 113	-	-
CFC 114	-	-
CFC 115	-	-
CFC + Halones (total)	1000	-
Halon 1211	-	-
Halon 1301	-	-
Halon 2402	-	-
HCFC non-specified	-	-
HCFC 22	-	-
HCFC 123	-	-
HCFC 124	-	-
HCFC 141b	-	-
HFC non-specified	-	-
HFC 125	-	-
HFC 134a	-	-
HFC 143a	-	-

2.4. General mixtures (7)

Threshold values in kg

	Threshold Air	Threshold Water
Volatile organic compounds	100000	-
Non-methane volatile organic compounds	100000	-
Halogenated organic compounds	10000	5000
Non-halogenated aliphatics	100000	5000
Non-halogenated aromatics	10000	100
Halogenated aliphatics	10000	5000
Halogenated aromatics	100	100

3. Pesticides, herbicides and fungicides (26)

No threshold values

DDT	Bentazon
Drins non-specified	Simazine
PCB's non-specified	Trifluralin
Azinphos-ethyl	Organic tin compounds
Azinphos-methyl	DNOC
Dichlorovos	2,4-D
Endosulfan	Diuron
Fenitrothion	Chloridazon
Fenthion	Dimethoate
Malathion	Mevinphos
Parathion-ethyl	Aldicarb
Parathion-methyl	Dithiocarbamates
Atrazine	Pesticides non-specified

4. Other substances (3)

Phosphorus-total
Nitrogen-total
Mineral oil non-specified

5. Miscellaneous (6)

Radiating substances non-specified	Noise
Radon	Black smoke
Smell	Water consumption

6. Solid waste (30)

Waste oil	Office, shop, and service waste
Car tires	Plastic waste
End of life vehicles	Waste paper and cardboard
Dredging sludge	Oxy-lime sludge
Batteries	Shipping waste
Construction and demolition waste	Shredder waste
Animal manure	Slag and fly ash from incinerating household and communal waste
Ferro domestic waste	Waste from painting activities
Phosphoric acid gypsum	Blasting grit
Glass	Street waste, market waste, waste from parks and waterways
Bulky household waste	Polluted soil
Waste containing halogenated substances	Packaging waste
Household waste non-specified	Fly ash from coal fired power plants
Waste from cables	Hospital waste
Jarosite	Sewage sludge

The Hague, August 1998

The United States Toxics Release Inventory (TRI): A Partnership with Industry, Community and Local Government

Susan B. Hazen

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Introduction

In the United States, there are over 700,000 facilities located in over 25,000 communities across the country. There are nearly 1.5 million kilometres of rivers, lakes and estuaries, and 385 million hectares of farmland. Each year, nearly ten thousand environmental permits are issued and equally compelling numbers of new facilities come on line.

My intent here is not to give a geographical overview of the United States, but rather to bring into focus the sheer magnitude of opportunities for unintended environmental damage within the U.S. Can the U.S. Environmental Protection Agency and our counterpart state EPA's look at each and every such potential risk situation and assure constant oversight? Obviously, the answer is no. Can any nation represented here assure each and every citizen that the routine and non-routine releases of toxic chemicals into their local environments do not individually or in aggregate pose a risk to human health or the environment? Again, I would suggest that the answer is no.

The inability to understand and assess risk at the local level is not a failure of federal environmental protection systems. The systems were never designed to address issues that may be relevant only to a three-mile area, a small, local river or aggregate releases from five different industrial sites within a small community. By and large, our federal systems and their enabling legislative statutes have focused on national environmental protection -- issues and risks that are relevant to a major portion of the country or major sectors of the economy. In the U.S., for example, we have national standards for PCBs, lead and benzene. Our span of control, our regulatory remedies and our resources limit the extent to which we can assess and manage risk at the local level.

There are others, however, who are in a much better position to understand, assess and design risk management approaches at the community level. These "others" are the people who live, work and raise families in close proximity to industrial activities and ultimately are the ones who must find the risks, if they exist, to be acceptable. Unfortunately, this same group has traditionally had the least amount of factual information, the bare minimum of environmental data, limited access to decision makers and severe resource constraints. To enable communities to determine what is acceptable and what is not, to empower our citizens to fully participate in environmental decisions that ultimately have more impact on them than federal regulators making those decisions, and to assure that we do not mandate a "one size fits all" approach to environmental standards, we must provide the information, the data, the tools and the resources that will allow communities to take responsibility for situations where federal authorities and resources are limited or unavailable.

TRI Background

The Pollutant Release and Transfer Register (PRTR) in the United States, known as the Toxics Release Inventory (TRI), is a system that was created for the reasons cited above. Created by the United States Congress in 1986, the purpose of TRI is to provide the public with information about the routine, permitted releases of toxic chemicals present in their local environments and information about similar

chemicals and similar releases across the U.S. The TRI was not developed so that EPA could gather more data about toxics; the TRI was created so that the public could have basic information on industrial chemicals entering their environment. The intent of TRI was not to provide EPA with the data to assess risk in each individual community, it was designed to allow communities to assess risk for themselves. Hence, the name of the statute, *The Emergency Planning and Community Right-to-Know Act (EPCRA)*.

While EPA was never meant to be the primary customer for TRI data, EPA does use the data extensively in its own programs. More important, however, is the role of the federal government in ensuring that TRI is made available to the public and that it evolves over time with the changing needs of the communities that use it. The federal government does have a critical role in this Community Right-to-Know program and that role is to assure that the public has access to the data and that the data fills the information needs of the public. TRI or any PRTR must change over time as environmental issues change and as data users become more sophisticated in their understanding of hazards, exposures and the interrelationship of both in assessing risk. The federal government has taken full responsibility for public access, listing and delisting of chemicals, expansion of covered facilities, revised data elements, reporting guidance, data use tools, etc.

Providing the Information for Environmental Action

The structure of TRI, therefore, is designed for collecting and disseminating information to the public and to promote understanding of local environmental conditions. The data available from TRI must inform the public and encourage their participation in environmental decision-making. TRI data must enable local governments to gather the necessary information to enact effective regulations and other guidelines. Researchers, both inside and outside the government, should have sufficient data to conduct analyses of environmental issues. Collecting TRI data should encourage industry to identify opportunities to minimise the releases and transfers of toxic chemicals and reduce the amount of wastes that they generate. Achieving these goals requires that the data collected by TRI provide the full picture of releases and transfers, plus other data to better understand how facilities are managing their waste.

Principals for the U.S. Right-to-Know Program

Facility-Specific

A fundamental principal of TRI is that the public should be able to obtain data on a facility-specific basis. The TRI reports are filed by individual facilities. They are not aggregated by the parent companies or by trade associations. The concept is that the public has the right-to-know about releases and transfers in their communities. To work effectively with a facility, or to understand that facility's environmental actions, the public and other users of TRI data need to have access to site-specific data. Facility-specific reporting highlights those facilities that have taken proactive steps to lower their releases and transfers. Aggregating the data on a regional basis can penalise the strong performers, while obscuring the releases and transfers of facilities with elevated releases and transfers.

Chemical-Specific

Equally important is the collection of chemical-specific data. Chemicals are included on the TRI list based on their hazard. The purpose is to provide the public with information on chemicals that have the potential to cause harm to human health or the environment. The criteria for this hazard assessment are provided by EPCRA. It was never the intent of EPCRA for EPA to screen for risk prior to release of information to communities. The intent was to allow communities to assess risk for themselves without the overlay of national cost/benefit standards, "acceptable level" determinations and other criteria which can bias risk decisions.

Under TRI, every report that a facility submits provides information for a single chemical or chemical category. A chemical category is a grouping of chemical compounds that contain a common element (e.g. nickel compounds or cadmium compounds). The toxicity of the common element is the basis for including compounds containing that element. There are over 600 chemicals and 28 chemical categories on the TRI list. The chemicals include carcinogens, ozone-depleting chemicals, heavy metals, pesticides, and chemicals covered under international agreements.

Having information on individual chemicals or chemical categories allows the public, governments, or the facilities to make more precise decisions or actions. Broad groupings of chemicals, such as volatile organic compounds (VOCs), can combine chemicals with vastly different environmental or health effects. Data for individual chemicals enables the public to learn about the national or facility-specific status for each chemical, while also allowing the user to compile groups of chemicals, such as carcinogens or heavy metals.

Multi-Media

To obtain proper information on the chemical releases and transfers, the TRI system is fully multi-media. When reporting for a chemical, a facility must indicate the amount that goes to the air, water, and land, that is injected underground, and that is sent off-site. Each of these media is broken down to provide the public and other users with even more specific information. The air release data, for instance, is divided into fugitive releases and stack air releases. Water releases are separated according to the identity of the receiving body. When the chemical is sent off-site, the facility must report the name and address of the receiving facility and whether the transfer is for disposal, treatment, recycling or energy recovery.

Collecting the spectrum of releases and transfers of the chemical provides the public and other users a comprehensive picture of that chemical's fate. If a facility only reported for air releases, the public and governments would not have sufficient information to understand how that facility disposed of its chemicals. While one facility might report that all its releases of a particular chemical went to the air, another facility might report zero releases of the same chemical to air. This second facility may actually release large quantities of the chemical to water, but would not be required to report the amount. Neither the public nor the governments would be informed of this situation.

Annual Reporting

Facilities report their TRI data annually. This provides the public, governments and other users with a yearly profile of information. Trends over time can show whether the national totals for chemicals are increasing or decreasing. Similarly, communities can learn whether a facility is lowering its releases and transfers. Governments can identify whether their environmental policies are taking effect. Industry can demonstrate environmental progress. On a national level, yearly data can show whether the releases and transfers of chemicals targeted by international agreements are decreasing. Annual reporting provides the public with tangible evidence about whether there is environmental progress at the national, regional or community level.

Understanding How TRI Chemical Waste is Managed

An important question for the public, governments and other users of TRI data is how facilities manage their chemical waste. Reduction in releases alone does not demonstrate that a facility is performing in a more environmentally responsible manner. Releases can be reduced by shifting to recycling. While this is good, the amount of waste generated may not be any smaller. From the U.S. perspective, there is no evidence of pollution prevention or source reduction.

Waste management data informs the user about what steps facilities are taking to reduce their releases and transfers of the toxic chemicals. For the public, this information highlights the proactive actions on the part of Industry, particularly local facilities, to protect the environment. Governments gain an understanding about the various procedures undertaken to minimise the generation of waste. The data can indicate the degree to which facilities are complying with various permitting regulations or policies. Industrial facilities can use the data to contact other facilities about the procedures they have used to achieve decreases.

Pollution Prevention Act of 1990

In 1990, Congress passed the Pollution Prevention Act (PPA). This new law expanded the public's right-to-know about how facilities managed their TRI chemical waste. In particular, the PPA provided information about pollution practices at facilities. By reporting this information, Congress also intended to encourage facilities to consider pollution prevention opportunities. With PPA, facilities began reporting on the amount of the TRI chemical that was treated, recycled or burned for energy recovery, both on-site and off-site. Facilities also started indicating the types of source reduction activities that they undertook to reduce chemical use.

Meeting the Public Needs

The passage of the Pollution Prevention Act highlights an important feature of the TRI. As the needs of the country change, the TRI system can change to meet those needs. For instance, the list of chemicals for which the public can obtain TRI information has grown from approximately 340 chemicals in 1987 to over 640 chemicals in 1998. The United States also has expanded the list of industry sectors that report their TRI data, with the expectation that 6000 new facilities will begin reporting in 1998. The addition of certain persistent bioaccumulating toxics (PBTs) presently is under review. The purpose of these changes is to meet the goals of EPCRA: ensuring the public's access to information about toxic chemicals in their communities.

The United States also considers the interests of Industry. Some chemicals on the original TRI list have been deleted. Industry has provided evidence that these chemicals do not meet the criteria for inclusion on the TRI list. A more recent change is the expansion of the categories of underground

injection. Industry now can report to the public if it uses a Class I well, a potentially safer method, rather than other types of wells.

Responding to the Public

For any changes to the TRI, such as the addition or deletion of chemicals, the public is given an important role in the decision-making process. The public, industry or other parties can petition the Government for a specific change. For instance, the United States recently received a request by an environmental organisation to require airports to report TRI data. This request is under review.

When the United States is considering a change, the public is invited to provide its comments. This process ensures that the Government hears the views of all sides of an issue, from trade associations to environmental organisations. There are a variety of venues for receiving public input, including written letters and public meetings. While encouraging public participation, the activity also ensures the Government receives a full range of opinions. The Government therefore has the information to make more effective final decisions.

Benefits of Public Access

Environmentally, the impact of TRI has been dramatic reductions in the releases and transfers of toxic chemicals. Between 1988 and 1996, the total for on- and off-site releases of TRI chemicals has declined by 46%. This number is a difference of 695 million kilograms. Reductions have occurred for nearly every industrial sector and chemical. Specific groupings of chemicals have shown even greater decreases. Chemicals designated as carcinogens have declined by 51%. TRI enables the public, governments and other users to track the total change for ozone-depleting chemicals, which dropped 95%. The proposed addition of PBTs can allow the public to monitor the trends for those highly toxic chemicals in future years.

The public's access to facility-specific information is credited with driving much of these reductions. Other factors have been Industry's internal interest in reducing inefficient use, plus other regulations that target TRI chemicals. Exposure to public oversight, however, has been a powerful motivator for improving the environmental picture at a facility. Whether from an internal interest to demonstrate progress or from public concerns, facilities have pursued technologies and other processes that minimise the use, releases and transfers of the chemicals.

"I'll be honest with you. [Our reduction in emissions] probably would not have occurred if that data had not become public information. It was something that caught everyone's attention, including the corporate leaders." -- Industry representative at TRI Data Use Conference

Making the Information Available

For the public to play its role as a partner in environmental protection, it must have access to the TRI data. This access must be simple and without barriers. It is a primary reason that all TRI reports are submitted to the federal government. While the United States encourages facilities to make their data available to local citizens, it also is important that the public has access to all the TRI data in one central location. A decentralised approach would inhibit the public's ability to make comparisons, for instance between a local facility and similar facilities in other regions of the country.

Outreach by the Government

Every year, the United States makes the most recent TRI data available to the public. There are a variety of methods. One example is the publication of the TRI Public Data Release. This report analyses the most current TRI data, breaking the information down by chemical, Industry sector, and state. The report also compares the data with data from the previous years and with the data from 1988 to show trends over time. Starting with the 1996 Public Data Release, in an attempt to provide the public with more in-depth information, there are specific chapters covering each Industry sector. There also is discussion about non-point sources to give the public some perspective about the relative releases and transfers from Industry versus other sources. An additional report, published at the same time as the Public Data Release, provides a profile of each State, showing the top chemicals and the location of the top facilities in each State.

These reports also are put onto the Internet. The TRI Internet site includes a range of material that provides information both to the public and to Industry. Besides obtaining the Public Data Release, it is possible to access the entire TRI database, including the ability to search on-line by chemical, state, city, facility and year. The TRI Internet site discusses any proposals for change and directs the user on how to give input. Industry can search the site for guidance manuals on estimating emissions or download a copy of the TRI reporting form and instructions manual. The address of this site is <http://www.epa.gov/opptintr/tri>.

Additionally, the TRI database is made available on CD-ROMs, with data dating from 1987 to the present. Many State and local governments have their own proactive projects, including Internet sites, for making the regional TRI data available. There also is a Data Use Conference held approximately every two years. Industry, the public, academia, labour and government representatives meet to discuss the TRI and Right-to-Know. This three-day meeting focuses on new uses of TRI data, how the data is being made public, and any new developments on the types of data collected.

Outreach by the Public

Once the government makes the TRI data publicly available, non-governmental organisations and businesses put the information to further use. Newspapers write stories, discussing the releases and transfers and profiling local facilities that have achieved reductions. Members of the public have used the data to help when writing books on environmental issues. Other citizens have conducted analyses of certain topics, relying in whole or in part on TRI data. Numerous environmental organisations have taken steps to inform the public about TRI and the TRI data, creating Internet sites, publishing news letters and working with local community leaders.

Outreach by Industry

Since the establishment of the TRI, Industry increasingly has recognised the value of public access. Most large corporations, as well as many smaller ones, have begun publishing environmental reports that highlight their TRI data. Many companies have achieved significant reductions in their releases and transfers and now have a venue for highlighting this success. There is a growing trend by many companies and their facilities to interact proactively with their workers and with the local communities. The TRI data is a mechanism for demonstrating to these groups that the company is committed to improving their environmental stewardship. Further evidence of Industry's willingness to communicate with the public is the recently developed ISO 14000, which advocates the setting of environmental targets and communicating that information to the public. TRI data is a perfect tool for achieving these goals.

Conclusion

The Toxics Release Inventory has transformed the nature of environmental protection in the U.S. It is not without flaws. The data can be misrepresented by all user groups, and the estimates provided by industrial facilities may not be as exact as monitoring would provide. It is, however, the most effective program that we have in place to assure that the people of our country have a way to influence the decisions that industry and the government make about the use of the resources and the environment of communities across the U.S. With the release of the first TRI data back in 1988 it became clear that there was no going back to the days when the public had to rely solely on EPA and industry to tell them that their environment was acceptable. For EPA and industry, it often means we have to answer some tough questions about the decisions we make each day. But then, shouldn't we be able to answer those tough questions if we have made the right decision?

Overview of the Development of Australia's National Pollutant Inventory

Environment Australia, Presented by Mark Hyman

What is the National Pollutant Inventory?

The National Pollutant Inventory (NPI) is an Internet database designed to provide the community, industry and government with information on the types and amounts of certain chemicals being emitted to the air, land and water.

Larger Australian facilities are required to estimate and report annually their emissions for the NPI from July 1, 1998. Estimates of emissions from smaller industry, households and everyday activities will also be included on the database and will be estimated by governments.

The first national NPI database will be loaded onto the Internet for public access in early 2000.

The main objectives of the NPI are to:

- provide information to industry and government to assist in environmental planning and management;
- satisfy community demand for accessible information on emissions to the environment; and
- promote waste minimisation, cleaner production, and energy and resource savings.

These objectives were selected as information on emissions of pollutants to air, land and water in Australia is currently limited, inaccessible or unavailable. In particular, the NPI will address the lack of publicly available information on emissions which is required to assist in environmental planning and assess the effectiveness of existing licensing and waste reduction programmes. Governments will be able to formulate and assess cost-effective environmental management and pollution reduction policies with a basis of good, consistent information. Individuals will also be able to make informed and efficient decisions about issues affecting them and their surroundings.

The NPI will make companies and the community publicly accountable for their emissions of pollutants. Businesses often have insufficient information on their own processes and emissions, leading to unnecessary wastage of raw materials and inefficiencies in business operations. Communities are often unaware of the impacts that their everyday activities like driving a car, mowing a lawn or using solvents have on their surrounding environment.

Development of the National Pollutant Inventory

The early concept and design

The decision to develop a National Pollutant Inventory was first announced in 1992 by the Federal Government, with the basic parameters outlined at that time. It was envisaged that it would be implemented jointly with the States and Territories, would collect emission data on a range of pollutants and would provide useful information for a range of improvements to government and business policies and operations.

A discussion paper released in 1994 for public consultation which proposed a PRTR similar to the US Toxics Release Inventory was widely criticised by all stakeholder groups. As a result, Environment Australia embarked on a consultation process to revise the basic design of the NPI to meet Australian needs.

A stakeholder group consisting of industry, community and environment representatives formed in 1995 provided advice to the Federal Government on the look, design and content of the Inventory. This group met regularly for nearly two years and in 1996, a new look NPI concept was completed. The major changes in the “new look” version from the earlier version included the:

- reporting of diffuse emissions as well as point source emissions;
- contextual data to be presented in a geographical information system format; and
- development of commercial in confidence, enforcement provisions and rights of third parties concepts to be embodied within the NPI framework.

Implementation of the NPI

Under the Australian Federal system, States and Territories have responsibility for day to day environmental regulation, except where the Federal Government implements international obligations. This meant that State and Territory environment agencies were best placed to collect NPI style data and in some cases already did collect some of the necessary data. For the Federal Government to implement the NPI was not only constitutionally difficult, but also would have required setting up of duplicative infrastructure at the national government level.

Co-operative implementation by the Federal and State and Territory governments was considered the only feasible option. A new body to establish co-operative environment protection mechanisms, the National Environment Protection Council (a legislative body made up of environment ministers from the Federal and State Governments), had been recently established. It was agreed in November 1996 to develop the NPI as a National Environment Protection Measure. This meant that all the States and Territories would agree to a common framework for the NPI, but that they would implement the NPI individually in their jurisdictions. It was also decided that all jurisdictions should sign a Memorandum of Understanding providing for joint implementation.

Developing a National Environment Protection Measure involves considerable negotiation between any number of interested parties, and a number of groups were established to carry out particular tasks. Two are of interest for the purposes of this paper - a stakeholder group consisting of industry and environment non-government organisations (NGOs) to provide advice on policy aspects of the NPI's design; and a Technical Advisory Panel, which provided advice on the formation of the reporting list of substances for the NPI. A draft of the Measure was issued in June 1997, and July and August 1997 saw a

two month period of public consultation in which public meetings were held and submissions received for evaluation.

The NGO Advisory Group consisted of environment, union, community and industry representatives which met on a number of occasions, and in many cases reinforced the views put forward in earlier consultation.

The Technical Panel consisted of eleven technical experts from a range of scientific disciplines put forward by NGO policy representatives. The Panel reviewed existing lists of substances and ranked the substances in priority order, using international hazard information and Australian exposure information. This new list of around 400 substances was made publicly available for consultation and was adjusted in light of some material which was brought forward by various stakeholders. From this “master list” a shorter reporting list was recommended. The decision on the final number of substances reportable under the NPI was made by the Council.

The revised NPI Measure was approved by the Council on 27 February 1998 and at the same time, the Memorandum of Understanding was signed to ensure a nationally consistent approach to implementation of the NPI.

The National Environment Protection Measure for the NPI

The NPI is the first Measure made by the National Environment Protection Council and is implemented by legislation in all jurisdictions. The Measure provides the framework for the establishment of the NPI and sets out:

- the goals of the National Pollutant Inventory;
- requirements for data collection by jurisdictions from facilities;
- requirements for estimation of emissions data from non-point sources;
- requirements that data collected by State and Territory jurisdictions be passed to the Federal Government for dissemination;
- the list of substances on which industries are required to report and data is to be estimated from non-point sources;
- details of reporting thresholds for the substances on the list;
- requirements that emission estimation techniques are provided to facilities;
- requirements for validation of data received from facilities;
- guidance on amending the list of substances, confidentiality provisions, enforcement provisions, security of data, provision of the NPI data to the public, and review of the Measure; and
- a number of administrative matters such as amending the reporting list, national security, commercial confidentiality, enforcement provisions and the rights of third parties.

All jurisdictions are required to implement the Measure within their own legislative framework. Access to the Measure is on the Internet (at www.nepc.gov.au) or, alternatively, at Australian government bookshops.

Summary of features of the NPI

In essence, facilities are required to report emissions of nominated substances to the State or Territory Government, which then validates the data and passes it on to the Federal Government for public dissemination. State and Territory governments also estimate emissions from non-point sources and provide that data to the Federal Government for dissemination.

Reporting thresholds have been established, so that small users of the substances are not required to report. Industry will report on 36 substances for the first two years, while the NPI reporting systems are refined and put in place. Subject to the outcomes of the 1999 review, the reporting list will expand to 90 substances (including VOCs). (The review is discussed in more detail later in this paper.)

At this stage, the NPI only includes emissions to the environment, not transfers off-site to other facilities. Jurisdictions considered that in the initial stages, reporting requirements for facilities should be kept simple and that more ambitious issues (such as transfers or more substances) should be put on hold until the NPI is properly established. The possible inclusion of transfers information will be a focus of the 1997 review.

The NPI database is being developed by the Federal Government in consultation with jurisdictions and interested NGOs. The database will include point and non-point source data presented in an integrated way so that the relative contributions of industry and the community can be easily accessed. The database will reside on the Internet and hard copy reports will also be published.

Provision of handbooks to facilities

Under the NPI, handbooks are being provided to all companies required to report in order that they have access to emission estimation techniques, and so that data across industries and processes is comparable. If companies wish to utilise direct measurements (for example, if they already report direct measurements to the State or Territory environment agency as part of their licence conditions), they may use this data instead.

Consultation on the handbooks is extensive, with consultation procedures in place to ensure that the handbooks are subjected to scrutiny by companies, technical experts and governments prior to their finalisation. The first batches of handbooks have already been produced and circulated to relevant companies and industry bodies. It is intended that these documents be revised and updated on the basis of feedback received on their format and content.

A handbook for companies wishing to claim that release of emissions information could breach trade secrets is being developed.

Trialing of the National Pollutant Inventory

A number of trials contributing to the formation of the Inventory and addressing the many technical issues have been completed or are underway.

In 1996, NPI trials were held in regional centres in four states and these trials collected data on emissions to the air. The trial canvassed in detail the type of reporting form that could be used, the emission estimation techniques that could be used for air emissions, the format and design of the database, and the needs of people in the community and in industry in respect of the data presented. The trial also developed some contextual information for the pollutants trialed. Data from these trials and other information about the NPI can be found on the Internet at www.npi.gov.au.

In 1998, substantial trials on the process for compiling and presenting NPI data are being carried out in Queensland and Western Australia covering emissions for air, land and water. These trials further elaborate the work of the earlier trials, and should provide final guidance on the reporting, estimation and presentation of information on the final list of pollutants.

When does the National Pollutant Inventory start?

The first reporting year for the National Pollutant Inventory began on 1 July 1998. After June 1999, companies will be expected to provide reports on their emissions to their State or Territory environment agency, which will then verify and check the reports. It is expected that the first NPI report will be publicly released in early 2000, together with contextual information and aggregated emissions information from smaller and non-point sources. The database will be available on the Internet, via CD-ROM if required, and printed reports will be also be made widely available.

Dissemination of information and consultation

Broad dissemination of information on progress with development of the database and trials is important to ensure that not only does the community become aware of the availability of the data, but also to ensure that all companies required to report are made aware of their obligations.

Environment Australia publishes an "NPI Update" which is disseminated to about 7,500 companies, organisations and governments nationally. There is also a register of people and organisations interested in providing feedback on the handbooks. Environment Australia has been using numerous trade and industry journals to advertise the requirement of companies to report and obtain their interest in commenting on draft handbooks.

Review of the NPI

The National Environment Protection Measure for the NPI provides that a review of the Measure will be undertaken in October 1999 and that this review will include:

- the likely effectiveness of the Measure in achieving its goals;
- the resources needed and available for implementing the Measure; and
- the need, if any, for amendment of the Measure.

Issues specified for possible amendment include:

- whether substances should be added to or deleted from the reporting list;
- whether transfers of waste should be included;
- whether any changes should be made to the thresholds of definitions which determine whether a facility should report; and
- whether any changes should be made to improve the effectiveness of the Measure.

A full consultation process will be undertaken if the Council decides to amend the Measure in any way. This consultation, required by legislation, will ensure that all stakeholders have the opportunity to comment on any proposed changes to the Measure.

Lessons learnt through the NPI development process

Development of the Australian NPI has been a long and difficult process, not the least because of the difficulties in implementing a national program in a country where primary environmental responsibilities rest with the regional governments.

- We found that PRTR models being used in other countries, while useful background and starting points, were not applicable in the Australian context, and that the Australian PRTR had to be specifically designed to meet Australian needs.
- The importance of the consultation that was undertaken in respect of development of the NPI cannot be underestimated. All stakeholders played a valuable role in shaping the final form of the NPI and while no one group will ever be entirely happy with all of the outcomes, the final NPI is a pragmatic and sensible starting point. Changes to the NPI database, reporting list, handbooks and contextual data are all feasible given experience and use of them over the next few years.
- We have found that transparency in decision making processes to be important and that feedback on issues raised by stakeholders was pivotal in their understanding of the decisions made.
- The development of handbooks to assist industry in estimating their emissions is a challenging and demanding task, and one that ideally needs to be embarked upon in a consultative and open way, with sufficient time allocated for changes and revisions based on industry and community group feedback.

Even now, challenges are being raised by industry sectors in respect of the coverage of the NPI - who should report and what should be reported. These challenges can only be met by a firm and united management team that is positive, forward looking and firmly committed to implementing a National Pollutant Inventory that is relevant, useful and able to meet the many needs of the community, industry and government.

Summary Report of the PRTR Pilot Project in Japan

Teruyoshi Hayamizu
Environment Agency of Japan

Introduction

Pollutant Release and Transfer Registers (PRTRs), based on participation of many sectors, including government, business, citizens and non-governmental organisations (NGOs), are an innovative new method of promoting environmental risk management of chemical substances. In 1992 the concept gained a place in the 19th Chapter of Agenda 21, and in February 1996, the OECD Council issued a recommendation to take steps to establish a PRTR system. The United States, Canada, the Netherlands, and the United Kingdom, etc., have already introduced PRTRs as systems for protecting the environment.

Keeping in line with international trends, it is important to promote consideration of introduction of a PRTR system to Japan. Therefore, in December 1996, the Environment Agency of Japan established the PRTR Technical Advisory Committee, chaired by Dr. Jiro Kondo, who is also the Chairman of the Central Environmental Council. The Committee has investigated technical matters and frameworks for implementing PRTRs. Based on this framework, the Environment Agency started a pilot PRTR project in June 1997, covering parts of Kanagawa and Aichi Prefectures.

An interim report was published in May 1998 and public comments were collected. The final report was published in September 1998 including the evaluation of the Pilot Project by the Technical Advisory Committee. The following is a summary of the Pilot Project based on both reports.

1. Outline of the PRTR Pilot Project

(1) Design of the Pilot Project

This Pilot Project was designed with the objectives of verifying the overall PRTR process, solving various technical problems, deepening understanding of PRTRs among citizens, businesses, and administrative institutions in order to build common awareness of PRTRs, and building a basis for smooth implementation of a PRTR system in Japan.

In promoting the Pilot Project, in order to evaluate the overall design, the plan for implementation and the results of the project, the PRTR Technical Advisory Committee was established, members of which include scientists, industry representatives, officials of local governments and NGO members.

The Pilot Project was designed to give a grasp of the variation in conditions of release and transfers of chemical substances from three types of areas that differ in terms of industrial structure and land use, namely, industrial, transportation, and residential. The three districts chosen to take part in this project account for 7% of Japan's product shipments and 2.5% of its population. As the substances studied in this project, 178 chemical substances which have been found potentially hazardous due to carcinogenicity, chronic toxicity by oral ingestion or inhalation, ecotoxicity, etc. were chosen, taking into consideration the target substances in other countries' PRTRs, regulatory conditions and production volumes in Japan, etc.

Survey forms were sent out to about 1,800 factories and business places in the areas being studied. These asked the business or factory to report voluntarily the amounts of the target substances they had released into the environment or transferred as waste during the 1996 fiscal year. Regarding releases from non-point sources, such as spraying of pesticides, release of household chemicals, release during transfer by automobile and other sources, the Environment Agency made estimates based on previously obtained statistics and results of a survey conducted for the Pilot Project. Releases and transfers from point and non-point sources were summed up.

Table 1 gives an outline of the Pilot Project.

Table 1: Pilot Project Outline

Target Areas	Kawasaki City (Kanagawa Prefecture); Shonan District (Kanagawa Prefecture); and Mikawa District (Aichi Prefecture)
Target Substances	178 substances selected based on judgement of their hazard [carcinogenicity, chronic toxicity (oral, inhalation), ecotoxicity, etc.] in conjunction with exposure potential (estimated by production volumes, etc.) (to be reported in mixtures only when the ratio is 1% or greater).
Target Businesses	Manufacturing businesses and a few non-manufacturing businesses with employees totalling 30/100 (depending on business categories) or more, totalling about 1800 businesses in all (Table 2). [Note: only businesses handling target substances in the amount of 0.1 ton or more per year (10 tons in the case of low-toxicity substances) were included.]
Contents of Reports	Releases into the atmosphere, water, or soil, and transfers as waste, etc.
Contents of Estimations of Non-point Sources	Environment Agency estimates of pesticide spraying, transfer sources and amounts released or transferred from households and small businesses.

Table 2: Target facilities in the Pilot Project

Type of industry	Employees
Food production, drinks/fertilisers/tobacco production, timber/wood product manufacturing, pulp/paper/other paper products production, publishing/printing and related, chemical industry, petroleum products/coal product manufacturing, rubber product manufacturing, leather/copper/fur production, steel manufacturing, non-ferrous metal production, general equipment manufacturing, transport equipment manufacturing, precision instrument manufacturing, weapons manufacturing, other manufacturing, mining, electricity/gas/heating/ water industries, railways, education, scientific research institutions	100 persons or more
Textile industry, clothing/other textile industry, furniture/appliances manufacturing, plastic goods manufacturing, ceramics/pottery, metal products manufacturing, electrical equipment manufacturing, general construction, road cargo transport, cleaning, health/hygiene, waste treatment, warehouses	30 persons or more

(2) Pilot Project Implementation Outline

In order to ensure uniformity in methods of calculating and reporting amounts of releases and transfers from businesses, the PRTRs Technical Advisory Committee drafted beforehand a "Release Estimation Manual" and distributed it together with the Survey Form to all target businesses. In addition, explanatory meetings and training courses were held for the businesses in co-operation with local governments, and thus efforts were made to deepen understanding of the Pilot Project. In addition a system for reporting electronically was distributed to all that wanted it. Furthermore, to help promote a smooth introduction of PRTRs hearings were held and questionnaires distributed to the target businesses. Furthermore, in order to facilitate implementation in Kanagawa and Aichi Prefectures, Regional Promotion Committees were established with representatives of local governments, businesses, and local citizens.

The Survey Forms were distributed in September 1997 with responses due by December 1997. 52% of the target businesses sent in responses to the survey, and of these, 53% reported amounts of the target substances that they had released or transferred. Meanwhile, 68% of the target businesses responded to questions by filling out and sending in the questionnaire. Hearings were also conducted.

The total amounts of releases and transfers of target substances reported to and estimated in the Pilot Project were published on May 1, 1998, in the "PRTR Pilot Project Interim Report" together with an explanation of PRTR systems. Results were also released over the Internet. During the next two months through the end of June, the Environment Agency solicited opinions widely from citizens with regard to the design of the Pilot Project and how to introduce PRTRs. In order to enable an exchange of opinions and to introduce the results of the Pilot Project directly to Japanese citizens, it held seminars in seven places across Japan. Through these efforts, the Environment Agency obtained nearly 600 opinions in total from businesses, citizens, NGOs and others.

(3) Outline of Results of Calculating Amounts of Target Chemical Substances Released or Transferred

Of the 178 target substances studied, only 96 (about half) were reported to have been released or transferred by businesses (point sources). When combined with information about other sources (non-point sources), the total comes to 134 substances (about 75% of the total target substances) which were reported or estimated. (There were no reports of the remaining 44 substances primarily because the areas studied were limited. If reports were tabulated from all across the country, most of the remaining substances would likely be reported.) (See Table 3.)

Table 3: Number of Substances Reported or Estimated, by Source.

Source	Point Only	Source	Point and Non-point	Non-point Source Only	None Reported or Estimated	Total
Number	66		30	38	44	178

The total volume of target substances released was reported or estimated to have been about 20,700 tons/year. The total volume released from point sources was about 15,800 tons/year. Viewed by medium of release, the atmosphere accounted for the overwhelming majority of the number of cases reported, the type of substances reported and the total volume: 15,400 tons/year (98% of the total volume of released substances). Releases to public waters came next at 333 tons/year, and a very small amount to

soil at 0.6 tons/year. These chemical substances are first released into the environment, but spread beyond the environmental medium depending on their respective properties, go through complex routes and ultimately are absorbed by humans and wild flora and fauna.

Results have also been tabulated regarding conditions of release by business category and by region, and some differences have been found in release characteristics according to business type and region. In addition, the results clarified the amounts of waste disposal and recycling, as well as the destination of waste disposed.

Examples of Chemical Substances Released in Large Amounts

- Xylenes (solvents, industrial raw materials)
- Toluene (solvents, industrial raw materials)
- Dichloromethane (solvents, metals cleansers)
- 1,3-butadiene (industrial raw materials)
- p-dichlorobenzene (moth repellent)
- Formaldehyde (industrial raw materials, adhesives, preservatives, combustion of gasoline)
- Benzene (industrial raw materials, component of gasoline)

Releases According to Business Category

Xylenes and toluene, for which releases were large overall, were found to have been released by nearly all categories of businesses, but releases were largest among machine-manufacturing industries. Dichloromethane was characterised by largest releases from metal-manufacturing industries, and 1,3-butadiene was found to be released only by chemical-manufacturing industries.

Releases from Non-point Sources

The Environment Agency estimated in as far as it was possible releases from non-point sources including spraying of pesticides, gaseous releases during transference by automobile, paint, adhesive, and insecticide releases from households, and releases of paints and other substances by smaller businesses. Not a few substances showed higher levels of release from non-point sources than from point sources, or release from non-point sources only.

Releases According to Region

During the Pilot Project, data are being gathered in Kawasaki City, the Shonan district of Kanagawa Prefecture and the Nishi-Mikawa district of Aichi Prefecture. In consideration of the diversity of areas within Kawasaki City, we have subdivided it into coastal, inland, and hilly areas.

Viewed by region, the Nishi-Mikawa District of Aichi Prefecture had the greatest amount of releases, but it also had the largest area and largest number of businesses. When the three parts of Kawasaki City were compared, there were big disparities with regard to ratio of releases from point sources to those from non-point sources, reflecting differences in the zoning structure of these areas.

(4) Promotion and Education with regard to the PRTR Pilot Project

Awareness-raising and education about PRTRs were considered essential elements in the process of implementing the Pilot Project. For this reason, the Environment Agency held international symposiums in November 1996 and July 1997 along with preparations for the Pilot Project, in order to provide a forum for exchange of information on international efforts with regard to PRTRs.

Furthermore, when announcing the Interim Report, the Environment Agency produced explanatory materials and a pamphlet along with the report and sent them to the administrative bodies of all of Japan's prefectures and major cities so that they would be available for reference at each government's environmental department and at some public libraries. All materials were also available for perusal on the Environment Agency Internet Homepage. In addition, as mentioned above, seminars were held in seven cities nation-wide titled *Risk Management of Chemicals and PRTRs*, and explained the results of the Pilot Project to a wide citizen audience. There have been nearly 20,000 visits to the Environment Agency's Web site during the course of the Pilot Project and the seminars attracted a total of 2,000 people.

2. Outline of Evaluation Results

The Pilot Project was evaluated by the PRTR Technical Advisory Committee based on the results of the reporting and estimations, the outcome of the hearings and questionnaire survey, opinions expressed by citizens, and comparison with how PRTRs are being implemented in other countries. With regard to items requiring detailed technical knowledge, a preliminary study was done by the Working Group to Investigate PRTR Pilot Project Evaluation, chaired by Prof. Kohei Urano of Yokohama National University. The following is a summary of evaluation by the Technical Advisory Committee.

(1) Evaluation of Items with regard to Framework

1) Target Chemical Substances

The Pilot Project was implemented with the selection of 178 substances from a range of chemical substances suspected of affecting human health and the environment. They were chosen by ranking substances with regard to the level of hazard and actual domestic production and use with consideration given to level of exposure. Of course, it will be important to review these selections appropriately as more scientific knowledge comes to light regarding the toxicity of the target substances.

The Technical Advisory Committee has indicated, standing by these principles and based on views generated by experience with the Pilot Project, that particular attention needs to be paid to the following points:

- Selection of substances should also give consideration to endocrine disruptive effects in the future, to which much attention has been paid world wide recently.
- Thought should be given to lowering the limits on percentages that especially toxic target substances must account for in mixtures from 1%, which was used in the Pilot Project, to 0.1%, as OSHA of the US, for example, has set as standard for carcinogenic substances.
- The lower bound of 0.1 tons and 10 tons for amount of the target substance handled per year appears to cover the releases appropriately, but further consideration should be given in relation with degrees of toxicity and size of the company using these substances.

2) Target Businesses

In the Pilot Project, companies from all manufacturing industries and some non-manufacturing industries were selected for investigation, and aside from a few non-manufacturing industries, almost all industrial categories reported releasing or transferring target chemical substances. There existed, however, some non-manufacturing industries (general construction, ground freight transport, etc.) which had difficulty ascertaining how much of the target substances may have been released in the course of their business. It is known that they are releasing only limited number of the target substances. Therefore, further consideration needs to be given to whether they ought to be removed from the list of target businesses and instead have the Environment Agency estimate their releases under non-point sources.

Regarding lower bounds set on number of employees, results of a survey on conditions of reporting among companies with different numbers of employees and businesses which were too small to be subjects of the investigation indicate that lower bounds of 30 or 100 employees are adequate in general, but that there are some categories (e.g. metal products manufacturing) for which it is difficult to ascertain the amount of releases and transfers with the current limits, so there needs to be consideration of lowering the limits in these cases.

3) Report Contents

It appears that the items selected for reporting were appropriate. However, further consideration and improvement will be needed when systematising the reporting system based on indications from the Pilot Project. For example, necessary items for verification of data on amount of target substances handled could be added and styles and modes of description for data reported could be improved. Opinions were expressed that amounts of the substances transferred as products or stored should also be reported, but transfers of products and storage do not fall under the category of direct releases and are thus outside the realm of PRTRs, so it is thought that this data should be handled elsewhere. However, release and disposal after the final stage of use of a product needs to be captured.

(2) Evaluation of Items Relating to Implementation of Reporting, Estimation, etc.

1) Deriving Releases and Transfers

a) From Point Sources

The Pilot Project was implemented with the co-operation of businesses, which reported voluntarily, based on a careful plan with about the same level of implementation and elaborateness as in other countries which have adopted PRTRs, so the data obtained is considered highly reliable.

Regarding the contents of the Release Estimation Manual, which was used by most of the point sources in reporting, some said that there was too much information and that it was difficult to understand, but the majority evaluated it as easy to understand. Indications included giving more examples, preparing different manuals for different industries with simpler instructions, aiming for greater accuracy, and others. In order to reduce the burden on businesses, there is a need for various improvements such as preparing different material for specific industries such as laundry. There is also a need to conduct appropriate reviews in order to improve accuracy. This can be achieved by accumulating more knowledge and make necessary revisions in the interval before a PRTR system is fully implemented, and conduct trials to verify

estimation, comparing these with the results of monitoring for substances which tend to be released in large volumes.

(b) From Non-Point Sources

Problem points in estimating non-point sources include difficulty in obtaining the needed data and a difference between the fiscal year periods for which useful statistical data are gathered and those pertaining to the reports from point sources. However, estimates of amounts released from non-point sources, when combined with reports from point sources, give a grasp of the overall picture of conditions of chemical substance release and transfer and are essential for evaluating more accurately the overall environmental risk. Moreover, they can form an extremely important decision-making basis for implementing effective plans to reduce risks in the midst of the complex distribution structure for chemical products in modern society.

The basic stance for making these estimates is to use enough data from the main sources of release and transfer and strive in as far as possible to achieve accurate estimates, and the utmost efforts were made along these lines in the Pilot Project. To enable others to judge the limits of validity of the data used in making the estimates, adequate explanations should be added regarding the reliability of the data. In addition, it is necessary to work swiftly towards improved accuracy of future estimates by creating and improving systems for gathering and maintaining necessary data.

2) The Burden on Businesses

According to responses to the questionnaire, on average business facilities in Japan handled the same number of target chemical substances as their counterparts did in the US and Canada (i.e. Pilot Project: 4.1 materials, US: 3.3 materials; Canada:3.6 materials.) The amount of time required to deal with the PRTR system was greatest at the beginning, to investigate the chemical substances included in products handled, and the financial cost was greatest for analysis and measurement, but the average cost per facility was only about 140,000 yen (\$1,000).

Judging from these results, the load on businesses related to PRTRs was higher this time because it was the first time and it can be expected to decrease in future surveys as these businesses gain experience and learn how to save effort. In any case, it will be important to continue to strive to grasp the variety, character, and degree of the burden on businesses and to maximise the cost effectiveness of PRTRs as an instrument for environmental protection.

3) Support Policies

From the viewpoint of reducing the burden to businesses and implement PRTRs smoothly, it is necessary to formulate measures to aid target businesses. One of these measures is the above-described "Release Estimation Manual," for which efforts will need to be made in order to make it more useful. One more problem in the future will be to maintain a system in which producers of chemical products which contain a mixture of substances, including target substances, provide information on component ratios for companies further down the distribution line. This will be necessary in order to facilitate accurate, speedier estimation of amounts released by target businesses who are users of the target chemical substances.

Thanks to diffusion of electronic communication technology it is possible to report via electronic media, and this reduces the work load not only for the target businesses but also for the administrative side

which is compiling the data. Thus it would be appropriate to combine use of both paper and electronic media for PRTRs.

4) Compilation

During compilation there appeared some cases among the reports that were clearly abnormal in comparison with other reports, and these were confirmed with the businesses via local governments. However, the Pilot Project was not attempting to investigate establishment of indices useful in comparing reports of amounts of substances handled, and insufficiencies exist in this regard. Having each business check its own data as appropriate is the most efficient way to handle this, but it is also necessary to develop ways for the administrative side which is receiving the reports to perform effective checks in order to obtain reliable reports and compiled figures.

Data on amounts released and transferred was compiled basically on a substance-by-substance basis, but in addition to the overall compilation, data were compiled on the bases of medium of release, industry type, and region and reported in the Interim Report. But in accordance with citizens' opinions, there is felt to be a need to strive for as much detail as possible in the reported statistics along with comparisons to results of monitoring and active utilisation in risk assessment.

5) Dissemination of Information

During the Pilot Project, in addition to information provided over the Internet and through printed reports as should be done in PRTR systems, seminars were held and explanatory guides published to promote awareness of PRTRs, which was one of the objectives of the Pilot Project. The mass media have also taken up PRTRs many times and helped heighten public awareness, but due to the technical nature of PRTRs, such as chemical names and hazard data, efforts must continue to hold seminars and reach the public through new publicity activities in order to further their understanding. Considering information dissemination needed during the actual implementation of a PRTR system, the Pilot Project did provide hazard data, but it will be necessary to consider further how to conduct environmental risk assessment based on the results of PRTRs, and how to communicate this to the public.

In addition, in order to promote risk communication, it will be necessary that local governments develop human resources with expert knowledge of PRTRs to explain well to citizens the results of PRTRs and risk assessments based on them, and make consultation services possible. It will be important to establish the infrastructure for this. Suggestions were made for using the services of "Environmental Counsellors" registered by the Environment Agency or for developing human resources among NGOs and companies specialising in this field.

(3) Discussion Regarding Other than Technical Issues

One task of the PRTR Technical Advisory Committee is to discuss and evaluate the technical aspects of PRTRs. However, introduction of PRTRs to Japan raises a number of important points that are outside the technical realm and which were brought up in the questionnaire survey of businesses conducted as part of the Pilot Project and in the many opinions that were stimulated by the Pilot Project's Interim Report. There was also lively debate among members of the Committee regarding important points.

The course of the discussion among the Advisory Committee and opinions received relating to important non-technical points is introduced below. A full discussion will be left to deliberations at the Central Environment Council.

1) Raising the Benefits of PRTRs

There are very many objectives for utilisation of PRTRs--the Explanatory Edition of the Interim Report pointed out the usefulness of PRTRs for the majority of administrative bodies, businesses, citizens, and NGOs--and it is common knowledge that PRTRs are basically tools for planning management to reduce environmental risks from potentially harmful chemical substances. Moreover, while they provide knowledge in an appropriate way to citizens on releases and transfers of chemicals, PRTRs' most important features are that all sectors of society can participate in environmental risk reduction and management and that they could be methods for the realisation of cost-effective countermeasures.

In order to heighten the utility of PRTRs in this regard, the opinions and arguments of all groups on points worth consideration have been compiled and are presented below.

- With PRTRs established appropriately among the measures for reducing future environmental risks from chemical substances, it is important to promote environmental administrative policies by making PRTRs a source of information about chemical releases.
- In addition to measures to protect the environment through regulating releases into the environment, PRTRs can be considered a source of information which ought to be shared among government administrations, businesses, citizens and NGOs. They can be thought of as real tools to earnestly consider and find measures for reducing and controlling environmental risks locally and nation-wide. In order for PRTRs to become an effective bridge, so to speak, among these different sectors, PRTRs themselves must be given a definite structure, and the introduction of various subsystems to support the implementation of PRTRs must be promoted.
- In order for PRTRs to be successful, administrative bodies, businesses, citizens, and NGOs will each need to strive to make use of their respective positions in order to create measures to combat risks from chemical substances to the environment. It is also hoped that they will each play their own role, in as much as they can, in order to assure that PRTRs are implemented smoothly.
- In order to prevent environmental pollution, countermeasures at the local level are important. In order to achieve these, it is hoped that local governments can make use of PRTR data to promote risk communication and develop countermeasures against environmental risks at the local level.

2) Ensuring Fairness and Higher Rates of Response

The Pilot Project was implemented by getting businesses to co-operate voluntarily, and although this was the first attempt, the overall response rate of 52% cannot be considered high. However, if we break this figure down by business category, we find high rates of response among chemical industries (83%), who would be expected to be highly concerned, and transport-related machine and tool industries (85%). On the other hand, there were low response rates from furniture and furnishing businesses (33%) and printing and publishing businesses (37%). Thus there is considerable variation among manufacturing businesses depending on what they are manufacturing, and in fact there was even greater variation among non-manufacturing businesses. A look at the response rate as it relates to company size shows that the more employees a company had, the more likely it was to respond. Among companies with 100-199 employees, the response rate was 69%, but even among the biggest companies with 1000 or more employees, it was no more than 84%.

Many citizens expressed the opinion that they would like to see legal measures enacted in order to ensure fairness of the system and reliability of the resulting figures. In questionnaires filled out by participants at the nation-wide seminars, the majority opinion of people regardless of sector was that a PRTR system needs to be instituted. They also expressed the opinions that upon its establishment, the

PRTR system needs to be subject to thorough discussion; that consideration be made to avoid a heavier burden on companies by duplicating other reporting systems; and that it be linked with ISO14001.

Members of the Committee also expressed their opinions that in order to get higher response rates and be fairer, it will be necessary to make reporting mandatory in principle for individual facilities, but that in this case it will be necessary to consider how to avoid putting a big burden on small businesses. There were also proposals to make reporting of some substances mandatory and other substances voluntary, but the majority opinion was that for the sake of compilation it would be better to have a unified system.

3) Debate on Publication of Individual Company Data

As the Pilot Project was a request-based investigation which required co-operation from individual businesses, and it was important to ensure the overall process, data was sought on the condition that individual data would not be published.

There was much interest expressed on the issue of whether data from individual companies should be published when a PRTR system is fully implemented in the future, and many views were expressed. The view that individual company data should be published was mainly by citizens and NGOs, while the view that this data should not be published, or that it should be done carefully was mainly expressed by businesses and industries.

Regarding the controversy of publishing individual data, the questionnaire sent to the businesses involved in the Pilot Project asked their opinion regarding publication of individual company data when a PRTR system is fully implemented. In response, roughly one third said it would be okay to publish all or part of the data, another third said they were completely opposed or that they would do their utmost to avoid such publication, and the last third had no opinion on it. On the other hand, in response to the questionnaire to the seminar participants, more responded that it was necessary to make data on releases and transfers by individual companies available to the public, than those who did not, regardless of which sector the participant represented.

Reasons given for considering publication of individual company data necessary included that this would help reduce amounts released by ensuring transparency of data and that it would be useful in managing the environment locally by obtaining local release data of chemicals. On the other hand, one reason given for opposing it was that if figures were published without any explanation of their meaning this would simply increase apprehension among the public.

Among foreign countries that have adopted PRTRs, some, including the U.S. and Canada, publish individual company data under their PRTR system, and others, including the Netherlands and the U.K., do not, but they give access to individual company data by other means. In any case, while giving uniform consideration to maintaining trade secrets, they have implemented PRTRs with the understanding that there will be access to individual company data. In Japan there is now a bill under deliberation before the Diet regarding public access to information called the "Bill Relating to Public Disclosure of Information Held by Administrative Institutions" (below called the "Public Disclosure Bill").

Bearing this in mind, various opinions were expressed in the PRTR Technical Advisory Committee with regard to publication of individual company data, including that it is important to at least provide access to individual data and that voluntary disclosure by companies ought to be respected. In promoting public disclosure of individual company data, the importance of promoting risk communication was pointed out. It was also noted that it is important to accumulate experience and observe what has been

actually learned by the people involved with the Pilot Project, or to refer to other countries' experiences, such as those in the U.S. and U.K., that the problems had been solved year after year.

There needs to be further consideration of this matter in the future.

4) Consideration of Trade Secrets

Another important point regarding publication of individual company data is the problem of protecting trade secrets. The questionnaire distributed to the businesses asked them if the data they had been asked to supply in the Pilot Project contained any trade secrets, and only about 10% of the companies overall answered in the affirmative. When asked what constituted the secret information, most answered "substances being used or their composition," and only a few answered "amounts being released." Thus it appears that if only a small part of the data are protected as trade secrets, publication of individual company data could proceed.

Citizen opinions included the view that it is important to strive for transparency in judgement standards and that trade secrets could be protected if the burden of proof is put on the businesses.

There is some variation in how other countries handle trade secrets, but in general the company petitions the government, and the environment ministry/agency reviews the petition, and judges whether the information qualifies as a trade secret or not. There are countries, such as the U.S. and Canada, which have clearly spelled out standards of judgement for this process. However, the cases in which the information is deemed to be appropriate for secrecy are few in number.

In light of these examples on how to deal with secrecy, it is important to consider methods for handling this appropriately in Japan, taking into account the procedures in the Public Disclosure Bill or the definition in the Law to Prevent Unfair Competition.

5) Comparison with Principles Concerning Establishment of PRTR Systems in Annex to OECD Council Recommendation

In the final stages of consideration and evaluation of a PRTR system in Japan, an opinion was expressed that there should be a review of annex to the recommendation on PRTRs by the OECD Council entitled "Principles Concerning Establishment of PRTR Systems." Accordingly, the Advisory Committee is now compiling an evaluation about the status of efforts and approaches in reference with each of the principles. It is thought that this kind of evaluation will be appropriate once a PRTR system has been established in Japan, but it would also be appropriate to refer to the evaluation conducted by the Pilot Program when considering future courses.

In particular, the following two items will be considered important in future considerations:

[13] A compliance mechanism to best meet the needs of the goals and objectives should be agreed by affected and interested parties.

[14] The entire process of establishing a PRTR system and its implementation and operation should be transparent and objective.

The PRTR Technical Advisory Committee designed the Pilot Program itself; however, for the evaluation, the Environment Agency published the Interim Report, explained PRTRs and the Pilot Project

at seminars nation-wide, and sought opinions from citizens for two months. In addition, for the evaluation, discussions were held with industry, citizen, and NGO representatives. The materials used and content of discussions at the Committee were included in the report. Therefore, the evaluation has been undertaken in a transparent and objective manner. In the future efforts will be made to ensure as much transparency and objectivity as possible, and to agree with affiliated and interested organisations.

3. Conclusion

By getting a grasp of sources and amounts of releases into environmental media and transfers as waste of chemical substances which are potentially hazardous, PRTRs are instruments for providing data for assessing the risk to human health and the environment. While supplementing the regulatory framework, it will accelerate the pace of introduction of technology for environmental protection and serve as a yardstick for evaluating the degree of development of environmental administration and the degree to which environmental objectives have been met. In order that PRTRs can perform all of these functions, it is important that all parties concerned discuss the system and help build a better system.

The objectives of the pilot project were to verify the entire PRTR process, solve the various problems regarding technical matters, deepen the understanding of PRTRs by citizens, businesses, and administrative bodies, to build a body of common knowledge, and to foster a basis for smooth implementation of PRTRs in Japan. It appears that these objectives were met reasonably well. In particular, the Pilot Project promoted much discussion and consideration, and as the Environment Agency worked in many ways to raise awareness and understanding, it appears that there is considerably more awareness of PRTRs now among citizens and businesses compared with conditions at the start of the Pilot Project.

To work towards introducing a PRTR, the Committee recommended that the Pilot Project be continued through 1998 and onward as it is necessary to build a basis for the smooth implementation of PRTRs. The opinions of citizens included in this report will be taken into consideration in the continuation of the Pilot Project and subsequent discussions on PRTRs.

Regarding a good and friendly name of the PRTR system in Japan, the Environment Agency is also soliciting ideas from citizens. No new name has been adopted at this point, but this will be one task to complete before a PRTR system is officially launched in Japan.

With regard to the results of the evaluation, the Central Environment Council and other bodies will be adding their ideas to the discussions on what kind of system to build. Based on the outcome of the discussions, it will be necessary to establish a PRTR system suitable to Japan.

PRTR Systems: Experiences in Design and Development

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Introduction

With pollutant release and transfer registers (PRTRs) in place in many countries, with several new PRTR systems under development, and with the availability of the OECD PRTR Guidance Manual since 1996, it is now possible to provide countries interested in designing a PRTR system with much clearer guidance and better information on key issues which need to be addressed in the context of a national PRTR design process. This presentation will attempt to highlight some of these issues and to put them into a logical step-by step framework from the perspective of a country that wants to get started.

The suggested framework draws upon the OECD *PRTR Guidance Manual for Governments*, as well as the UNITAR *Guidance Series on Implementing a National PRTR Design Project* which was developed in co-operation and based on lessons learned through PRTR pilot design projects in the Czech Republic, Egypt and Mexico.⁵ Other countries, including a number of industrialising countries and countries in transition, have also made a promising start towards the development of national PRTR programmes and further experience will be gained as these countries continue to move forward.

Initiating the Development of a National PRTR

Countries with existing PRTRs or with PRTRs in development have chosen different ways to initiate the establishment of a national PRTR system. In the case of the United States, for example, national legislation on community right-to-know paved the way for the U.S. Environmental Protection Agency (USEPA) to design and implement the Toxics Release Inventory. In the case of Canada, Australia and Mexico, national multi-stakeholder processes were initiated by the respective national environmental authorities to address important PRTR design questions through a dialogue involving all concerned parties. In the case of Sweden, the Czech Republic and Switzerland, initial PRTR work focused on working with a select number of companies to implement a pilot reporting trial through which practical experiences of relevance to the design and operation of a national PRTR system were gained. Each of these approaches provides valuable lessons and ideas from which other countries may benefit.

Identifying the Goals of the National PRTR System

The specific objectives and goals identified for a PRTR will shape and direct the development of the overall PRTR system. It is important that various parties of interest agree upon and clarify the objectives of the national PRTR system before tackling the actual design of the system. Obtaining the

⁵ The *UNITAR PRTR Guidance Series for Implementing a National PRTR Design Project* comprises a main guidance document and four supplements and complements the substantive information contained in the *OECD Guidance Manual for Governments*. It provides ideas on getting organized at the start of the PRTR initiative, in particular with regard to ensuring the involvement of all relevant parties of interest, and then walks through a six-stage process for designing a PRTR system in accordance with a country's particular needs and objectives.

views and input of industry and public interest groups, in addition to those of concerned government ministries, is important during this objective-setting exercise. In countries which have a federal structure (e.g. Australia, South Africa), the perspectives of the various regions or provinces, which may vary due to specific local circumstances, will also need to be taken into account.

Possible objectives of national PRTR systems may include, for example:

- identifying major sources of releases and transfers of pollutants;
- quantifying pollutant releases and transfers at the national and local levels;
- tracking of substance-specific emissions trends;
- identifying geographic areas of environmental concern;
- providing environmental information to the public;
- promoting cleaner production and pollution prevention activities within industry;
- identifying opportunities for environmental and health risk reduction;
- integrating and harmonising reporting requirements;
- fulfilling international obligations to report emissions data and statistics; and
- broadening of public participation and interest in environmental policy decision-making processes.

Assessing the Existing National Infrastructure Relevant to a PRTR

Once national PRTR objectives have been defined, country experience suggests that it may be useful to conduct a thorough assessment of the national infrastructure relevant to the design and implementation of the national PRTR system. A PRTR infrastructure assessment typically covers the following aspects:

- national legal and regulatory infrastructure relevant to a national PRTR;
- national institutional and administrative infrastructure relevant to a national PRTR;
- existing national databases on emissions data or releases/transfers of chemicals to various environmental media;
- programmes and activities conducted by industry, research organisations and public/environmental interest groups relevant to a national PRTR; and
- relevant programmes and activities conducted with support of international organisations.

A PRTR infrastructure assessment is a means for identifying existing national information, programmes, activities and expertise in the area of pollution monitoring and emissions data collection which are of potential relevance to the PRTR design effort. In order to achieve this comprehensive picture, close co-operation and input from all sources of relevant national information and expertise is considered essential. Once the information has been gathered, it can be compiled into a coherent document to be used as a reference throughout the PRTR design process. In addition to pulling together information on all potentially relevant national infrastructure, expertise and activities, the assessment can also help to ensure that the PRTR system will be appropriately linked to other ongoing programmes and initiatives, thereby helping to avoid overlaps and inconsistencies.

In Mexico, for example, the PRTR infrastructure assessment conducted in 1995 revealed a multitude of different reporting requirements under various regulatory programmes and thus paved the way for a national initiative to link the PRTR system to an integrated reporting scheme. This move to develop a multi-media PRTR system covering pollutant releases and transfers to air, water and land in an integrated manner has created an opportunity for reducing the administrative reporting burden on industry.

Defining the Scope of the National PRTR System

The scope of a PRTR system should be directly linked to the national objectives for the PRTR. For example, if the goal is to get a comprehensive picture of all pollutant emissions, as is the case in the Netherlands, then authorities may decide to collect data for both point and non-point emission sources. If the goal of the PRTR is to target major site-specific pollution sources, as is the case in the United States, then it may not be necessary to include non-point sources in the PRTR system. Similarly, with regard to the list of chemicals, if there are specific chemicals or chemical categories that are of concern in the country, the authorities will want to ensure that these are included on the list of reportable substances.

Defining the scope of the national PRTR system involves the following design decisions:

- selecting the chemicals to be included in the PRTR;
- deciding whether to include point and/or non-point source emissions data;
- deciding which sectors to include (e.g., manufacturing, resource extraction, service industries, public sector, etc.);
- specifying reporting thresholds (e.g., facility size, chemical use levels, etc.);
- specifying exemptions from reporting requirements (if any);
- defining the data elements to be collected (e.g., facility identification/location, chemical identification, quantity and nature of releases/transfers, chemical use data, pollution prevention and recycling activities, etc.).

Defining the scope of the national PRTR system also involves consideration of practical issues such as feasibility and availability of resources, while at the same time ensuring that the PRTR will yield the types and depth of information needed to serve the national objectives for the system.

Developing Data Collection and Data Management Procedures

The development of data collection and management procedures involves addressing the following tasks:

- developing the reporting format to be used for data collection;
- developing the reporting instructions and estimation guides to be distributed to reporting facilities;
- specifying the PRTR system software;
- specifying the required computer hardware;
- specifying data collection procedures;
- specifying data quality control and verification procedures; and
- specifying procedures for data entry and database management.

An important aspect of the PRTR design is to assign responsibilities for all data collection and management procedures involved in the operation of a complete PRTR reporting cycle. This includes selecting a government agency to host the database and securing the resources and staff needed for its operation.

Developing Data Analysis and Dissemination Procedures

Among the tasks that need to be addressed in developing data analysis and dissemination procedures are identification of methodologies for extracting useful information from the raw PRTR data to support the objectives and intended applications of the national PRTR system. Decisions need to be made regarding the form and mechanisms through which the PRTR data will be made available and disseminated to the public and other interested parties. The power of the PRTR system to serve as an incentive for improved environmental performance depends on the transparency and public availability of the emissions data that are collected.

The development of data analysis and dissemination procedures involves addressing the following tasks:

- specifying procedures for data aggregation;
- specifying the various types of analysis to be performed on the PRTR data;
- specifying mechanisms for data dissemination and for providing access to the PRTR data; and
- specifying the intended applications and uses of PRTR data.

Addressing the Legal Implementation of the National PRTR

Various legal issues need to be considered to ensure the necessary legal foundation for the PRTR. If reporting under the PRTR system will be mandatory, this will include establishing the necessary legal authority to require industrial facilities and other sources to report their releases and transfers of listed substances. Opportunities for integrating PRTR reporting with existing legally mandated reporting requirements should also be considered. In addition to reducing administrative burden for both government and industry, integrating PRTR reporting with other existing requirements will help to ensure that PRTR

reporting will not be unnecessarily duplicative. Another important legal issue is the handling of data which is claimed as confidential by industry. Recognising industry's concern about potential damage to competitiveness, most PRTRs have been designed to allow companies the opportunity to protect data they view as confidential. Finally, discussions should be held regarding the enforcement mechanisms to be used to ensure compliance with PRTR reporting requirements.

Testing the System

Prior to introducing the PRTR system on a national scale, it may be useful to test the PRTR system on a pilot basis to gain experience directly applicable to the design and implementation of the national PRTR. The pilot trial experience can be used to refine the various design elements of the PRTR system, and to gain concrete insights into the human and financial resources needed for its operation on a national scale. The data collected in the reporting trial also might be used to test the potential uses, analyses and applications that authorities are planning for the national PRTR system.

A pilot reporting trial can be a valuable component of a national PRTR design initiative. Mexico, which conducted a PRTR pilot reporting trial in the State of Querétaro in 1996, has utilised the results of its pilot trial to further refine the design of the national PRTR system. The pilot reporting trial, which involved close collaboration between government and the participating industries, also served to raise awareness among industry and thereby helped to dispel some of industry's initial concerns. It was also an opportunity for government staff to gain hands-on experience with the various data management procedures and to preview the types of questions which are likely to arise from reporting facilities and the general public.

A number of specific planning and implementation issues need to be addressed in relation to a PRTR pilot reporting trial. These include: defining the scope of the pilot trial (e.g. choosing the industry sample and region); ensuring that the necessary technical PRTR elements are in place for operating the trial; deciding what local authorities need to be involved; and establishing clear responsibilities for all operational tasks involved in the trial. Establishing a co-operative relationship and good communication with the participating facilities is important to ensure a successful reporting trial. Achieving effective co-ordination between central and regional authorities is also critical for success in this exercise.

The Importance of a Multi-Stakeholder Process

Experiences gained by countries indicate that a key to the successful development of a national PRTR system is the involvement from the start of all concerned parties. These include the various governmental bodies which will be involved in some way in the operation and/or use of the system; industry, which may be required to report under the PRTR and whose co-operation is therefore essential; communities and members of the general public who have an interest in accessing information on releases and transfers of pollutants into the environment; and the research and academic community which is also likely to have an interest in PRTR data.

One way to achieve broad participation in the PRTR design process is to establish a National Co-ordinating Team (NCT) comprised of representatives from the various interested parties (e.g. government, industry, non-governmental organisations) who together will undertake the tasks and activities involved in designing the national PRTR system. This approach has been used in many countries, such as Australia, Canada and Mexico, and has allowed many parties within and outside of government to participate in the PRTR design process.

The basis for an effective, well co-ordinated participatory process is clear communication. From the outset, members of the National Co-ordinating Team need to understand their responsibilities and know what is expected from them in developing a national PRTR. They should be convinced that they have an

important role to play in designing the national PRTR system and that their input will contribute to the development of a sound, well-designed system. Maintaining effective communication and co-ordination among concerned parties is an ongoing challenge that will be faced throughout the design project.

Some countries have found the organisation of a national workshop to be an effective means for raising awareness and getting concerned parties directly involved in the design project. For example, Egypt, South Africa and Cuba have organised national PRTR workshops at the outset of the PRTR design initiative. These events have contributed to a better understanding of the PRTR concept and have mobilised interest among various sectors of society.

To be effective, a national PRTR workshop should involve a wide range of participants representing the various viewpoints and concerns of all interested parties. Achieving this level of participation will entail considerable outreach to ensure that all stakeholder groups are aware of and are invited to participate in the workshop. During the workshop, background information could be presented and discussions held on the concept of a PRTR system, its potential benefits and applications, and its relevance to national goals and objectives. A national workshop of this nature could be organised with the co-operation of international agencies that have experience with and knowledge of PRTRs.

The desired outcome of these awareness raising efforts is that key participants from national interest groups who are genuinely interested in developing a national PRTR will actively join the PRTR design process. Another desired outcome is the mobilisation of interest and commitment of top decision makers. This policy support will be critical throughout the PRTR design process and during the implementation phase.

Looking Ahead into the Future

As the number of countries with PRTR systems continues to grow, the opportunities for drawing upon their practical experiences, innovations and lessons learned will likewise continue to grow. Increasingly, countries will be able to compare and contrast the various features and design options of different types of PRTR systems, and will be able to learn from each other how to capitalise on opportunities and overcome obstacles in developing PRTRs.

The rapid progress being made among industrialising countries and countries in economic transition towards the development of national PRTRs is particularly noteworthy. While PRTRs in industrialised countries have proven themselves as innovative and effective tools, we are just now beginning to see the significant potential which PRTRs hold for countries with a diverse range of economic and political circumstances, regulatory infrastructures, cultural norms and historical backgrounds. The experiences of these countries as they move forward with the development and implementation of their national PRTRs will undoubtedly enrich the international understanding of PRTRs and expand the horizons with regard to innovative and practical applications of PRTRs as tools for sustainable economic development and environmental protection.

With the expanding development of PRTRs, it will become increasingly important to keep attention focused on those features of a PRTR which contribute to its strength as a tool for environmental management and pollution prevention, and which distinguish it from other types of databases or systems which may also contain information on pollution and transfers. Some of these key defining features of PRTRs include: collection of release and transfer data for specific chemical substances as opposed to broad pollutant categories, periodic reporting by facilities or activities which might release and/or transfer the substances of interest, mechanisms for ensuring access to the PRTR results for all interested parties on a regular and timely basis, and the inclusion of a sufficiently comprehensive number of substances and facilities/activities in order to ensure that the PRTR will be of real value in setting national priorities and

contributing to environmental policy goals. The use of the term "PRTR" for systems which, although also of use, do not share the defining features of a PRTR should be avoided. Maintaining a clear and distinct identity for PRTRs systems, while allowing for diversity in PRTR design from one country to the next, is a challenge which must be met in order to ensure the continued strength and flexibility of the PRTR concept.

Other important issues for international dialogue, and on which countries now have increasing opportunities to learn from one another, include various issues and questions of PRTR design and development, for example:

- Which PRTR design approaches, or aspects thereof, have proven to be effective in developing a national PRTR system?
- What is the importance of industry participation in the design process and how can the involvement and support of industry be encouraged from the start?
- How can the perspective of communities and public interest groups be integrated into the PRTR design initiative and how can the PRTR system meet some of the concerns and information needs of members of the public and workers?
- What are opportunities for streamlining environmental reporting -- and thereby reducing administrative burden for both industry and government -- through the design of a PRTR?
- What are the main constraints in implementing PRTR systems in industrialising and transitional countries (e.g. human resource and financial constraints, technical issues, political commitment, etc.) and how can they be addressed?

The OECD International Conference on PRTRs: National and Global Responsibility is a concrete opportunity to have an open exchange of experience among countries around these and other important questions of PRTR design and implementation. UNITAR welcomes the opportunity to take part in this dialogue and looks forward to learning from each others' experience, generating some ideas and conclusions which will benefit countries which may be considering the development of a PRTR, and exploring innovative ways in which PRTRs can continue to be used to support sound chemicals and environmental management world-wide.

SESSION III - SHARING LESSONS LEARNED

SESSION III

Sharing Lessons Learned

Working Group A

Implementing an Effective PRTR Design Process

No papers presented

SESSION III

Sharing Lessons Learned

Working Group B

PRTR Implementation

Design and Implementation of the Mexican Pollutant Release and Transfer Register (PRTR)

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Instituto Nacional de Ecología Mexico

1. Background

Upon sustainable development principles, and following the Agenda 21, governments started to consider policies to achieve ecologically sound management of chemicals. Mexican environmental regulations addressing common air pollutants, wastewater discharges and hazardous wastes were partially developed by that time, but there was no policy for environmental management of substances or for providing public access to environmental information.

Through Agenda 21, where the basic statements of global environmental action are documented, UNCED recognised that any chemical substance may be harmful to the health and safety of living organisms and the environment if it reaches a given level of concentration and exposure, and that it is the responsibility of each country to decide the levels of excessive or unacceptable risks, hence, to define regulatory frameworks and policies for chemical substances management.

Agenda 21 recommends to include the following policies for chemical substances management: an appropriate legislation and enforcement, environmental data gathering and compilation, risks management, remediation of polluted sites, effective educational programs and emergency response infrastructure. It is also recommended that governments should consider the citizens right-to-know and implement public access to information as a tool for risks reduction.

On this basis and as part of the recommendations of Agenda 21, the Ministry of the Environment, Natural Resources and Fisheries, SEMARNAP for Spanish Secretaría del Medio Ambiente Recursos Naturales y Pesca set the Pollutant Release and Transfer Register as one priority to be developed under the National Environmental Protection Program 1995-2000.

The main objectives to be pursued with the PRTR implementation are:

- Provide a reliable information source about emission and transfer of specific pollutants to different media (air, water and soil), to support decision-making and formulation of environmental policies in Mexico.
- Update and quantify pollutant emission for different environmental media.
- Simplify industrial reporting requirements and information gathering on the releases and transfers of specific pollutants.
- Establish an additional tool for decision-making in industries, as a complement to their own systems and priorities for environmental management.
- Provide basic information regarding pollutants release and support the management and communication of associated risks.
- Create an information system on pollutant releases and transfers for public access.

- Develop a mechanism that enables Mexico to meet its international commitments regarding environmental information.

2. Design of a PRTR System for Mexico

In early 1994, the United Nations Institute for Training and Research (UNITAR), in co-operation with other UN agencies and the OECD, initiated pilot projects in Mexico, Egypt and Czech Republic to facilitate the establishment of a national Pollutant Release and Transfer Register (PRTR). The scope of the pilot project was to obtain a better understanding of the benefits derived from the introduction of PRTRs in developing countries.

In this context, the Mexican initiative took the name of Registro de Emisiones y Transferencia de Contaminantes (RETC), understood as a tool for compilation, integration and diffusion of information regarding the chemical substances that could be causing a significant environmental impact, both released to the environment and transferred to treatment and disposal systems.

Mexico initiated its PRTR project in 1994, with the National Institute of Ecology, INE for Spanish Instituto Nacional de Ecología, acting as focal point. INE established a multi-stakeholder group named the National Co-ordinating Group (NCG), which contained representatives from industrial associations, government, academia and non-governmental organisations (NGOs).

Industry, academia and NGOs participated as decision-makers during the PRTR development, particularly regarding some of the components such as the toxic substance list, the filing form and the issue of information access. The governmental institutions provided information about how environmental data had been collected and what kind of inventories could be useful in order to improve environmental management in Mexico.

Under the technical support provided by UNITAR, the NCG developed the program guidelines and finally published the PRTR National Executive Proposal in March 1997. The Proposal was designed as a tool for compilation, integration and diffusion of information regarding the chemical substances with a significant environmental impact.

The National Executive Proposal describes the components to establish an electronic register with annual data on releases to air, water and soil; detailed by chemical substances or regulated parameters at reporting facilities, economical sectors and regions. This register includes information about the geographical location, general operative data, preventive and control devices, as well as data on non-point sources such as agriculture and transportation. This proposal addresses as well legal implementation and public policy issues.

As a result of the pilot trial and presentation of the PRTR National Executive Proposal, the Minister of the Environment, Natural Resources and Fisheries, SEMARNAP decided to incorporate the reporting cycle of the PRTR as a constituent part of the Integrated System for Environmental Management and Regulation (SIRG) for Mexican industry. This system integrates pollution control regulation and voluntary initiatives. It involves a comprehensive permitting process that includes air, water and wastes issues as part of a single environmental license and reporting procedure, actually developed from the work done on the PRTR. The PRTR has a solid juridical and technical basis, supported by the environmental law.

3. Implementation of PRTR in Mexico

Upon the release in March 1997 of the National Executive Proposal, new reporting and licensing regulations were dictated. In April 1997, SEMARNAP signed an agreement with industrial chambers to promote clean environmental performance and competitiveness, including a new legal and institutional scheme under which the Mexican PRTR is now being implemented. The main constituent elements are:

- Sole Environmental License (LAU, from Licencia Ambiental Única)
- Annual Operational Report (COA, from Cédula de Operación Anual)
- Environmental Management Voluntary Program (PVG, from Programa Voluntario de Gestión Ambiental)

Under this scheme, all licensed facilities will submit their report on the emissions and transfers of 178 substances or groups of substances through annual reporting. The PRTR data base will serve several applications of the so-called Integrated Environmental Management and Regulation System (SIRG).

4. Generating and Reporting PRTR Data

Industrial sources will submit PRTR data starting in 1998, through the compulsory Annual Operational Report (COA). The COA is a reporting mechanism which industries currently holding the Sole Environmental Licence or the Performance Licence (approximately 4,000 nation-wide industrial plants under federal jurisdiction) must submit; filling procedures consist of a multimedia reporting scope (air, water and soil) that includes environmental information such as air emissions, wastewater discharges and hazardous waste management. A special chapter addressing the release and transfer of 178 toxic substances and categories of environmental concern is also included as part of the filling procedures.

The Annual Report will provide the following information:

- Emissions and transfers of pollutants to environmental media (air, water and soil)
- Amount of substance transfers outside the establishment for treatment, recycling, reuse, final disposition or incineration
- Control and pollution prevention activities of the facilities as well as pollutants projections
- Information about *in situ* treatment methods

Due to its multimedia approach, the analysis of this report will provide industry with additional tools for decision-making to promote the use of clean technologies and spot specific environmental problems due to the transfer of pollutants between different media.

The information request in the report is divided into five sections:

- I. General technical information
- II. Atmospheric pollution
- III. Water use and wastewater treatment
- IV. Generation, treatment and transfer of toxic waste
- V. Release and transfer of listed pollutants

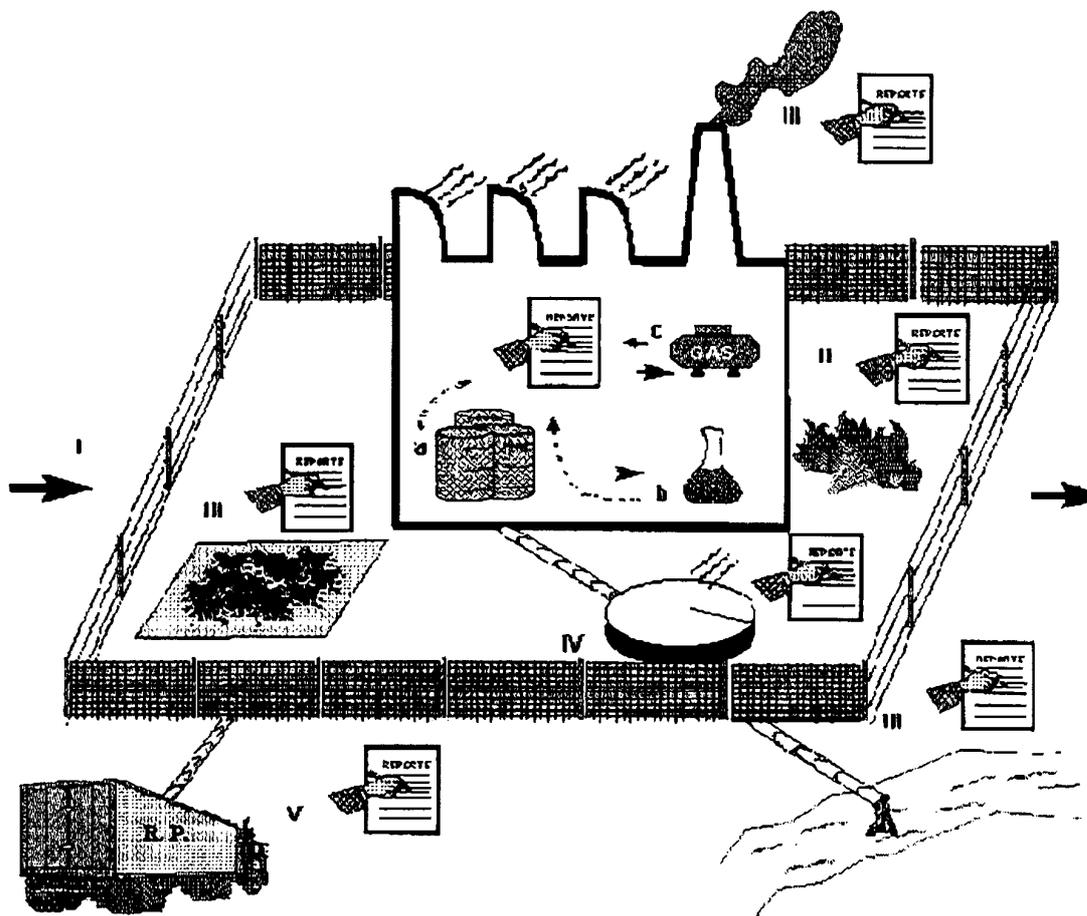
Section *I, General technical information* as well as section *II, Atmospheric pollution* and section *IV, Generation, treatment and transfer of toxic waste* are compulsory, while the information from section *III, Water use and wastewater treatment* is optional and will be received for statistical purpose. The information in section *V, Release and transfer of listed pollutants*, is optional until the legal standard that obliged its reporting is issued.

The following figure shows the reporting points of an industrial facility associated with Mexico's PRTR program.

The Annual Report could also serve as a starting point for other voluntary programs like the Environmental Management Program (PVG) and the Environmental Auditing Program (PAA), whose main objectives are to achieve continuous and integral protection of the environment.

The reporting procedure is crucial to the effective development of the Mexican PRTR, since it is the main tool used to gather environmental performance information concerning the industrial sector and the basis for a public database. The public database will link regulation tracking and public right-to-know as one of the various components of the National Environmental System as stated in the *National Environmental Protection Program 1995-2000*.

Moment of Report	Activities Description
I	Substances that enter the industrial establishment: a , warehouse; b , process; and c , services
II	Emissions caused by accidents
III	Emissions to environmental media: air, water and soil
IV	<i>In situ</i> treatment
V	Transfer for treatment or final disposition



5. Use and Dissemination of PRTR Information

The goal of any PRTR is not simply to collect data, but to provide information that can be used by government, industry and the public to improve the sound management of chemicals. In Mexico, industrial sources will submit the Annual Operation Report data starting in 1998. Full understanding of the instrument by both government and industry is necessary to assure the reliability of the overall reporting process.

As a main tool for the National PRTR, the information gathered from the Annual Report will be integrated into it by systematic procedures of report, integration, analysis and consultation. This information will be analysed from a statistical and geographical perspective.

The use of PRTR information will provide considerable benefits to the government through the identification of industrial sectors that generate toxic releases, as well as quantities, time and media where they are emitted. It will allow the government to establish environmental priorities in the following issues:

- Environmental performance of reporting facilities
- Enforcement of environmental law
- Communication and assessment of environmental risk
- Pollution prevention and waste minimisation
- Environmental management and international certification
- Action plans for the reduction of greenhouse gases for compliance with the Convention on Global Climate Change
- Water and wastewater management
- Air quality management

The information gathered in the PRTR also contains positive aspects and benefits for reporting industries. Industry can improve its own performance by decreasing operating costs and communicating with nearby communities as a means of establishing trust and confidence. PRTR information will help industry to promote:

- Internal incentives to improve environmental performance
- Financial decision-making
- Establishment of voluntary emission reduction goals
- Improvement of industry-community relationship
- Performance comparability between facilities
- Corporate reporting
- Improve manufacturing processes
- Recycling of material

The PRTR, together with the regulation allowing public access to environmental information, will bring citizens into the decision-making process, where universities, academia and NGOs can use the information for the following purposes:

- Public access to environmental information
- Promote activities in pollution prevention and control
- Promote citizens right-to-know programs
- Surveillance of environmental law compliance
- Education and investigation in environmental areas

Nowadays, long term national projects must be interpreted in the light of their environmental meaning and the conditions of their feasibility or sustainability. Although this concept has been universally accepted, its translation in institutions, policies, and actions has proven to be highly complex.

1998 is the first year Mexican industries will submit PRTR data, by reporting their emissions and transfer of pollutants of 1997 through the Environmental Annual Report. After an overview of the recent experience of Mexico in designing and developing a national PRTR system, it is important to recognise the potential roles of a PRTR from a government point of view.

Environmental policy framework

The main objective of the National Environmental Protection Program 1995-2000 is to halt the trends that damage the environment, the ecosystems and natural resources, and to set the basis for a process of ecological restoration and recovery that will allow for the promotion of social and economic development of Mexico with sustainability.

The program functions according to an important set of instruments of environmental policy, available to both the authority and the society as a whole and which is offered by the legislation and the existing institutions. Some of these instruments that are linked to the development of a PRTR system are: Mexican official norms, industrial regulation (permitting and report), regulation on wastes and environmental risk, environmental information, social participation, education and research, and compliance with environmental laws and regulations.

Environmental performance of reporting facilities (pollution prevention)

As the PRTR inventory is obtained through the years, it will allow the evaluation of environmental performance of reporting facilities. Through the evaluation of each report after being handed to the INE (and in the process of integrating it to the national inventory database), evaluation of the compliance of regulated facilities for air, water and hazardous wastes releases will be done. At this point, the PRTR will link with other national programs like the Environmental Auditing Program, whose main objective is to achieve continuous and integral protection of the environment.

The intention in creating the Annual Report as a reporting mechanism that contains the information of the PRTR was to simplify and reduce administrative burden and also to create the first multimedia approach for the release and transfer of pollutants. One of the main objectives of a PRTR is to establish an additional tool for decision making in industries. PRTR information is starting to be used in pollution prevention and waste minimisation programs. Further efforts are being planned to integrate pollution prevention and source reduction as policy elements for sustainable development.

Air and water quality management (greenhouse gases reduction plans)

Air and water quality management has been carried out since the recent past, but emissions and discharge inventories have been a serious constraint. With an operational PRTR system, the management of air and water quality will count on comprehensive contaminants inventories.

An important issue in air management is greenhouse gases. In this regard, the PRTR is starting to compile information provided by the reporting industries and from the National University and other research agencies which have already contributed to estimating country greenhouse emissions.

Emergency response

One of the potential roles of PRTR is its use in emergency response situations. This issue has not been further developed in Mexico, so for the time being further analysis is required.

Risk analysis

To provide basic information regarding pollutant release and support the management and communication of risk is another key objective for a PRTR system. PRTR data is very useful for environmental exposure assessments and the emission rates of chemicals from reporting facilities into air, surface water, and soil are one of the key inputs to conduct exposure/risk assessment studies to evaluate risk assessment and risk management activities.

The information gathered in the PRTR will also allow Mexico to carry out its international commitments for the management and control of priority substances like DDT, chlordane, lead, cadmium, PCBs and mercury.

Public access to PRTR information

In recent years, the access to information has been transformed into a critical subject, where the government converges with citizens, non-governmental organisations, and academia as well as the industrial sector for the protection of the environment. Access to information is being increasingly demanded, while the well informed public wants to serve as a partner both to the government and to industry in environmental decision-making.

In response to the increasing demand of different actors interested in environmental decision-making, the reforms passed by Congress integrated social participation and the right-to-know in the same statute. Government has to provide public access to environmental information, so the publication of the PRTR reports on an annual basis will allow the general public to acquire this information through publications or via the INE WebPages.

Use of PRTR data on a regional and international level

The NAFTA Commission for Environmental Co-operation (CEC) is facilitating trilateral activities to support the development of North American pollutant release and transfer registers as a method of enhancing the quality of the environment.

The North American Pollutant Release and Transfer Register project was initiated in 1995 in response to the CEC recognition of the importance of PRTRs for their potential to enhance environmental quality and a CEC goal to assist citizens in integrating and understanding the ramifications of North

American PRTR data. The CEC is attempting to increase the value and public accessibility of the national inventories by presenting an analysis of this information on substances of concern across North America.

6. Outreach, Training and Educational Programs

Integrated Pollution Control is considered to be one of the beneficial consequences of an effective PRTR system, since new reporting procedures have become compulsory for over 4000 industrial facilities country-wide. Since Mexican industry has never before reported its emissions under an integrated scheme and most of the substances asked to be reported are not measured normally, full understanding of the instrument both by government and industry is necessary to assure reliability of the overall reporting process.

Actions have been undertaken by INE, with the Co-operation of UNITAR and CINAM (Colegio de Ingenieros Ambientales de Mexico AC), to facilitate reporting through a series of training and educational programs. The following actions have been essential to facilitate reporting:

- Elaboration of a basic campaign through printed posters and leaflets to inform industry and the general public about the new environmental reporting requirements as well as the potential use and availability of PRTR information.
- Development of a training program for government and industrial personnel, related to the meaning and content of COA, as well as to review the engineering capabilities for filling out such a format.
- Development of industrial guides for the estimation of pollutant emissions at key industrial sectors.

7. Co-operation For PRTR Development in Transitional and Industrialising Nations

Several international organisations have been working to foster development and the use of these systems. On the one hand, UNITAR has been working on technical and financial assistance for developing countries and the United Nations Environment Program (UNEP) has arranged an International Register of Potentially Toxic Substances. On the other hand, as a result of international agreements, Mexico has been working with the North American Commission for Environmental Co-operation and towards implementing the Recommendation of the OECD Council on the introduction of these systems in Member countries, according to the guidance for governments published by the OECD.

Officers of INE have been invited to several events around the world to provide an example of the implementation of a PRTR following UNITAR and OECD guidance. These experiences have also provided the opportunity to enhance technical Co-operation with countries like Brazil, Cuba, Nicaragua, and Venezuela.

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SESSION III
Sharing Lessons Learned

Working Group C

**Outreach, Training and
Education Programmes**

Outreach, Training and Education Programmes: Perspectives and Experiences of the U.S. Chemical Industry

Steven K. Russell
Chemical Manufacturers Association

Introduction

The Chemical Manufacturers Association (CMA) is a non-profit trade association whose 190 member companies represent 90% of the manufacturing capability for basic industrial chemicals in the United States. The U.S. chemical industry employs more than one million workers, most of whom earn more than 1/3 above the manufacturing average. And, we are the country's largest exporter. The chemical industry also is richly diverse; chemical companies manufacture more than 70,000 feedstocks, intermediates, and products from a vast array of metals, minerals, coal, oil natural gas, vegetable oils, and other raw materials.

Materials listed on the U.S. PRTR, known as the Toxics Release Inventory (or "TRI"), form the vast majority by volume of U.S. chemical production. In fact, 91 of the top 100 production volume U.S. chemicals either are TRI-listed chemicals, or require a TRI-listed chemical as an input or catalyst in production. In short, TRI-listed chemicals are vital to virtually every modern chemical manufacturing process and product. Therefore, CMA has a strong interest in outreach, training and education regarding the TRI. While our members' views are not uniform, the vast majority have found that effective public education about the TRI -- what it is, and what it is not -- is essential to a successful relationship with their local communities.

I. CMA Support for Community Right-to-Know

CMA's outreach on TRI stems from the industry's strong support for community right-to-know. This support is most evident in the Responsible Care[®] initiative, launched in 1988 shortly after enactment of the legislation which created the TRI. Responsible Care[®] grew out of a voluntary pre-TRI program called CAER (Community Awareness and Emergency Response). CAER, which became a part of Responsible Care[®], was created to encourage more openness at chemical facilities and to ensure coordinated emergency response planning. By the end of the 1980's there were more than 1,100 CAER Coordinating Groups in 46 states.

Responsible Care[®] consists of a set of Guiding Principles and six Codes of Management Practice that all CMA members are required to implement as an obligation of membership. Two Guiding Principles relevant to PRTRs require companies:

- to recognise and respond to community concerns about chemicals and chemical operations; and
- to report promptly to government officials, employees, customers, and the public information on chemical-related health or environmental hazards and to recommend protective measures.

Two of the Codes of Management Practice are particularly relevant to PRTRs:

- The CAER Code requires each facility to have an outreach program that includes an assessment of community concerns, ongoing dialogue, employee and community education, communication and co-ordination with Local Emergency Planning Committees (LEPCs), facility tours, and information sharing with neighbours. Under the CAER Code, many companies establish Community Advisory Panels (CAPs) that serve as a channel for identifying and responding to questions about health, safety and the environment. Today there are more than 300 CAPs nation-wide.
- The Pollution Prevention Code requires facility management to engage in a dialogue with employees and community residents about chemical inventories, waste generation, and release information, progress in meeting reductions, and future plans.

CMA's commitment to responsible chemical management is reflected in its members' performance. During the initial five-year reporting period (1988-1994), CMA members reduced releases, transfers and underground injection of listed chemicals by 52 per cent, while increasing chemical production by 18 per cent. Since the number of listed chemicals has increased, it has become more difficult to give simple and accurate answers concerning the level and type of reduction. Nevertheless, the trend in reducing releases and transfers of TRI-listed chemicals continues. Of all reporting sectors, the chemical industry had the greatest overall reduction from 1995 to 1996.

However, CMA's support for a community's right-to-know about PRTR information also embraces our support for the community's right to **understand** the risk-related meaning and significance of the information being provided. CMA has not always supported the U.S. EPA's attempts to expand the TRI, especially if -- in CMA's view -- EPA's actions were not consistent with the implementing legislation, or if they would have the effect of increasing public misunderstanding. Where CMA has opposed EPA's TRI expansion efforts, we have tried to suggest alternative means of providing equally meaningful information.⁶ Unfortunately, these efforts have frequently been wrongly characterised as evidence of industry's opposition to the TRI itself. Because we know some still misunderstand our views on TRI, we appreciate the opportunity this conference provides to offer our perspective and experience on outreach, training and education to governments, academics, and NGOs.

II. Improving Facility/Community/Government PRTR Dialogue

Responsible Care[®] emphasises dialogue as an objective, regardless of the content. Nevertheless, there is no doubt that the availability of TRI data has been an important topic of discussion in dialogue between facilities and local communities at LEPC and CAP meetings during the last decade. Today also we use TRI information as a measure of performance under the Pollution Prevention Code. So while the TRI itself did not *cause* facilities and communities to come together, it certainly has played a very important role in the evolution of Responsible Care[®], and it has been one of the topics which many of these groups have discussed in depth during the past ten years. In that sense, it has been a central element in many facility/community relationships.

⁶ In comments on a 1996 EPA proposal to expand the TRI to include "materials use accounting", CMA suggested specific ways to: better define the focus of community RTK; review existing data collection programs; make existing data more valuable; expand voluntary information programs; and improve EPA's information stewardship activities.

In CMA's opinion, at least, relationships which have included significant discussions on TRI data have been extremely valuable; all parties benefit from open communication. These relationships, unimaginable to some even a few years ago, are now seen as critical to a successful long-term local presence. Understanding and communicating about a facility's TRI data has been an essential part of that relationship, almost from the beginning.

Today most facilities present their LEPCs and CAPs with the facility's annual TRI report at the same time the information is reported to EPA. Why? Once the annual data reporting occurs, it takes EPA more than a year to carefully enter, tabulate and report that extraordinary amount of information back to the public. By then, facility reductions which occurred early in the reporting period are almost two years old. Facilities which are able to report decreases in releases and transfers are generally anxious to share that information with their communities. Interestingly, even when the news has not been particularly good, most facilities prefer to deliver that information themselves, and communities have come to expect no less of their facilities.

However, most participants in LEPC and CAP meetings report that their initial discussions on TRI data have been among the most difficult and frustrating. Why? From industry's perspective, the problem was principally two-fold: (1) communities did not initially understand what all of the information meant, because there was a lack of basic context for it, and (2) no one had carefully articulated the relationships between release and exposure, or between hazard and risk. In hindsight, neither of these problems needed to occur. With early communication and an honest attempt to first understand the perspective held by other stakeholders, these problems can be largely avoided.

A. Provide a Useful Context for PRTR Information

If we start with the assumption that improving the quality and content of PRTR dialogue among industry, governments, communities and NGOs is in our mutual best interest, then we should examine how the early obstacles -- including dialogue -- have hindered our relationships. The following are simple suggestions for improving early program dialogue, based on lessons industry has learned after ten years of reporting:

1. Create an Unbiased Language

Chemical companies are, of course, sensitive to how their governments characterise their activities. Sometimes even the most simple activity or reference can unnecessarily strain relations. For instance, chemical companies exist for the purpose of making chemicals. Why then are these registries characterised as accounting for "pollutants" rather than "chemicals"? Is it really true that every chemical transfer or release must be referred to as pollution? Probably not. Transfers, in particular, suffer from this moniker. There also are times when a chemical metabolises or degrades into an entirely benign substance. This simple example, admittedly a minor irritant, was an early obstacle to constructive dialogue, particularly when it was used pejoratively, or for political benefit.

Another example is the routine use of the word "toxic" before "chemical." All chemicals, at some level, are toxic. However, as we all know, the dose makes the poison. This usage -- intentional or not -- creates a public which is afraid of chemicals, and eventually becomes unable, or unwilling, to have a rational discussion about chemicals.

2. Specify Which Industries are Covered by Reporting

The annual release of TRI data, particularly in the early years, was characterised in the press, and therefore generally understood by communities, as a problem created solely by the chemical industry. It

was only rarely clear that a variety of manufacturing industries -- from food to furniture making, and from electronics to clothing -- were reporting on their use/release/transfer of listed chemicals. When communities are told that several thousand pounds of a chemical are released into the environment that year, they, perhaps predictably, assume that the chemical industry is responsible. It has taken several years and too many resources to clarify that dozens of different manufacturing and industrial activities are covered, and that the ability to affect total pounds released requires Co-operation among dozens of stakeholders.

3. TRI Does Not Account for All Emissions

Because the TRI does not account for emissions from mobile/non-point (i.e., automobiles and other non-industrial) sources, it is not a complete accounting of releases or transfers. As a result, the sectors to which reporting obligations apply tend to become the sole or primary focus of attention by regulators and environmental activists. This is a significant barrier to enthusiastic support for PRTRs by many in industry. Therefore, short of universal coverage, one important part of an effective PRTR system would be clear and prominent statements of precisely which industries do, and which do not, report to the system.

4. PRTR Reporters Are Not All Alike

Given the wide variety among and even within industries which report to PRTRs, some facilities can affect their reported releases more easily than others. As a result, it is impossible to draw completely accurate conclusions regarding performance or appropriate regulatory responses across industrial sectors, and in some cases, across the same industry, when conclusions are based on PRTR data alone. This is not to say such analyses are inappropriate; merely that there is a real danger that the sheer variety among reporters makes reliable conclusions difficult. Further inquiry is frequently needed to validate the apparent conclusion, and to ensure that responses based on that information will be effective.

5. Companies Operate in a Litigious Environment

The public, including EPA, generally does not appreciate the enormous role which tort liability has on the decisions of companies doing business in the U.S., and in particular on their willingness to offer enthusiastic support for certain elements of the TRI. This point is relevant here because TRI supporters frequently suggest that the TRI is useful in helping “empower citizens to identify environmental concerns.” Industry cannot help but interpret those statements as encouraging the filing of “citizen suits.” PRTR data can be, and frequently is, cited by organisations which seek to profit from environmental shortcomings, rather than stop them.

B. Relationships Between Release and Exposure, and Between Hazard and Risk

1. A “Release” Does Not Always Equal Exposure

Early in our TRI program many plant managers were surprised to learn that many plant neighbours did not understand that chemicals reported as “released” or “transferred” did not equate directly to chemical exposure. This situation is clearly different today. But even now, with annual TRI reports approaching 200 pages, only a relatively small number of pages are dedicated to explanations of context, reporting scope, and data limitations. The lack of a basic “program description” is a very significant issue for industry. For instance, according to many in industry, “transfers” and “recycling” are particularly confusing to the public, and reports on those elements frequently convey a misleading impression of hazard, exposure, and even risk. If PRTR programs are to receive enthusiastic or substantial, broad-based industry support, then effective ways must be found to address these issues.

2. *Chemical Substitution and Comparative Risk*

As the accompanying material to the TRI now notes, when it comes to risk, not all reductions have the same meaning. A large reduction in a relatively unstable chemical with low toxicity may mean less than a small reduction in a chemical with greater stability or higher toxicity. This reality makes meaningful conclusions about the TRI even more difficult when manufacturers achieve reductions in reported releases by switching to non-listed chemicals. This single but significant truth must be taken into account when PRTR information is used by others.

3. *PRTRs Are Generally Not a Good Risk Communication Tool*

Countries considering adopting or enhancing PRTRs should understand that PRTRs, for all of their benefits, are generally not a good tool for communicating chemical risk to humans. Why? Because risk is an equation which requires consideration of both hazard and exposure, and PRTRs, by definition, do not provide detailed information about either element. This is not to say that PRTRs have no value, or are in themselves misleading. However, sponsoring governments must also understand, and adequately communicate to the public, their limitations.

Of course, it is unrealistic to expect that any PRTR will provide a full picture of chemicals in the environment. They simply are not designed to do that. The problem is that its many users don't always understand or acknowledge that limitation.

III. Creating a Dialogue with Environmental Organisations

In CMA's recent experience, effective and co-operative dialogue with some environmental organisations is at an all time high. As with facility/community dialogue, the TRI itself did not create the dialogue with environmental NGOs. However, it certainly is one of the topics which form the basis for our discussions. For example, TRI data forms the basis for the Environmental Defense Fund's Chemical Scorecard, and our dialogue on that project has generally been viewed as co-operative and helpful. When the basic facts are true and clearly presented, there is less opportunity to disagree. However, there are some areas where better use of TRI data could help industry and environmental NGOs get along even better.

A. Environmental Information Stewardship

The most important new topic of mutual interest will be stewardship of environmental information. Industry depends on accurate information. Increasingly, so do environmental and/or activist organisations which, like EDF, use TRI data to populate and drive entire web sites like the Chemical Scorecard. As these uses grow, it will become increasingly important to ALL parties that the information be complete, accurate, timely, and in the proper context.

B. Citizen Empowerment

Supporters frequently repeat the mantra of "citizen empowerment" when describing the benefits of a strong PRTR. However, even the strongest PRTR supporters admit that most citizens themselves rarely use raw TRI data directly. To the degree they use TRI information, they rely on the repackaging of that information by other groups...groups which often have a strong public policy or political agenda. Whether one agrees with the agenda of information "packagers" or not, the fact remains that governments must now consider not only how they present data, but also how others will use that data for their own ends.

C. A Tendency to Grow

As with almost every regulatory program since the advent of administrative law and practice, the TRI has grown. Why? EPA and environmental NGOs have always had a flexible and expanding view of the legitimate purposes, uses and goals of generating PRTR data. Examples of purposes and uses which EPA had articulated include: public awareness; voluntary reductions programs; pollution prevention targeting; signalling the need for new legislation and regulation; education; risk screening; environmental justice; geographic information systems; enforcement and compliance; “green indexing”; and taxes/fees. These varied uses reflect a program that sees a constantly evolving set of goals that are essentially synonymous with the potential uses of the data. As a result, once a potential use is articulated for an existing or new data element, then the “right-to-know” test has been met, and the data element is a legitimate part of the TRI program.

Governments thinking about adopting or enhancing existing PRTRs can count on industry to take a slightly contrary view. That view, broadly stated, is that environmental reporting programs should bear a direct relationship to risk-related environmental results. Under that view, desirable environmental outcomes should be articulated by the government and appropriate environmental measures should then be developed specifically to reach those outcomes. When data collection is required, it should be collected through efficient processes and conveyed to the public in understandable ways.

D. A Role for Governments

Some have stated that it is not government’s responsibility to put PRTR data “into context.” The rationale for this position is not entirely clear, but appears to rest on the belief that it should be up to “the public” to decide what the information means. Industry has taken a slightly contrary view. Simply stated, if a government declines to put information into context, then it runs a risk of becoming irrelevant to the process; it becomes merely a conduit for information to pass through on the way to “the public.” Such a limited function could almost be automated. By abdicating any responsibility for context or judgement, there is no added value. It would seem not to be in a government’s enlightened self-interest to go too far down that road.

Conclusion

CMA and its members believe that PRTRs can provide valuable information, and stimulate actions to reduce emissions. By encouraging responsible stewardship in the production and use of chemical products, Responsible Care[®] and PRTRs are entirely consistent. And, by providing facilities and communities with a set of data on which to initiate those discussions, PRTRs have played a key role in establishing positive relationships. Therefore, we are pleased to participate in this conference, and to further improve that dialogue.

The Need for Public Education and Outreach Components in Pollutant Release and Transfer Register (PRTR) Programs: A Non-Governmental Organisation Perspective

**Mark S. Winfield
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Canadian Institute for Environmental Law and Policy¹**

I. Introduction

Pollutant Release and Transfer Registers (PRTRs) are emerging as one of most important environmental policy innovations of the past 30 years. They have the potential to strengthen public understanding and knowledge of pollution problems, enhance the accountability of governments and industry to the public for their actions, and promote reductions in the generation and release into the environment of hazardous and toxic substances.

II. The Potential Uses of PRTR Data

The data generated through PRTRs has the potential to be put to a wide range of uses by a broad constituency of possible users, ranging for governmental environmental agencies, to individual citizens dealing with local pollution problems. These uses include the following:

- ensuring the right of local communities and the public at large to know about releases and transfers of pollutants;
- strengthening the ability of the public to hold governments to account for the consequences of their environmental policy decisions;
- strengthening the ability of the public to hold industry to account for the environmental and health impacts of its activities, and the validity of its claims regarding voluntary reductions in the generation of wastes and release or transfer of pollutants;
- providing a more sound basis for public policy decisions regarding environmental protection;
- improving environmental management and promoting and facilitating pollution prevention activities within firms and institutions which generate, transfer or release pollutants;
- improving investment and insurance decision-making within financial institutions regarding activities which involve the potential to cause harm to the environment or human health.

III. The Need for Outreach and Education Activities to Accompany PRTR Programs

This potential for the use of PRTR data can, however, only be fulfilled if the public is made aware of the existence of PRTR programs and has access to the information gathered through them. Failure to build

¹ The Institute is an independent, not-for-profit environmental law and policy research and education organisation, founded in 1970 as the Canadian Environmental Law Research Foundation. The Institute may be reached at Suite 400, 517 College St., Toronto, Ontario, M6G 4A2. Tel: 416-923-3529, fax: 416-923-5949, home page: <<http://www.web.net/cielap>>

public awareness, on the other hand, can threaten the continued existence of PRTR programs. Programs in which there is no apparent public interest may become difficult to justify, especially in the face of complaints or opposition from the affected industry sectors.

These are not abstract problems. Even in Canada, where the federal Department of the Environment (Environment Canada) has been relatively active in communicating the existence of the data gathered through the National Pollutant Release Inventory (NPRI), and in making it available to the public, community and environmental organisations have, to date, only made limited use of data. In fact, the most significant user group to emerge in Canada has not been members of the public, or community and environmental groups, but rather private sector financial institutions.

IV. Ensuring Public Knowledge and Accessibility of PRTR Data

A number of steps need to be taken to ensure that the public is informed of the existence of PRTR data, and is able to make use of it.

Public Access to Data

The most basic of these measures is to provide members of the public with access to the data collected through PRTR programs. This can be done in a number of ways:

- posting PRTR data on the internet home page of the agency operating the PRTR program, as is done in Canada and the United States;
- making the data available to the public in a CD ROM or floppy disc format; and
- the provision of annual hard copy summary reports of PRTR data to the public, as is done in Canada, the United States and Australia.⁷ The Canadian experience has shown that, in practice, the written summary reports are the initial point of contact with PRTR data for most audiences.

Public access to data needs to be provided in a timely manner. Lengthy delays between the collection and release of data should be avoided. It is important that members have access to the most up-to-date data possible. In Canada this has also emerged as an important issue for facilities that report under the NPRI. The late release of data has resulted in firms that have undertaken major pollution control and prevention programs being identified as still being major sources of pollution in media reports on the release the release of PRTR data.

Public access to PRTR data should be provided at no cost, or minimal cost. This is consistent with the public education and accountability goals of PRTR programs, and the objective of achieving the widest possible distribution of the data.

² See, for example *National Pollutant Release Inventory - Summary Report 1994, Summary Report 1995, Summary Report 1996* (Ottawa: Environment Canada, 1996, 1997, 1998).

Informing the Public about the Existence of PRTR Data

Steps are also needed to inform the public about the existence of the data and the fact that the public has a right to access it. These goals can be achieved in a number of ways. Coverage in the mass media on the existence and public availability of PRTR data is one of the most effective ways of communicating basic information about PRTR programs to the widest possible audience.

Among other things, this requires presenting the data, both in summary report and electronic formats, in a manner that is accessible and meaningful to non-specialists. Regional breakdowns and analyses of PRTR data can be especially useful in this sense. Environment Canada, for example, has provided an extensive analysis of NPRI and U.S. Toxics Release Inventory (TRI) data for the Great Lakes Region.⁸ The provision of detailed briefings to key media outlets should also be considered prior to the release of PRTR data.

The mass media is able to reach large audiences with a limited amount of basic information of PRTR programs and the data they provide. However, the process of building a constituency of public users of PRTR data requires a number of additional steps. These include outreach and education programs targeted at potential users of PRTR data, such as community groups and environmental non-governmental organisations. These efforts should include presentations on PRTR programs and the means through which the data which they contain may be accessed, and more detailed training programs on how to access or analyse the data.

Non-traditional environmental constituencies, including public health agencies and non-governmental organisations, the health professions, such as doctors, nurses, and public health officials, organised labour, aboriginal peoples, and educators, should be included in these efforts as well. The latter category is particularly important, as the conduct of analyses of PRTR data lends itself well to being an assigned project for senior high school and undergraduate university/college students. Such work can help to build a long-term constituency of PRTR users.

It is important to note that while providing the public with timely electronic access to PRTR data is essential, it suffers from a number of significant limitations. Internet access, and access to the computer capacity and skills necessary to conduct analyses of PRTR data, remains much more limited than is generally realised, even in Canada. Rural and disadvantaged communities tend to have especially serious problems in obtaining access to electronic information. Yet these communities are often among those most affected by pollution problems.

The production of hard copy summary reports, as are provided in Canada, the U.S. and Australia, is a very useful way of overcoming this barrier to accessing the general information provided through PRTR programs. However, the site-specific data which is likely to be of the most interest to community groups and individuals usually cannot be provided in this way.

Steps can be taken by governments to address the issue of electronic access to PRTR data. In the Canadian province of Ontario, the *Environmental Bill of Rights* (EBR), enacted in 1993, provided for the establishment of an electronic registry, on which all proposed provincial environmental laws, regulations, policies, and individual facility approvals and permits are required to be posted for public comment prior to being finalised.

The problem of providing public access to such an electronic registry was recognised early in the process of developing the Ontario Bill. As a result, the provincial government and the Office of the

³ *Industrial Releases Within the Great Lakes Basin: An Evaluation of NPRI and TRI Data* (Toronto: Environment Canada - Ontario Region, 1995).

Environmental Commissioner, an agency established through the Bill, undertook a program to provide and install computers in public libraries and other public buildings, such as provincial government offices and city halls, to ensure public access to the registry. Similar programs should be considered as components of PRTR programs.

A number of other steps were taken in the case of the Ontario EBR. An extensive program of presentations and training sessions on the EBR registry has been provided by the Environmental Commissioner's Office over the past four years. These programs have been made available to any group or organisation: governmental; Non-governmental organisations (NGOs); or private sector, which has requested them. In addition, a grant was provided to the provincial network of environmental organisations to conduct a training program on the use of the electronic registry specifically targeted at environment NGOs. Active training and outreach programs of this nature need to be provided in relation to PRTRs as well.

Other Considerations

The provision of public access to the basic data provided by reporting facilities under PRTR programs is a critical element. However, this needs to be done in a way that is accessible and user-friendly. The ideal is to provide members of the public with the means to design their own searches and analyses of the data. This can be achieved by providing the required software as part of the sponsoring agency's home page posting of the PRTR data, or as part of a package of software provided with the data on a CD ROM or computer disc. PRTR data has also been presented in an on-line, searchable format by NGOs in the United States and the United Kingdom.

In Canada, Environment Canada's home page posting of the NPRI data allows the user to query the NPRI database on specific facilities in each of the reporting years. This feature allows the user to select an NPRI reporting facility, location or release for any pollutant on the NPRI list. The feature displays the facilities' on-site releases and off-site transfers in waste by pollutant. Searches can also be performed by industrial sector.

A number of other measures can be taken to improve public knowledge about and access to PRTR data. These can include the provision of seed money for NGOs, members of the academic community and others to work with PRTR data and demonstrate the different types of analyses that it can be used to develop. The Canadian Institute for Environmental Law and Policy, for example, has received a grant from Environment Canada to work with the Cartography Unit at the University of Toronto to develop a map showing the leading sources of pollutant releases and transfers in Canada.

It is also important that industry pressures to restrict public access to PRTR data, or to provide "context" for the data that is provided, be limited. The key purposes of a PRTR program are community right-to-know, and enhanced industry and government accountability. The achievement of these goals requires that members of the public be provided with full access to the data collected through PRTR programs, and with the tools to develop their own understanding of the data and its significance.

Governments can provide information to help with this process, such as information on characteristics of inventoried pollutants. This is already being done in the U.S. and, to a limited degree, Canada. However, communities need to be able to arrive at their own conclusions regarding the implications of PRTR data for their health and well-being.

V. Conclusions

PRTR programs represent one of the most important environmental policy innovations of the past 30 years. However, in order to achieve their full potential, PRTR data collection activities need to be accompanied by significant programs of public outreach and education activities. These need to include measures to inform the public of the existence and availability of PRTR data, ensure public accessibility, and to provide specific information, education and training on the use of the data. Such programs may be as essential to the success of PRTR programs as are activities to provide training to facilities on how to report under the registries.

The Commission for Environmental Co-operation

Lisa Nichols

**Program Manager, Technical Co-operation
Commission for Environmental Co-operation**

The CEC is an international organisation whose members are Canada, Mexico and the United States. The CEC, which is based in Montreal, Quebec, Canada, was created under the North American Agreement on Environmental Co-operation to address regional environmental concerns, help prevent potential trade and environmental conflicts and to promote the effective enforcement of environmental law. The Agreement complements the environmental provisions established in the North American Free Trade Agreement. The CEC carries out a work program on environmental issues that are of interest to all three North American countries.

The CEC is a tri-national agency - our official languages are Spanish, English and French. Therefore, all our formal publications, as well as our workplan, are available in all three languages, both in hardcopy and on the internet via our homepage <<http://www.cec.org>>.

The CEC recognises the importance of PRTRs, such as the TRI in the US, the NPRI in Canada, and the new PRTR system in Mexico. In addition, Article 10.2(a) of the North American Agreement on Environmental Co-operation states that the Council may consider and develop recommendations regarding the comparability of techniques and methodologies for data gathering and analysis, data management, and electronic data communications on matters covered by the Agreement. Therefore, one of our programs is focused on North American Pollutant Release and Transfer Registers.

An important milestone was the signing of a resolution by the representatives of the North American environment ministers in June 1997, entitled "Promoting Comparability of Pollutant Release and Transfer Registers (PRTRs)". In this resolution, the governments have formally recognised the value of PRTR information to assist in environmental risk reduction and decision making, to allow for public access to environmental information, while acknowledging that each national PRTR program is unique.

The resolution and the CEC work program provide for a number of specific items, including:

- The annual production of a report analysing publicly available PRTR data. We are currently preparing a to publish the report based upon 1995 data, and preparing to select a consultant for the preparation of the 1997 data report. Work on the 1996 data report is underway;
- Collaboration in the development of an internet site to present the matched subset of data from each of the three national PRTRs and provide information on the degree of comparability;
- The development of an implementation plan to enhance the comparability of North American PRTRs; and
- Continued support for the development and implementation of the Mexican PRTR system.

The resolution specifically directs the CEC Secretariat to encourage and provide for "meaningful public and governmental participation, including participation by non-governmental organisations, business and industry, provincial, state, and municipal governments, academia, and technical and policy experts in developing its recommendations for enhanced comparability."

In general, the CEC places emphasis on the inclusion of public participation at the heart of its programs. The importance of transparency in CEC programs is noted in the North American Agreement on Environmental Co-operation. In developing the CEC program, we have interpreted the directive in the resolution as broadly as possible.

One of the principal products of the CEC PRTR program is the development of the annual Taking Stock reports, which compare and analyse publicly available information in the national PRTR databases and provide insight on a North American basis. This information can be used by industry, NGOs, government and interested persons interested in examining the North American environment on a regional basis. But it is an entirely new way of looking at the data - the national governments each release the raw data and publish their own summary of the data. The CEC is uniquely positioned to examine the data from a regional point of view and the consultative review that we utilise in the process of developing the Taking Stock report has been valuable to us.

From the beginning, we have encouraged public feedback in the process of the report development. Although comments on the project are welcome at any time, the formal public consultation process includes:

- *Review of list of persons* who may be interested in participating in the consultation phase. The CEC consults with the national PRTR representatives to determine if the list is an accurate reflection of interest seen in their countries;
- *Consultation* with the list of persons named on the consultative review list. For the first two Taking Stock reports, we requested input on the draft Taking Stock report. However, for the third Taking Stock report, we requested input on the structure of the report, even prior to beginning the work. The consultation phase has two parts: a public meeting and a written comment period;
- *Response to comments* - a document detailing the written and verbal comments received, and how CEC intends to incorporate those comments into the report is prepared at the conclusion of the formal public consultation.

Significant changes were made to the Taking Stock 1995 data report in response to comments received.

Once published, the CEC report not only provides a new perspective on the PRTR data but highlights the country programs. We hope that the North American public will use their PRTR data to the full extent of its usefulness and that this model may be useful for others.

The Environmental Defense Fund Chemical Scorecard

David Roe
Environmental Defense Fund

Millions of pounds of chemicals are released into our air and water each year. Some are recognised as harmful to human health, others are suspect, and a great many we don't know much about. The Environmental Defense Fund believes one of the best ways to protect the environment is to give people the information they need to identify chemical hazards, so they can avoid potential health risks and press for better safety information from the companies responsible for releasing these chemicals.

The Chemical Scorecard makes it easy to find information fast: where these chemicals come from in your community, what their known or suspected effects are, and what actions you can take. Some of the questions you can answer here are:

- **Who Are the Polluters in Your Community?**

Find out what chemicals are being released into your neighbourhood environment by manufacturing plants, which of these chemicals are potentially the most harmful, and what companies are responsible. Right now Scorecard covers only the polluters who are required to report to the 1995 U.S. Toxics Release Inventory. Use our maps to see how close these polluting facilities are to your home, your workplace, or your children's schools.

- **How Bad Is the Pollution in Your Community?**

Pollution Rankings: Scorecard gives you a way to evaluate the manufacturing pollution in your area, by comparing it to such pollution in other areas. Rankings can be based on the actual data companies report to TRI, or on Scorecard's information about the potential health hazards of these chemicals. Scorecard highlights pollution problems that put an area into the top 20% of areas in the country, or in its own state. It spotlights the manufacturing facilities that are contributing to these high-ranking problems.

- **What Do We Know About the Chemicals?**

About the Chemicals: Type in the name of a chemical and find out whether it has been tested for health effects, how harmful it may be for you and the environment, and whether it is subject to government regulation.

- **What Chemicals Might Cause a Particular Health Effect?**

Health Effects: Cancer, birth defects, respiratory disease, and other health problems can result from exposure to certain chemicals. Select a health problem that concerns you and find out what chemicals are recognised or suspected causes.

- **What Chemicals Might Cause a Particular Health Effect?**

Health Effects: Cancer, birth defects, respiratory disease, and other health problems can result from exposure to certain chemicals. Select a health problem that concerns you and find out what chemicals are recognised or suspected causes.

- **Is Government Doing Anything to Control These Chemicals?**

- Regulatory Controls: Find out about the regulatory programs that govern chemicals, what chemicals are covered by each program, and what chemicals have been banned or severely restricted due to health or environmental hazards.

- **What Can You Do?**

Take Action: Scorecard lets you send faxes -- for free -- straight to the top-ranked polluters in your area, telling them your concerns. It gives you a list of environmental organisations in your area that you can contact to work with on local toxic chemical problems. And it connects you to information about pollution prevention -- how companies can avoid having to pollute in the first place.

Environmental Defense Fund Chemical Scorecard

A no-cost, public information service available on the Internet:

www.scorecard.org

(available since April 15, 1998)

Volume of use (first three months: April 15, 1998 to July 15, 1998)

- 11,500,000 hits
- 3,000,000 separate queries to database
- 475,000 visits
- 250,000 visitors

- first two days only: 1,000,000 hits
- design capacity: 20 hits per second

Contents

- Integrated, easy-access data on 6,000 chemicals and releases of 650 chemicals
- Searchable via local maps (5,000 community-level maps; U.S.A. only)
- Uses more than 150 electronic databases (7.5 gigabytes of information), all in the public record

*Presented by: David Roe
Environmental Defense Fund
Oakland, California, USA*

SESSION III

Sharing Lessons Learned

Working Group D

Generating And Reporting PRTR Data

Collecting and Reporting PRTR Data in Voluntary PRTR Programs of Japan's Industries

Tadao Iguchi
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Introduction

For the first time in Japan, the Japan Chemical Industry Association (JCIA) voluntarily launched a PRTR pilot in 1992. It surveyed twelve substances and was supported by the Ministry of International Trade and Industry (MITI). In 1993, JCIA continued the voluntary PRTR pilot with 28 substances to find out the problems involved in implementing a PRTR smoothly and effectively. In 1994, to prepare for a regular PRTR survey, JCIA specified 259 substances as total target substances and created an "Investigation Manual for Chemical Substance Emissions", the name of which we changed to the "PRTR Manual" in 1997.

In 1995, JCIA started a regular PRTR program with 55 substances and, in 1996, it surveyed 151 substances. In 1997, the number of total target substances was increased to 454 and JCIA surveyed 286 out of these substances.

On the other hand, Keidanren (Japan Federation of Economic Organisations) launched the PRTR program for all industries in 1997.

OHP-1 The PRTR history of industrial circles in Japan.

JCIA

- 1992 First Trial (12 substances)
- 1993 Second Trial (28 substances)
- 1994 Selected Total Target Substances
- 1995 First Regular Survey (55 substances)
- 1996 Second Regular Survey (151 substances)
- 1997 Third Regular Survey (286 substances)

Keidanren

- 1997 First Regular Survey (174 substances)

Now let me show you the problems in PRTR implementation, focusing on generating and reporting data, that became clear through voluntary surveys by JCIA as well as by Keidanren.

How to use PRTR data and required accuracy of data

Before collecting PRTR data, we need to make clear how to use them. In the case of Europe and the U.S., there are two ways of thinking for PRTR. One is the American way of thinking, based on "right-to-know", and the other is the European way of thinking, which is to use data for "Total Risk Management of Chemical Substances".

JCIA and Keidanren have adopted the latter way of thinking and have been collecting PRTR data on industrial circles voluntarily.

Next, with respect to the accuracy of generating data, we don't need to seek the accurate value of data but we need to avoid overlooking large emission sources and the amounts of their emissions. Moreover, it is important that each industrial circle and each company be able to compare and use PRTR data for emission reductions.

OHP-2 Use of PRTR data and required accuracy

- | | |
|-----------|--|
| Purpose: | Risk assessment of chemical substances |
| | Evaluate the necessity of emission reduction. |
| | Evaluate the orders of priority of measures internally and externally. |
| Accuracy: | Round figures are enough. |
| | Data are comparable with each other. |
| | Don't overlook large emission sources. |

Quality of collected data

The following data are helpful for industries to evaluate the risks of chemical substances, the necessity of emission reduction measures, and the internal/external orders of priority to take emission reduction measures.

That is, (1) production amount and consumption/used amount, which are necessary to calculate the coverage rate of a survey, which means the ratio of collected emission value over real total emission value. (2) comparative emission data according to companies in an industrial circle, (3) comparative emission data according to companies in an industrial circle, (4) emission data from each process and facility to study emission reduction measures, (5) emission data of each site (production facility) according to substances, to find each position in total target facilities, (6) emission data from non-point sources to assess the effect of each emission in the region, and this data collection is a role of the government.

Of course many of these data are trade secrets, so it is very difficult to collect them by mandatory ways based on legislation. But if it is a voluntary program of industrial circles, with the exception of (6) these data can be collected with relative ease while keeping trade secrets and we can use them for the studies of emission reductions.

OHP-3 Quality of collected data

- 1) Production amount and consumption/used amount to calculate the coverage rate.
- 2) Comparative emission data according to industrial circles.
- 3) Comparative emission data according to each company in an industrial circle.
- 4) Emission data by each process and facility
- 5) Emission data by each site (production/consumption facility) according to substances
- 6) Emission data from non-point sources.

How to measure/calculate emissions

With respect to the calculation of emission amount, we created the handbook called the “Estimation Manual of Emission”, and in this handbook we proposed the following four methods and recommended choose one properly considering cost-effectiveness.

That is, (1) sampling and direct measurement, (2) emission factors, (3) mass balance techniques, (4) engineering calculations.

OHP 4 How to measure/calculate emissions

- (1) Sampling and direct measurement
- (2) Emission factors
- (3) Mass balance techniques
- (4) Engineering calculation

Choose one properly, considering cost-effectiveness.

But in the case of the facilities whose emission amounts are large or in the case of the substances whose hazardous levels are high, we recommend to measure emission amounts directly.

Data collection methods of JCIA and Keidanren

The threshold of the JCIA survey is based on the hazards of substances, while generally it is based on the plant capacity or the numbers of workers.

The emission amounts of substances exceeding threshold values are reported to JCIA, but many companies surveyed all substances that they are producing, using and handling within sites, even if their amounts are under reporting thresholds. And we divided emission sources into processes to study emission reduction measures, which I will explain in working group H.

The thresholds and the data collection formats of Keidanren PRTR are almost same as the Environment Agency (EA) in Japan, to compare the results with those of EA.

OHP-5 Reporting thresholds for PRTR survey

JCIA: based on hazards of substances.

≥ 1 T/Y/Facility; Toxicity level A,B

Legally restricted substances

Voluntary control substances specified by the Air Pollution
Control Law

≥ 10 T/Y/Facility; Others

Keidanren: based on scales of facilities.

≥ 100 employees/facility; chemical industry, petroleum,
pulp/paper, steel, electricity/gas,
general equipment, etc

≥ 30 employees/facility; textile/clothing, plastic, laundry,

ceramics/pottery, metal, etc.

Errors and fluctuations when generating data

At the beginning of the PRTR survey by JCIA, the collecting data have fluctuated because of the following reasons and so did the Keidanren PRTR.

First is the discrepancy in interpretation of word definitions. For example, the amount of hydrochloric acid, which was used for the neutralisation of waste alkaline water, was counted as emission to water. Another example is the amount of styrene polymer in the solid waste. It was also counted as emission of “styrene (monomer)”, because the substance name was described as only “styrene”, so they thought “styrene polymer” was included in “styrene”.

Second is the fluctuations of concentration and flow rate. The concentrations of substances in vent gases often fluctuate according to the production conditions, such as kinds of products and operation conditions. So the reported amounts of some emissions changed year by year. Vent gases from distillation towers, exhaust gases from dryers and evaporated monomers from polymer products at warehouses are typical examples.

Third is double counting of data. To calculate the coverage rates of emissions, JCIA and Keidanren reported both production amounts and consumption/used amounts. They were often double counted in the case that a loading facility and a consumption facility were differently managed, because consumption/used amounts were counted by each section individually.

Fourth are 100% or more coverage or very low coverage. In above case, the coverage rate exceeded 100%. On the other hand, for instance in the case of solvents, the main users were middle-sized or small companies or non-chemical companies. So the coverage rates became very low because the emission data weren't reported since their treating amounts were under the reporting thresholds or calculation methods were different among industries.

OHP-6 Errors and fluctuations when generating data.

(1) Discrepancy in interpretation of word definitions:

Acids for neutralisation of waste alkaline water

Discrepancy of definition of monomer and polymer

(2) Fluctuations of concentration and flow rate:

Vent gas from distillation tower, dryer, products warehouse

(3) Double counting:

Production amounts and consumption/used amounts.

(4) The coverage of over 100% or very low value:

Depends on substances.

(5) Mistakes of units

Corrective action

Accuracy improves by repeating surveys.

Compare with other companies' values.

Review the data by experts.

Fifth is a simple mistake. At the beginning of the survey, there were many mistakes in units and they were sometimes overlooked at the aggregation of data.

The number of these errors and fluctuations has been reduced by repeating surveys. And by comparing with the values of other companies, which produce the same products, and/or by the review of the people who have experience in the works, these errors could be avoided.

Disclosure of ingredients in mixed products

In case of the PRTR survey by JCIA, it was hardly a problem to know what ingredients were included in a product, but it was a big problem in the case of the Keidanren PRTR survey. Keidanren consists of many industrial circles. It was reported that suppliers had often refused to disclose the ingredients because of trade secrets.

Though we know that there are some requests to describe ingredients in MSDS, we don't agree to describe ingredients in MSDS except in legally specified substances, because ingredients themselves are the confidential information and explain what cause the excellent performance and functions of products. Instead of MSDS, I propose a purchase agreement, an analytical certificate or a label to deliver ingredients information.

OHP-7 Disclosure of ingredients in mixed products

Examples of ingredients being confidential.

Paint, Stripper, Detergent, Additive

MSDS

Information about hazardous data and safety treatments
as a whole product

Alternative manner to deliver ingredients information

Purchase agreement including specification

Analytical certificate

Label

How to disclose and how to use PRTR data

It has no meaning only to publish the collected PRTR data.

In the case of the JCIA and Keidanren PRTRs, we published aggregated emission data with explanations such as main physical and chemical characteristics, toxic data, safety treatments, etc. Moreover, we are supporting each industry's voluntary activities by providing handbooks to use PRTR data to reduce emissions.

OHP-8 How to disclose and how to use PRTR data

JCIA and Keidanren:

Publish aggregated emission data with the explanations about substances.

Voluntary emission reductions by companies:

Handbooks provided by JCIA, Keidanren, and each industrial circle.

Summary

What I wanted to explain today is summarised in OHP-9.

That is, to make a success of PRTR, the PRTR data should result in measures to reduce emissions of chemical substances to the environment. It isn't a good way from the point of cost-effectiveness to manage all things in a mandatory way. The voluntary JCIA PRTR and Keidanren PRTR have borne many good results. Voluntary activities of industries are indispensable for PRTR.

OHP-9 JCIA PRTR and Keidanren PRTR

Purpose:

- Evaluation of the priority of environmental policies and emission reduction measures.

Collected data:

- Emissions to environment, transferred quantity, production quantity, consumption/used quantity etc.

Target facilities:

- According to the hazardous levels of substances and the capacity of the facility.

Emission reduction:

- Provide a Handbook including emission reduction measures.
- Publish aggregated emission data.
- Emission reductions should be proceeded by each company's voluntary plan.

Voluntary plans by industries are the most effective.

The framework utilising voluntary program of industries is a key to succeed in emission reductions of chemical substances.

National Pollutant Inventory Industry Handbooks

Environment Australia, Presented by Mark Hyman

Introduction

The Commonwealth, State and Territory governments of Australia made Australia's Pollutant Release and Transfer Register, the National Pollutant Inventory (NPI) on 27 February 1998. It was made as a National Environment Protection Measure through the National Environment Protection Council.

The NPI requires industrial facilities using more than a specified amount of the chemicals listed on the NPI to estimate emissions of these substances on an annual basis. There are 36 substances on the NPI reporting list and, subject to a review of the NPI in late 1999, there will be 90 substances. The State and Territory governments of Australia are responsible for estimating emissions of substances from diffuse sources. This information will be presented on the NPI database together with information from point source facilities.

A core feature of the NPI is the requirement that government provide 'industry handbooks' to industrial facilities before those facilities are required to report to the NPI. Attached is an indicative list of the industry handbooks being developed.

This paper will explore the rationale for including industry handbooks as a core feature of the NPI, describe the industry handbooks, the process by which they are being developed, the consultation that is being undertaken and the lessons learnt so far.

Rationale for NPI Industry Handbooks

During the development of the NPI Measure, the Council was conscious of the need to minimise the impost on industry of NPI reporting requirements and, at the same time, to secure their involvement and participation.

The Council believed that the development of emission estimation guidance for industrial facilities would have a three fold benefit. Firstly, it would address concerns expressed by industry that some sectors of Australian industry had a limited knowledge of emission estimation techniques and that reporting to the NPI could represent a considerable cost burden. Secondly, it would help to ensure that emissions data from across Australia would be collected in a consistent and comparable manner. A third benefit was that guidance would assist industry to better understand the processes that give rise to pollutant emissions.

In recognition of the need for and benefits from the provision of emission estimation guidance the final NPI Measure, as agreed on 27 February 1998, states that 'each participating jurisdiction shall not require an occupier of a reporting facility within its legislative control to furnish any information ... unless or until an industry handbook for that type of facility (a) has been agreed ; and (b) is published'

What is an industry handbook?

Industry handbooks are designed to assist industrial facilities to determine if they have an NPI reporting requirement and, if so, how to meet this requirement. They are being developed for specific industries and sectors and have been designed to be both a comprehensive and effective resource for Australian manufacturing, industrial and service facilities. Each industry handbook contains:

- an NPI Guide; and
- one or more Emission Estimation Technique (EET) Manuals.

The NPI Guide assists facilities to determine whether they are required to report to the NPI. It describes the NPI and its objectives, how it may affect a facility (the reporting thresholds), gives general guidance on how to estimate emissions and details the information that facilities are required to report. The Guide contains a series of worksheets to help facilities determine if they trigger the reporting thresholds and it contains a standard reporting form.

If, by consulting the NPI Guide, a facility determines that they are required to report to the NPI, more detailed information on estimating emissions is contained in the EET Manual/s. The number of EET Manuals each reporting facility requires depends on the number of industrial processes within its facility. For example, a handbook has been developed for Non-Ferrous Metal Casting. While foundry processes may represent their core function, a Non-Ferrous Metal Casting facility may also require a EET Manual for Combustion Processes.

The EET Manuals usually contain a general description of the relevant industrial process and the likely emissions and emission points from that process. A variety of emission estimation techniques including emission factors, mass balance techniques, engineering calculations, and sampling or direct measurement are provided. Examples are given to assist the facilities in the use of the emission estimation techniques.

While the EET Manuals provide facilities with a range of emission estimation techniques (all of which are acceptable to use for NPI reporting purposes), it is recognised that in some circumstances a facility may have a more accurate technique. In these cases, they may use these 'other' techniques subject to the agreement of the relevant State or Territory environment authority.

An example of an industry handbook will be made available at the conference. Industry handbooks can also be found on the Internet at www.npi.gov.au.

Consultation during the industry handbook development process

The Federal, State and Territory governments of Australia are developing industry handbooks in a collaborative effort. Their development is a practical expression of the principles that the Federal, States and Territories have embraced to facilitate a co-ordinated and consistent national approach to implementation of the NPI throughout Australia. Environment Australia, as the lead agency, is funding a range of projects in conjunction with the Queensland, New South Wales and Western Australian governments to develop handbooks.

There are two major phases of consultation in the development of the industry handbooks, the key industry consultation phase and the national consultation phase. The key industry consultation occurs in the initial drafting of the handbooks in the projects listed above. This occurs in a variety of ways. The New South Wales Environment Protection Authority has established small industry reference groups that

provide advice on the development of certain industry handbooks. These reference groups have proved to be a very effective mechanism for liaising and maintaining goodwill with industry representatives.

The Queensland Department of Environment has taken a slightly different approach. Their main form of consultation in the initial drafting process is through hosting industry workshops. These industry workshops bring together interested representatives who can provide valuable input to the development of the handbooks. These industry workshops are supplemented by liaison with industry representatives on an ad-hoc basis.

Western Australia is adopting an approach similar to that of the Queensland Department of the Environment. Their consultation processes are assisted by the fact that the WMC Resources (a minerals company) is a partner in the project.

The national consultation phase occurs after the handbooks have been drafted. They are sent to Environment Australia for distribution to relevant national industry associations, peak industry bodies, environmental non-governmental organisations, and each State and Territory government for consideration and comment. This phase of consultation allows for a wider distribution of the handbooks and also permits stakeholders that may not have been involved in the earlier process to comment on the handbooks.

After this period of national consultation, the draft handbooks are revised based on the comments received. Environment Australia then seeks the agreement of the Chief Executive Officers of each of the State and Territory environment authorities and the Federal Environment Department to the handbooks. Once agreed and published by Environment Australia, the handbooks are available for use by industry. Each of the EET Manuals are viewed as 'live' documents that will be subject to continuous improvement. It is recognised that it is only through the use of the handbooks that we can truly assess their effectiveness.

Lessons learnt so far...

A variety of process and technical issues have arisen during the development of the handbooks. These issues include the time provided for consultation and the need for objectivity in their development. The extent of the coverage we achieve during both the key industry and national consultation phases is another issue. Every attempt is made to involve relevant organisations but, in some circumstances, this is not always achieved.

The adequacy of the emission estimation techniques in the EET Manuals, particularly the emission factors, is also a concern for industry. Many of these concerns are based on the possible over estimation of a facility's emissions and the misleading picture that this may present to the community. This is coupled with the fact that most of the emission factors contained in the Manuals are based on the United States' Toxics Release Inventory. Industry representatives have expressed the concern that these are not applicable to Australian industry yet, in the absence of Australian factors, it is a compromise that we have accepted, until we are able to develop Australian specific emission factors.

Conclusion

The development of the industry handbooks for the NPI is a challenging and resource intensive project. While the first eight industry handbooks were agreed on 25 June 1998, there are approximately another 60 to be rolled out over the next few months. Environment Australia will continue to strive, together with the States and Territories, towards the development of useful and practical industry handbooks. There is a acceptance amongst government and key stakeholders within Australia that the handbooks are an exciting initiative and that they will continue to improve with time and practice.

Australia's indicative timetable for industry handbook development

Australian New Zealand Standard Industrial Classification code	Industry handbook title	Final approval granted by Chief Exec.
2542 & 2547	Paint and ink manufacturing	25 June
2712 & 2713	Iron and steel manufacturing - casting and forging and steel pipe and tube manufacturing	25 June
261 series	Glass & Glass Product manufacturing	25 June
233 series	Paper & Paper Product Manufacturing	25 June
2543	Medicinal & Pharmaceutical Product Manufacturing	25 June
241 & 242 series	Printing, Publishing and services to printing	25 June
2733	Non-ferrous metal casting	25 June
262 series	Ceramic product manufacturing	25 June
2764	Metal Coating and Finishing - Galvanising -Electroplating and Anodising - Surface Coating	28 August
N/A	Incineration	9 Nov
263	Cement, Lime, Plaster and Concrete Product Manufacturing - Cement Manufacturing - Lime and Dolomite Manufacturing - Gypsum and Plaster Manufacturing - Concrete Batching and Concrete Product Plants	9 Nov
2171	Sugar manufacturing	9 Nov
216 series	Bakery product manufacturing	9 Nov
2182	Beer and malt manufacturing	9 Nov
251 series	Petroleum refining	21 Oct
1200	Oil and gas extraction	21 Oct
2721	Alumina production	21 Oct
2722	Aluminium smelting	21 Oct
2534	Organic Industrial Chemical Manufacturing (synthetic organic chemical manufacture)	21 Oct
TBA	Inorganic Chemical Manufacture	21 Oct
131 series	Metal ore mining	21 Oct
N/A	Combustion and boilers, coal, fuel oil, wood waste and natural gas	21 Oct
N/A	Stationery I.C Engines	4 Nov
N/A	Explosives Detonation	4 Nov
2811	Motor Vehicle Manufacturing	4 Nov
820	Defence	4 Nov
N/A	Fuel organic liquid storage	4 Nov
3610	Electricity supply (fossil fuel electric power generation)	4 Nov
7810	Scientific research facilities	4 Nov
640	Airports	4 Nov
2531	Fertiliser manufacturing: urea	18 Nov
2729	Basic non-ferrous metal manufacturing: nickel smelting	18 Nov
2531	Fertiliser manufacturing: phosphate	18 Nov
2729	Basic non-ferrous metal manufacturing: gold refining	18 Nov
2531	Fertiliser manufacturing: synthetic Ammonia	18 Nov

2531	Fertiliser manufacturing: sulphate of ammonia	18 Nov
	Mining of Non-metallic Minerals	18 Nov
N/A	Spent Solvent Recycling	18 Nov
2261	Leather tanning	2 Dec
9521	Laundries and dry cleaners	2 Dec
N/A	Lead Acid Battery Production	2 Dec
2111	Meat Industry Abattoirs & Butchery	2 Dec
2173	Seafood processing	2 Dec
2130	Fruit & Vegetable Processing	2 Dec
212 series	Dairy product manufacturing	2 Dec
2140	Oil and fat manufacturing (vegetable oil only)	2 Dec
2179	Food manufacturing: Snack Food Manufacture	2 Dec
2179	Food manufacturing: Nut Processing & Roasting	2 Dec
2179	Food manufacturing: coffee production	2 Dec
N/A	Hot Mix Asphalt Plants	16 Dec
2329	Wood product manufacturing	16 Dec
222 series	Textile Product Manufacturing	16 Dec
2841 & 2849	Computers and electronics	16 Dec
2921	Wooden furniture manufacturing	16 Dec
2211	Wool scouring	16 Dec
TBA	Explosives Manufacturing	16 Dec
2183 & 2184	Wine & Spirit manufacturing	16 Dec
0211	Cotton Ginning	16 Dec
TBA	Landfills	TBA
3702	Sewage and drainage services	TBA
2823	Railway equipment manufacturing (railway workshops)	TBA
2821	Shipbuilding (shipyards/docks)	TBA
370 series	Water supply	TBA
2564	Plastic product rigid fibre reinforced manufacturing (fibreglass manufacture)	TBA
TBA	Adhesive Tapes	TBA
2711	Iron and steel production	TBA

**SESSION IV - PRTR SYSTEMS:
EXPERIENCE IN PRTR
IMPLEMENTATION AND USE**

The Keidanren PRTR: Voluntary Efforts by Japanese Industry

Presented by Keiichi Higuchi
Corporate Auditor, Mitsubishi Chemical Corp.
Former Chairman, Task Force on the Air & the Water Quality
Japan Federation of Economic Organisations (Keidanren)

I'm Keiichi Higuchi, Corporate Auditor of the Mitsubishi Chemical Corp. From September 1995 to June 1998, I served as chairman of Keidanren's Task Force on Air and Water Quality, primarily responsible for the PRTR issue. This June, Keidanren released the results of the "Keidanren PRTR", featuring Japanese industry's voluntary efforts regarding PRTR, which attracted considerable attention from various sectors. The "Keidanren PRTR" involved 45 industry associations (spanning 30 industries), which participated in the project voluntarily in response to an appeal from Keidanren. We feel a sense of pride in having achieved the world's first wide-ranging PRTR based on industry's voluntary efforts. Today, with a focus on this Keidanren PRTR, I would like to explain the efforts being made by Japanese industry to deal voluntarily with the management of chemical substances.

But before beginning my presentation, I would like to introduce Keidanren briefly. Keidanren ("Japan Federation of Economic Organisations") is a nation-wide business organisation which was established in 1946. As its name indicates, it is a federation of industry associations, comprising 122 major associations. It includes among its members about 1,000 leading companies that belong to these associations. It is also the largest business organisation in Japan. The "Keidanren PRTR", the topic of today's discussion, could not have been realised without the organisational backing represented by Keidanren.

With that rather long introduction, I will now move on to the main topic, which is to explain the voluntary efforts of Japanese industry concerning the issue of PRTR.

In 1992, the Japan Chemical Industry Association carried out a PRTR project on behalf of the chemical industry with the co-operation of Ministry of International Trade and Industry. Starting with 12 substances, the project gradually expanded its scope, and in 1997 JCIA monitored 286 substances. As a result of these efforts, Japan's chemical industry achieved efficient reduction of the quantities of chemical substances being discharged.

Meanwhile, in response to the OECD Recommendation in February 1996, Keidanren began in November of that year to examine how PRTR should be implemented in Japan, in co-operation with MITI. In April 1997, Keidanren published its opinion paper, in which we stated that the management of chemical substances had to be approached not as an issue of regulation by the government, but as a matter of voluntary management by corporations. The PRTR issue should also be pursued as voluntary efforts on the part of industry. In October 1997, it dispatched a delegation to Europe and North America to study how PRTR is being operated in those countries. The delegation obtained valuable first-hand knowledge of the way the governments and private enterprises in different countries were dealing with the issue. I would like to take this opportunity to express once again our appreciation to those who extended invaluable co-operation.

In December 1997, Keidanren implemented the first Keidanren PRTR project, which included 45 industry associations. The project dealt with 174 chemical substances selected on the basis of a comprehensive consideration of factors such as carcinogenicity and chronic toxicity. The project included

all operating sites with over 100 employees, either producing or using more than a certain amount of the target substances. Reports were made from these operating sites to their industry associations on quantities of the 174 substances that were either being discharged into the atmosphere, public waters, and soil or being transferred as waste material. Keidanren put together all data submitted by industry associations and released the results in June 1998.

The results of the project clearly demonstrated that emissions into the atmosphere were the largest, accounting for about 93 percent of all emissions. This was followed by discharges into public waters, which accounted for approximately 6 percent. The rate of discharge into the soil was an extremely low 0.5 percent. The details of the project are provided on pages 60 through 69 of the pamphlet, so please refer to that information.

Among the main achievements of this Keidanren PRTR project, three can be cited: (1) for the first time, the order of magnitude of emissions and transfers was identified on a nation-wide scale for each target substance; (2) as mentioned at the outset, this was the world's first extensive project involving voluntary efforts by industry, in which 45 industry associations declared their willingness to participate and 38 organisations provided responses; (3) for the 174 target substances monitored, the rate of coverage in terms of total amounts produced and used throughout Japan averaged a high 80 percent per target substance, based on our evaluations.

In light of the above, and despite the limitations of a lack of analysis of the data due to this being the first such project ever implemented, we believe that the Keidanren PRTR was generally successful.

On the other hand, among the issues highlighted in the current project were the following: (1) given the differences in the attitudes of each industry toward this project, there is a need to appeal for a larger number of industries to participate; (2) there is a need to confirm the consistency of the data, and to enhance its accuracy; and (3) while data for industry as a whole was released on this occasion, there is a need to aim gradually at releasing more detailed data, in conjunction with ongoing efforts to improve risk communication to society. Based on a thorough examination of such issues, we hope to make a good use of what has been learned in the next Keidanren PRTR.

Finally, although this will be somewhat repetitious, I would like to summarise Keidanren's fundamental views regarding the introduction of PRTR. As the opinion formed in April 1997 states, the purpose of PRTR is to evaluate and manage risks of chemical substances. Because releasing data without any appropriate explanation may cause unnecessary concerns among people, Keidanren believes that it is important that the data be broken down into more details gradually, and be released after a thorough analysis. At the same time, we have to make efforts to develop a system capable of supporting appropriate risk communication.

Currently, preparations are underway at related ministries and agencies to create a legal system for PRTR, and in the near future we believe that some kind of a framework for managing potentially hazardous chemical substances will be implemented. It stands to reason that, within this framework, voluntary efforts by industry should play a crucial role, and especially in the process of data analyses and data publication, voluntary efforts by industry should be highly respected. I believe that is the PRTR as it should be in the coming century. Furthermore, from the perspective of accountability of corporations in the 21st century, Japanese industry is committed to continuing the PRTR project on its own, and to contributing to the management of chemical substances in Japan.

Thank you for your kind attention.

Summary of the Keidanren (Japan Federation of Economic Organisations) PRTR

Introduction: from the Earth Summit to the OECD Recommendations

The origins of the PRTR can be traced as far back as the emissions registration system of the Netherlands (started from 1974), which was based primarily on voluntary reporting by industry. Thereafter, in 1986 TRI, a system for the collecting and releasing of information on certain toxic chemicals to accommodate the Emergency Planning and Community Right-to-Know Act of 1986, was introduced in the United States. But it wasn't until the Earth Summit in Rio de Janeiro in 1992 that the PRTR was taken up globally. Chapter 19 of Agenda 21, which was adopted by the Earth Summit, dealt with the appropriate management of chemical substances. Thereafter, as a follow-up to the Earth Summit, the United Nations requested the OECD to prepare guidelines for the adoption of the PRTR, upon which the OECD commenced work in 1993. Subsequently, in February 1996, the OECD announced a Council Recommendation calling for the adoption of the PRTR. This recommendation required that Member countries report on the status of their efforts to adopt the PRTR in February 1999.

Efforts by Keidanren

Following the issuance of the OECD Recommendation, Keidanren began in November 1996 to examine ways in which the PRTR system should be properly introduced to Japan, channelling this effort through its task force on air and water quality, a sub-group of the Committee on Environment and Safety. In April 1997, it announced its "Views on the Introduction of the 'PRTR (Pollutants Release and Transfer Register) System'", presenting its views to the Minister of International Trade and Industry, the Director-General of the Environment Agency and other concerned parties. In this opinion, it made it clear that its intention was to build PRTR systems voluntarily, conforming to the trend toward voluntary efforts by industry that began with the Keidanren Global Environmental Charter of 1991. Subsequently, in June, with the participation of 45 industry organisations that responded to its call, Keidanren established a new PRTR working group through which it advanced preparations for the construction of the system, including those relating to the selection of target substances, the production of manuals, and so on. In December 1997, it commenced its first project, compiling the data it received from various industry organisations into the report.

In addition, in October 1997 Keidanren sent a fact-finding mission of experts and corporate managers involved in the project to seven countries in Europe and North America. The purpose of the mission was to study the status of the PRTR in countries that had already adopted the system and were implementing its requirements. The mission found more progress than it had originally anticipated, with countries achieving a certain amount of results by building and operating distinctly individual PRTR systems that corresponded to their respective needs, social environments, and so on. Moreover, while each country examined the necessity of improvements in its system based on the OECD recommendation, none considered introducing a uniformly similar PRTR. And, while each maintained clear objectives to allow it to set priorities in its environmental policies, to promote the reduction of emissions, etc. in carrying out the PRTR, each country, within a given systemic framework, simultaneously placed a high value on, and showed respect for, the voluntary activities of individual companies. On the other hand, in terms of industry's actions, corporations in Europe and the United States are aggressively providing information on their environmental activities through issuing environmental reports and so forth, as a way of increasing trust in the corporation. The promotion of this kind of "risk communication" is an area where Japanese companies appear in need of greater efforts hereafter.

Today, MITI and the Environment Agency are each discussing the enactment of PRTR laws. In light of the importance of managing risks associated with environmental pollutants, however, Keidanren intends to continue to promote voluntary efforts by industry in fiscal 1998 and beyond.

Objectives

- **Promoting efforts by industry to control chemical substances on a voluntary basis**

Although chemicals are a necessary and essential part of the affluence of life in society, failing to provide appropriate controls over the way they are processed can result in adverse effects on the environment, health, and safety, and can cause them to act as life and environment-threatening substances.

On the other hand, it has become impossible to control the 50,000-100,000 different chemical substances that are now said to be in production and use by means of conventional legal systems. Hence, voluntary efforts by companies to control chemical substances are greatly needed.

Accordingly, an objective of the PRTR will be to provide a tool by which those in industry can identify how much of the chemicals that they are processing are being discharged or transferred to the environment, thus permitting them to carry out an appropriate level of risk assessment and risk management relating to potentially hazardous substances.

- **Utilising the system as a tool in risk communication**

By releasing the results of the project, utilising the system to increase the transparency of voluntary activities and to obtain the trust of society.

Basic policies

- (1) The PRTR system currently being implemented by Keidanren is not in its final form; it will continue to be improved through a process of risk communication with society.
- (2) Calls for participation will also be extended widely to groups that are not members of Keidanren, and efforts made to promote voluntary involvement in the PRTR system by all of industry.
- (3) The PRTR data will be used as basic data for voluntary efforts by industry to reduce emissions.
- (4) The PRTR data will be used as basic data for formulating an integrated risk management that covers the entire life of chemical substances, from their production to their disposal.
- (5) In relation to the release of data, information on emissions will be provided initially on an industry-wide basis; as the process of risk communication with society proceeds, the system will gradually aim to release data that is broken down into more detail.

Summary of Results

- **The number of industry organisations and companies that participated in the project**

In response to Keidanren's call for participation in the PRTR project, a total of 45 organisations - 29 member organisations of Keidanren and 16 non-member organisations - expressed their intentions to participate. Of these, seven organisations were unable to gear up for participation on time. Thus, 38 organisations submitted reports. According to our calculations, these 38 organisations accounted for an average coverage rate of 80 percent of total amounts processed in Japan for each of the target substances.⁹

The 38 participating organisations sent requests for co-operation to a total of 2,510 member companies. Of these, 63.1 percent, or 1,585, provided responses.

Those that did not respond to requests for assistance in the project were asked for reasons why. The following were some of their responses:

- (1) They did not process the target substances.
- (2) The size of their operations exempted them from the project.
- (3) They were unable to complete the project in the time allotted.

- **Amounts processed and discharged**

Of the 174 target substances on which reports were requested for this project, reports on amounts processed were received on 145. Of these, 40 substances had not been discharged into the environment; and, of these 40, 17 also had not been transferred into the environment as waste material.

Four of the organisations had not processed any of the target substances.

- **Quantity of emissions by environmental medium**

The bulk of discharges into the environment was in the form of emissions into the air, which accounted for roughly 93 percent of the total. Next came discharges into public waters, which made up roughly 6 percent of the total. Discharges into the soil constituted an extremely small percentage of all emissions, only around 0.5 percent.

In terms of specific substances, 72 were discharged in large quantities into the air, 30 in large quantities into public waters, and three in large quantities into the soil.

The substance discharged in the greatest amounts into the air was toluene, accounting for approximately 41,600 tons of emissions. Toluene was followed by xylene (roughly 31,600 tons) and dichloromethane (roughly 23,500 tons).

⁹ Coverage rate = Reported amounts processed / {Total amounts produced in Japan [MITI statistics] + Total amounts used [production amounts substituted] + imports - exports}

The discharges of 42 substances ranked at toxicity level C were reported, as were discharges of four substances ranked toxicity level D. (See Tables 4-5.)

The substance most commonly discharged into public waters was hydrogen chloride, accounting for approximately 4,500 tons. This was followed by dimethylformamide (roughly 680 tons) and boron and its compounds (roughly 390 tons).

The substance discharged in the greatest quantities into the soil was xylene and related substances, which accounted for approximately 220 tons. This was followed by barium and its compounds (roughly 197 tons) and oxalic acid (roughly 120 tons). (See Tables 1-3.)

- **Emissions by level of toxicity**

Regarding target substances ranked at toxicity level A (carcinogenic for humans), seven were reported being discharged into the environment. Substances being discharged in large quantities were the following: benzene, approximately 4,400 tons; vinyl chloride monomers, approximately 1,800 tons; and ethylene oxide, approximately 220 tons.

Regarding substances ranked at toxicity level B (substances strongly suspected of being carcinogenic for humans), 42 were reported being discharged into the environment. Substances being discharged in large quantities were the following: dichloromethane, approximately 23,500 tons; hydrogen chloride, approximately 5,900 tons; and styrene, approximately 3,400 tons.

By level of toxicity, substances ranked B and D in terms of level of toxicity accounted for roughly 44 percent of total emissions into the environment (approximately 74,000 tons). Substances ranked level C accounted for approximately 8 percent, while substances ranked level A accounted for approximately 4 percent.

- **Levels of discharge of 12 substances which are voluntary reduced by industry under the Air Pollution Control Law**

The revised Air Pollution Control Law contains as one of its main features the expediting of measures aimed at restraining emissions of toxic atmospheric pollutants, through promotion of voluntary controls by companies. With regard to the 12 substances subject to voluntary controls, efforts are now underway by industry to reduce emissions by approximately 30 percent of 1995 levels by the year 2000.

According to Keidanren project, total emissions of these 12 substances were roughly 44,000 tons, of which major emissions were accounted for by: dichloromethane, 23,500 tons; benzene, 4,400 tons; and trichloroethylene, 3,700 tons. Together these three substances accounted for 71 percent of the total. (See Table 6.)

- **The accuracy of the data**

The above represents the results of Keidanren's compilation and organisation of the data reported. In part because this was the first time the project was attempted, there were inconsistencies in the attitudes of calculating the amounts of emissions and transfers. Consequently, using the current results as a starting point, each industry will discuss the issue independently and develop a uniformity of views so that it can increase the accuracy of data hereafter. (For example, with respect to hydrogen chloride, whose emissions into public waters are strikingly large, we believe that a considerable portion of this amount is attributable to use as a neutraliser in effluents.)

Achievements

- **Assessment of the order of magnitude of emissions and transfers in Japan as a whole**

The major achievement of the current project was the light that it shed on the order of magnitude of emissions and transfers for individual substances on a nation-wide level.

- **The world's first comprehensive, voluntary effort by industry**

In response to the call by Keidanren, an impressively large 45 industry organisations expressed their intentions to participate, with 38 of them actually submitting reports. This was the world's first voluntary effort by industry, and an effort that was also comprehensive in scope.

- **High coverage rate**

According to Keidanren's estimation, the total emission quantities of this project reaches 80 percent of the total emission quantities in Japan.

Issues

- **Increasing the rate of response and expanding the range of participating organisations**

Although 45 organisations expressed their intention to participate, 38 actually ended up submitting reports (including four organisations that submitted no responses). Hereafter, Keidanren will endeavour to encourage more organisations to participate, including the seven that were unable to gear up in time for the current project.

Furthermore, while about 30 industries were covered in the current project, Keidanren will encourage participation from other industries that were not included despite processing large quantities of chemical substances, and in this way seek to expand and improve the data collected.

- **Confirming the consistency of data and improving its accuracy**

Because this was the first time this project was attempted, there were significant inconsistencies in the attitudes of calculating the data. Consequently, Keidanren will take steps to foster a more unified awareness in each industry, and confirm the consistency of the data.

Moreover, when preparing data, some felt that information on ingredients was inadequately provided when substances were purchased. Consequently Keidanren will endeavour to make improvements in methods of transmission.

- **Further improvement in the coverage rate**

By improving methods used to obtain the amounts of target substances processed, Keidanren will endeavour to further improve the coverage rate.

- **Providing commentary on the data**

In order to assist in risk communications, Keidanren will evaluate methods of analysing industry-specific data and of otherwise commenting on the data received from the respective industry organisations. There is also the need to develop experts capable of performing total risk analyses.

Table 1: Top 10 Substances with the largest release into the air

Substance	Toxicity level	Air (t/yr.)
Toluene	Legally restricted and below D	41,600
Xylenes	Legally restricted and below D	31,600
Dichloromethane ; Methylene chloride	Legally restricted, B	23,500
Benzene	Legally restricted, A	4,420
Trichloroethylene	Legally restricted, C	3,690
Styrene ; styrene monomer	B	3,450
Chloromethane ; Methyl chloride	C	2,470
Dimethylformamide	B	2,390
1,2-Dichloroethane ; Ethylene dichloride	Legally restricted, B	2,070
Chloroform ; Trichloromethane	Legally restricted, B	2,050

Table 2: Top 10 substances with the largest release into public waters

Substance	Toxicity level	Public waters(t/yr.)
Hydrochloric acid ; Hydrogen chloride	Legally restricted, B	4,550
Dimethylformamide	B	681
Boron and its compounds	Legally restricted, B	390
Caprolactam ; epsilon-Caprolactam	B	375
Chloroform ; Trichloromethane	Legally restricted, B	334
Soluble aluminum salt	C	329
Nitrobenzene	C	283
Zinc compounds	Legally restricted, B	278
Vinyl chloride ; Chloroethylene	Legally restricted, A	210
Toluene	Legally restricted and below D	203

Table 3: Top 10 substances with the largest release into the soil

Substance	Toxicity level	Soil (t/yr.)
Xylenes	Legally restricted and below D	220
Barium and its compounds	B	197
Oxalic acid	B	120
Toluene	Legally restricted and below D	63
Copper compounds	Legally restricted, C	55
Hydrogen fluoride	Legally restricted, C	32
Fluorine compounds(inorganic)	Legally restricted, C	22
Zinc compounds	Legally restricted, B	20
1,4-Dichlorobenzene ; p-Dichlorobenzene ; para-Dichlorobenzene	Legally restricted, B	10
Dichloromethane ; Methylene chloride	Legally restricted, B	10

Table 4: Emissions by level of toxicity (toxicity levels A, B)

Substance	Toxicity level	Total emissions into the environment (t/yr.)
Benzene	Legally restricted, A	4,441
Vinyl chloride ; Chloroethylene	Legally restricted, A	1,850
Ethylene oxide	Legally restricted, A	219
Nickel compounds	Legally restricted, A	123
Chromium compounds (other than hexavalent)	Legally restricted, A	19
Chromium compounds (hexavalent)	Legally restricted, A	5
Chloromethyl methyl ether ;	Legally restricted, A	1
Dichloromethane ; Methylene chloride	Legally restricted, B	23,532
Hydrochloric acid ; Hydrogen chloride	Legally restricted, B	5,944
Styrene ; styrene monomer	B	3,459
Dimethylformamide	B	3,071
Chloroform ; Trichloromethane	Legally restricted, B	2,385
1,2-Dichloroethane ; Ethylene dichloride	Legally restricted, B	2,086
Tetrachloroethylene ; perchloroethylene	Legally restricted, B	1,970
Acrylonitrile	Legally restricted, B	1,839
1,3-Butadiene ; Butadiene	Legally restricted, B	1,653
Oxalic acid	B	1,195
Formaldehyde ; Formalin	Legally restricted, B	680
Caprolactam ; epsilon Caprolactam	B	463
Boron and its compounds	Legally restricted, B	394
Zinc compounds	Legally restricted, B	391
Acetaldehyde	Legally restricted, B	251
Barium and its compounds	B	226
Propylene oxide ; 1,2-Epoxypropane ; Epoxypropane	B	206
1,4-Dichlorobenzene ; p-Dichlorobenzene ; para-Dichlorobenzene	Legally restricted, B	202
Acrylic acid	B	149
Methyl mercaptan ; Methanethiol	B	122
Methylenebis ; Methylenebis (phenylisocyanate)	B	122
Ethylene dibromide ; 1,2-Dibromoethane	B	103
Di-(2-ethylhexyl)phthalate ; DEHP ; di-sec-octyl phthalate	Legally restricted, B	101
Bromomethane ; Methyl bromide	B	98
Epichlorohydrin	B	94
Chloronitrobenzenes	B	79
Chloroprene	B	75
Carbon tetrachloride	Legally restricted, B	68

1,4-Dioxane ; p-Dioxane	B	57
Lead compounds	Legally restricted, B	27
Acrylamide	B	25
Ethyl acrylate	B	17
Hydrazine	B	17
Manganese compounds	Legally restricted, B	14
Cyanogen compounds	Legally restricted, B	9
Antimony and its compounds	Legally restricted, B	5
o-Toluidine	B	2
Cobalt compound	B	2
1,3-Dichloropropene ; 1,3-Dichloropropylene; Dichloropropene(technical grade)	Legally restricted, B	1
Thiuram	Legally restricted, B	1
Dichlorvos ; 2,2-Dichlorobinyldimethyl Phosphate	Legally restricted, B	1
Indium and its compounds	B	1

Table 5: Emissions by level of toxicity (toxicity levels C, D)

Substance	Toxicity level	Total emissions into the environment (t/yr.)
Trichloroethylene	Legally restricted, C	3,694
Chloromethane ; Methyl chloride	C	2,503
Vinyl acetate	C	1,626
2-Ethoxyethanol	C	949
Fluorine compounds(inorganic)	Legally restricted, C	852
Tetrahydrofuran	C	792
1,1,2-Trichloroethane	Legally restricted, C	359
Soluble aluminum salt	C	329
2-Ethoxyethyl acetate	C	310
Nitrobenzene	C	288
Copper compounds	Legally restricted, C	159
Ethylbenzene	C	154
Dimethylamine	C	107
Ethanol amine	C	86
Adipic acid	C	75
Isoprene	C	72
Chlorine	Legally restricted, C	66
Hydrogen fluoride	Legally restricted, C	62
Aniline	C	55
trans-Crotonaldehyde	C	55
Methylamine	C	40
Molybdenum and its compounds	Legally restricted, C	38
4,4-Isopropylidenediphenol ; Bisphenol A	C	34
Hydroquinone	C	31
Propylene dichloride ; 1,2-Dichloropropane	Legally restricted, C	24
Nonylphenol	C	15
Fluorine	Legally restricted, C	14
Diisobutyl phthalate	C	10
Pentaerythritol	C	9
Furfural	C	7
Allyl alcohol	C	7
Zirconium and its compounds	C	4
Terephthalic acid	C	3
Vanadium and its compounds	Legally restricted, C	3
Glyoxal	C	3
Chloromethylbenzene ; Benzyl chloride	C	3
Dibutyl phthalate	C	2
Dimethyl phthalate	C	2
2,6-Di-tert-Butyl-p-Cresol, 2,6-Di-tert-Butyl-4-Methylphenol	C	1
Biphenyl ; Diphenyl	C	1
Chlorothalonil	Legally restricted, C	1
Tungsten compounds	C	1

Toluene	Legally restricted and below D	41,867
Xylenes	Legally restricted and below D	31,846
Vinylidene chloride ; 1,1-Dichloroethylene	Legally restricted, D	429
1,1,1-Trichloroethane	Legally restricted and below D	118

Table 6: Levels of discharge of 12 substances which are voluntary reduced by industry in the Air Pollution Control Law

Substance	Toxicity level	Total emissions into the environment (t/yr.)
Dichloromethane ; Methylene chloride	Legally restricted, B	23,532
Benzene	Legally restricted, A	4,441
Trichloroethylene	Legally restricted, C	3,694
Chloroform ; Trichloromethane	Legally restricted, B	2,385
1,2-Dichloroethane ; Ethylene dichloride	Legally restricted, B	2,086
Tetrachloroethylene ; perchloroethylene	Legally restricted, B	1,970
Vinyl chloride ; Chloroethylene	Legally restricted, A	1,850
Acrylonitrile	Legally restricted, B	1,839
1,3-Butadiene ; Butadiene	Legally restricted, B	1,653
Formaldehyde ; Formalin	Legally restricted, B	680
Acetaldehyde	Legally restricted, B	251
Nickel compounds	Legally restricted, A	123

Toxicity levels A, B, C, D are determined by carcinogenic toxicity, reproductive toxicity, etc. (A: high, D: low)

Japanese NGOs: Issue Paper on the Establishment of a Comprehensive PRTR in Japan

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Introduction

The objectives of PRTR systems are diverse. We, the representatives of the Japanese NGO community, view PRTRs as an effective tool for reducing chemical environmental risk through information disclosure. We believe that by utilising publicly disclosed chemical information, we can more effectively understand the environmental issues that our communities are facing, and can therefore improve our contributions to and participation in the formation of corporate and government environmental policies and actions, resulting in the overall reduction of environmental risk. Therefore, we think that NGOs should play an important role in the development and utilisation of PRTR systems.

In this paper we will first outline the current status of pollutant use and management in Japan, explain our subsequent PRTR Appeal given to the Director General of the Environment Agency, and then discuss the meaning of the establishment of a PRTR system in Japan. We will end by offering some suggestions for action for the OECD on this topic.

1. The Current Status of Pollutant Use and Management in Japan

1.1 Need for pollutant management and control

Japan is an economic giant, responsible for 15% of the world economy. We are one of the world's largest users and emitters of chemical substances. In the past we have suffered from pollution problems as a result of our industrialisation. These problems were primarily overcome by utilising command and control methods. However, we think that it is inaccurate to say all our pollution problems are already solved completely. We still face a number of pollution problems, and we (not only the general public but also industry) do not have enough knowledge concerning chemical risk to effectively address those problems.

Recently, high levels of dioxin have been found both in milk produced in Japan and in soil in certain communities. Other recent research has shown alarming defects in carp and other animals that may indicate that Japan's ecosystem is being dramatically impacted by endocrine disrupting chemicals. These recent findings have greatly increased public concern over chemical use and management in their communities. Therefore, it is an urgent necessity to educate the general public about pollutant management and risk reduction issues, and to develop a controlling and monitoring system for the chemicals we use.

1.2 Information disclosure is necessary

In the late 20th century, in western countries, there has been a big trend toward legislating information disclosure laws. For example, in the US the Freedom of Information Act was legislated in

1966 and the Emergency Planning and Community Right-to-Know Act (EPCRA) in 1986. In the EU, Freedom of Access to Information on the Environment, 90/313/EEC EC, was legislated in 1990. All of these pieces of legislation stipulate the mandatory disclosure of not only government information but also information of the private entities.

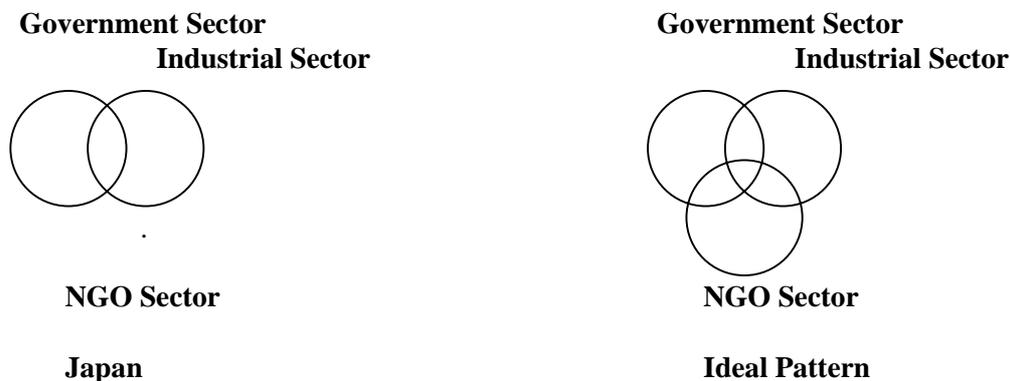
In Japan, we still do not have that kind of law at the national level, although many local governments have created their own information disclosure regulations. Just this year the Japanese parliament began to discuss the information disclosure law, but the law has still not been enacted. The current draft of the law being discussed does not have the clauses concerning the citizen's right-to-know, nor does it require the mandatory information disclosure of private entities, as required in EPCRA.

1.3 *The current situation of the Japanese NGOs*

Unlike most of the western or industrialised countries, Japan has not made efforts to foster and strengthen NGOs as an important entity in our social sector.

The Japanese Civil Law was enacted in 1898, just 100 years ago from now, as the constitutional law of the civil society. However, the law stipulates that the permission of the competent administrative authority, based on their arbitrary decision, is necessary in establishing a non-profit organisation. There is currently no objective process for establishing new NGOs. Therefore, in Japan there are few NGOs which were founded voluntarily and have corporate status .

The following diagram shows the current situation in Japan for NGOs and/or that of an ideal one.



It is important to note that we do not 100% admire western society and we are quite aware that western society too is now facing various problems. However, we should learn from the situation of NGOs in the western countries in terms of numbers, scale, and their diversified activities. We believe that it is an urgent necessity for our society to prepare the fundamental conditions for fostering and strengthening the NGO sector.

1.4 *Recognition of PRTR among the general public*

The Japanese Environment Agency (JEA) is enthusiastically trying to educate Japanese people about environmental issues and specifically about chemical use and management issues in many ways. For example, JEA held two PRTR international symposiums in Tokyo and Yokohama, three PRTR seminars for the general public in Tokyo, and seven seminars explaining the interim report of their PRTR pilot activity. However, most of the participants were either from business, academics or local government, and there were only a few NGO participants, a fact indicating that PRTR is little known among NGOs and the general public.

2. NGOs and PRTR

2.1 NGO Appeal

In Japan, the NGO sector is very small and powerless compared to other sectors. Nevertheless, it is also true that Japanese NGOs have various social activities targeting chemicals like food additives, detergents, and sick-house syndrome etc. And just recently there are moves to establish networks regarding dioxin and environmental hormones.

In October 1997, NGOs interested in PRTR held a roundtable conference. This conference was organised by the NGO called the Research Group of the Valdez Society (a Japanese NGO) and the World Wildlife Federation Japan.

In January 1998, key participants in this conference drew up "A Joint Appeal by Citizens and NGOs for the Introduction of a Comprehensive PRTR System in Japan", which was submitted to the Director General of the JEA. We have attached the full text of the Appeal at the end of this document.

2.2 Points of the Appeal

We stressed four points in the Appeal:

- Disclosed information should be meaningful for citizens.
- JEA should publish an interim report of their PRTR pilot activity and gather the public response to this report.
- The system should be user friendly and not burdensome to businesses.
- All sectors should be involved in discussions on how to structure the PRTR.

The information disclosure meaningful for citizens is the disclosure of information which is necessary to know in the decision-making process. This naturally implies site-based information disclosure is necessary. But we are not demanding site-based information disclosure from the start of the system, since we are aware that it takes time to establish chemical management at each site. Even in the case of our large corporations, not all of them have prepared chemical management systems yet.

So we are allowing a transition period when only aggregate data will be disclosed, as long as a detailed schedule of when site-based disclosure will be made available is made clear. However, postponing decision-making is an unfortunate but common practice in Japanese society, which is why we stress the creation of an explicit timeframe by which site-based disclosure will be made available.

If the Japanese PRTR will be a system that will only evaluate risk and allow businesses to monitor their chemical releases, and will not include information disclosure to be utilised by citizens, we will not regard this as a true PRTR system as recommended by OECD. In such a case we see no need to come up with an agreement among three sectors, government, business and citizens. We do not need a system which is of no use to citizens' needs, but will only answer the OECD Recommendation, since it adds another burden to our society, with little merit. Since we already have many regulations on chemicals, we should not try to lay a new burden on society by duplicating regulations or establishing a token system.

Concerning how to make our PRTR system user friendly, it is useful to compare our current situation to other countries with PRTR systems.

Currently we can acquire some company chemical release information through utilising local governments' disclosure regulations. But the effort required to gain access to this information is very inconvenient and time-consuming compared to procedures under information disclosure legislation in other countries.

3. Meaning of Establishing the PRTR system in Japan

Establishing a PRTR system in each country is not only necessary for improving international co-ordination, but will also influence social systems in the process of establishment and implementation.

For our society, establishing the PRTR system will mean that information will be available concerning the types and amount of chemicals used or released in the environment and will promote the disclosure of information.

We think the most important meaning of establishing the PRTR system for us is that it will contribute to promoting social governance by "partnership" of all sectors.

To explain this in more detail, we would like to give a short comment about the change generated in civil society in the first place. Then, after confirming the global standards of a citizens' society in the 21st century, we would like to explain the meaning for Japanese society.

3.1 Changing civil society

Huge private enterprises began to emerge from the late 19th century through the development of limited stock companies, and now these giant enterprises are supporting our prosperous industrial civilisation. However, at the same time this system destroyed a major premise of modern civil society, which is the equal relation between huge enterprises and individuals. Modern civil society is based on the premise that society is constituted by independent people who can equally participate in decision making. To secure such equal rights, many regulations and restrictions were made, such as:

- a) restriction of the civil rights of corporate organisations, and mitigation of the responsibility (including the modification of the negligence principle) of individuals and or SMEs.
- b) strengthening the right-to-know

For restricting the powerful so-called social laws (e.g. the employee protection law, anti-trust laws, etc.) have been developed. The effectiveness of these laws depends on how well they are implemented, which is mainly done via "administrative control" in the form of regulations. For protecting the rights of the weak, we have many laws and means, such as consumer protection laws, introduction of strict liability or no-fault principles like PL, and so on. The implementation of these laws depend mainly on "judicial control" through lawsuits for claiming compensation.

Legislation for the citizen's right-to-know occurred mainly in the late 20th century, as explained above, and it will be the major current toward the 21st century.

3.2 Civil society in the 21st century

We believe that there is no objection that the global environmental problem is the most serious one in the history of human kind. There also appears to be general international agreement that it will be impossible to solve the global environmental problem by only relying on "end of pipe" methods to manage industrial pollution. This is because the current global environmental problems are global problems, such

as the ozone layer being damaged and rising CO₂ level in the atmosphere, whose cause-and-effect relationship is still scientifically not concluded. Therefore, various means and devices have been tried and are being discussed to solve these problems, and we think the PRTR system is one effective tool that can help us to improve our environment. The industrial sector is insisting on self-regulation or voluntary regulation to cope with the problems, via tools like gaining ISO14001 standards certification for a facility's environmental management. However it is clear that mere self-regulation or self-commitment of the business community are not enough to solve the global environmental problems.

It is necessary to promote and encourage citizens' participation in the decision-making process of establishing social systems, as the Rio de Janeiro declaration claims. And it is also necessary to utilise monitoring and control systems, in other words, social control by the whole citizenry, since it is their right and responsibility. This social control is different from the disciplinary type of administrative control. This is social governance through "partnership" of all sectors, and information disclosure will be critically important for "partnership" as a major premise.

The image of the civil society in the 21st century which will tackle the global environmental problem will be a society governed by the partnership of citizen/NGO, industry and government. Such a society will depend on a mixture of:

- a) mandatory regulation and voluntary regulation/self-commitment
- b) administrative, judicial and social control
- c) disclosure of information by administrative authorities and private entities

3.3 Transformation of Japanese society

The governance of Japanese society since the Meiji restoration in 1868 has been depended heavily on administrative control, namely regulations and administrative guidance called "gyousei-shidou". At the beginning of the restoration, we employed the western legal system which accompanied modern civil society principles. However, because we depended too much on administrative control or bureaucrats, our social system eventually allowed administration to maximise their arbitrary decision right, leading to corruption. We have experienced the outcome of the excess of large administrative power, such as the AIDS medicine incident, the bankruptcies of major Japanese financial institutions and declining credibility of the Japanese financial system. There are many social issues that we have to overcome to restructure our society to meet global standards in the 21st century. We think establishing the PRTR system has the possibility to trigger such a reform through partnership of all sectors.

4. Proposal to the OECD

As we have explained, the PRTR recommendation by the OECD is specifically meaningful because we believe it will play an important role in changing and reconstructing Japanese society, since the recommendation includes a guideline encouraging the agreement being implemented by all sectors of society. However, it has few mandatory stipulations for minimum requirements for an effective useful PRTR system, deferring too much to the sovereignty of each nation. We are quite aware that it is not only impossible, but also ineffective and inefficient, to establish one single global system for chemicals management. We believe the specific character and situation of each country should be considered in developing each PRTR system, but we think these differences are given too much credence in OECD's Recommendation. In the case of Japan, it would be very desirable for OECD to indicate clearly the minimum standards for a PRTR system.

We would like to request that the OECD reissue recommendations on establishing PRTRs which stipulate concrete contents. The following are the items we believe should be included at a minimum in any PRTR system, and which we would like to see included in OECD's Recommendation:

4.1 Information disclosure for each operating site

All PRTRs should disclose individual operating sites' chemical release information by the target year set in principle.

4.2 Definition of trade secret

Protection and non-disclosure of core corporate innovation information is critical for enterprises. Thus, mandatory disclosure of this kind of information should not be required. But generally the disclosure of information should be stipulated as widely as possible concerning environmental health and safety performance. Therefore, it is desirable to define "trade secret" strictly, and to protect such information from general mandatory disclosure. The bounds of the term "trade secret" are easily interpreted widely. Strict definitions of this term should be stipulated globally.

4.3 Stipulation of the citizen's right-to-know

The basis for any partnership is the equality of information, which depends on establishment of the right-to-know. This item will also be very important and helpful in establishing a PRTR system in developing countries.

4.4 Products and intermediate products

Chemicals will be released to the environment via products containing chemicals once these products are disposed of. Therefore, it is desirable to prescribe information disclosure concerning the chemical content of products or intermediates. By doing so, consumer recognition concerning the risk of chemicals will be heightened and consumers will have the option of changing their purchasing, investment, and/or waste management habits based on this information.

4.5 *Support for developing countries*

It is not enough to establish PRTR systems in the developed countries. Use and emission of chemicals in developing countries are increasing rapidly, often due to foreign company manufacturing, and developed countries should propose measures to support establishing chemical management systems in developing countries. Therefore, ways to establish mechanisms to support developing countries' PRTR development should be considered. In addition, releases by subsidiaries of multinationals in the developing countries should be monitored at the parent company and such information should be disclosed on a consolidated basis. This will be helpful to enhance the management ability of their subsidiaries in developing countries.

ATTACHMENT

To: The Director General of the Environment Agency

A Joint Appeal by Citizens and NGOs for the Introduction of a Comprehensive PRTR (Pollutant Release and Transfer Register) System in Japan

Introduction

The Environment Agency is implementing a pilot PRTR project based on an OECD Recommendation. According to criteria for constructing a PRTR system (as appearing in the annex of the OECD recommendation), all sectors, including the government, industry, and citizens, should participate in PRTR development so as to come up with a system beneficial to society as a whole. Thus, on 25 October 1997, citizens, NGOs, and academics participated in Japan's first round-table conference on the subject.

While much more discussion and wider participation are necessary to reach a consensus, the ongoing pilot project is gathering facts, experiences, and examples. Bearing this in mind, some of those who participated in the conference believe it urgent to make the following appeal. Recognising that further study by all parties is necessary to achieve the full-scale introduction of a comprehensive PRTR system, and that you are considering and investigating various possibilities, we hope this appeal will assist you in your deliberations.

Appeal

To achieve the introduction of a comprehensive PRTR system in Japan, we request the following:

1. Information should be disclosed to the public

We request full disclosure of all information pertaining to each chemical at each individual facility. Exemption due to not wanting to reveal trade secrets should be kept to the minimum. For the average citizen, disclosure has little meaning unless really useful information becomes available, which enables participation in the decision-making process with respect to public policies and/or measures. For instance, for a community to make decisions, site-based information for each facility is necessary. Moreover, for firms to reduce the amount of chemicals being used, disclosure at the individual facility level is necessary. Most PRTR systems overseas are basically aimed at site-based disclosure, and we believe that Japan, although behind, should show leadership in the international community by establishing a PRTR system equivalent to, or better than, existing ones.

2. The Government should issue a full evaluation of its PRTR pilot project

For ordinary citizens, and many NGOs, PRTR is still not well understood. Therefore, to raise public awareness and interest, we request you issue a report on the pilot project including problems to be solved (such as credibility of data, research limits, etc.), and also stimulate public discussion by arranging opportunities for the public to express opinions. This, we believe, will lead to the strict implementation of the criteria for constructing a PRTR system that appear in the annex to the OECD Recommendation.

3. The system should be user friendly and not burdensome to businesses

Business corporations are already obliged to report various data concerning chemicals under various laws and regulations. Hence it would be negative for society if a PRTR system imposed an excessive burden on business corporations, since such cost would be passed on to consumers. What we need is a system consistent with existing laws and regulations (if not, laws/regulations will have to be amended), and which is also convenient for both business (especially small firms) and the community through the use of IT technology.

4. All sectors should be involved in discussions

We request that all sectors participate in discussion to establish a comprehensive PRTR system as well as additional pilot projects. We believe this a necessary process to create a PRTR system that is effective in promoting the reduction of toxic chemical substances. Further problems remain to be solved, such as how to include distribution/service companies, establish a system to evaluate the environmental burden using the LCA method, and construct a comprehensive and integrated system to control chemical substances.

A Decade of US Experience

Dorothy P. Bowers

Vice President, Environmental and Safety Policy, Merck & Co., Inc.

1998 marks the tenth year since the US first began the implementation of its PRTR, called the Toxics Release Inventory (TRI). By all accounts, the TRI has been the most cost-effective emission reduction regulation ever issued by the USEPA. The rule simply requires facilities in selected industries which use large amounts of one or more of a list of toxic chemicals to report to the public annually on releases and transfers of those chemicals. The rule has no requirements for reductions, it has no standards to be met, it has had no litigation over too costly or too stringent technological demands. Yet since it became effective a decade ago, emissions of these chemicals into the environment have continuously been reduced, year after year.

From the perspective of the regulatory agency, the TRI has resulted in significant emission reductions without the cost and burden of regulatory requirements mandating reductions. From the perspective of most of industry, the TRI report was an awakening to the amounts of costly chemicals that were purchased and discarded or lost to the environment. Many of the reductions in emissions resulted in operational savings in conservation of raw materials. From the perspective of the public, the TRI was the first accounting of the magnitude of their exposure and the first tool that empowered them to negotiate voluntary reductions by local industry.

The US TRI would seem, then, to be a win-win-win success story; such a success that we should be encouraging other nations to adopt similar PRTR systems in their countries. But before we do so, let us first examine in more detail not only the successes but also the problems and criticisms of the US TRI.

The TRI list

The TRI has drawn the greatest praise for **what** it has accomplished, but the greatest criticism for **how** the accomplishment was achieved. Many of the reductions resulted from true pollution prevention - where facilities found ways to eliminate the use of those chemicals, ways to prevent the escape of those chemicals during use, or ways to recover used chemicals and reuse them. Other reductions resulted from replacement of the listed chemical with another chemical not on the list. Hopefully by a chemical that is less toxic or has a lesser environmental impact. But the US list is not a list of the most toxic or environmentally problematic chemicals; it includes chemicals that are known carcinogens along with chemicals that have relatively little health or environmental impact at environmental concentrations; there are many more toxic chemicals that are not on the list. So while facilities probably sought to change to less toxic chemicals, there is no assurance that replacing one chemical with another is necessarily an environmental improvement.

If a facility replaced a listed chemical with one more toxic, which could easily happen, that doesn't mean the PRTR system has failed, but rather that the list used by the system has failed. Thus any consideration of developing a PRTR, based on a list of chemicals, needs to be aware of the likelihood for chemical substitutions and aware of the importance of choosing the list with this likelihood in mind.

Who must report

The initial TRI was based a list of industries. Any facility in one of those industries using a certain amount of a listed chemical had to estimate its emissions and releases and report on them. This resulted in communities being told about what seemed like huge emissions from one of their local industries which might be located next door to another industry which was not listed, but might have even higher emissions that it did not have to report. Furthermore, the high level of attention paid to the reports gave the perception that the reports included **ALL** of the nation-wide releases and transfers of the toxic chemicals, which clearly was, and still is, not the case.

While the initial limitation to a smaller subset of industries might have allowed the US to develop experience first on a smaller scale, it would have been far better to have begun with a pilot program. This would have avoided the misperception that only those listed industries have significant releases and that the reported emissions constitute the total of all emissions.

Releases and transfers

The US TRI, as well as others being piloted, include not only releases from facilities directly into the environment, the air, water or soil, but also transfers out of the facilities, whether to other facilities belonging to the same company, to commercial waste treaters or to municipal wastewater treatment plants. If a waste is treated on the facility's site, only the residual that enters the environment is reportable; but if the waste goes to an offsite facility, all of the waste is reportable as a transfer, even if it is fully and appropriately treated and destroyed. When the releases and transfers are reported to the public, the public simply views the total quantity as a potential threat.

I believe this perception is a hold-over from the historically marginal operations of commercial disposal companies that were not stringently regulated, inspected, and shut down when they caused environmental problems. But this is ten years later. Those facilities are now largely big-business, well-financed and state-of-the-art technologically. There is a good chance that their performance is better than that of on-site treatment. Also, in the initial TRI reporting, hazardous waste treatment facilities did not have to report their own releases and transfers, but now they are on the list of reporters along with their customers. So, in fact, having industry report transfers to treatment facilities, and those facilities report their own releases, is actually double counting some of the wastes. Those planning PRTRs should take into account the compliance record and performance of national disposal facilities to decide if it is necessary and appropriate to have transfers reported. They also need to consider what are the appropriate boundaries to draw around a given facility, e.g. will the facility's report include the total waste sent to a treatment plant jointly owned with a neighbouring plant or only the waste that eventually reaches the environment? or if waste is sent offsite for recovery and returned to the facility for reuse, how will that waste be reported?

Generating the data

How the data is to be estimated and generated is also a significant controversy. In the US, the initial guidance for emission estimates led, in some cases, to significant over-prediction of emissions and raised criticism on all sides. There will be a working session - Session IV - on this topic, so I will defer detailed discussion until then except to discuss one approach recently proposed by our regulatory agency. An approach called materials accounting which has been adopted in my home state of New Jersey. It calls for more than just a report on releases and transfers, but rather for an accounting on how each chemical is used within the facility. Industry has strenuously objected to the added burden of such reporting, but is even more concerned about the potential loss of trade secret information when the use of specific chemicals is reported at such a level of detail. The actual materials accounting report in New Jersey has

been little used and there is no indication that the value equals or exceeds the cost of generating the report nor the risk of loss of sensitive business information.

Timeliness and accuracy

US facilities report on the previous year's releases and transfers in July of the following year. Releases occurring now, in September of 1998, will be reported in July of 1999. Receiving, entering and tabulating the data consumes another nine months, which puts the publication date for the 1998 release into April or May of the year 2000 - two years after it has occurred. Yet when the public sees the data, it assumes that it is current information rather than historical. This is why companies have begun making public their releases at the same time as they are reported to EPA, to make them more timely and to show improvement over the prior year's data in the EPA report. An annual report would be difficult to make more timely. Some PRTRs are evaluating a three-year cycle, which would reduce the burden and could improve timeliness.

One of the most contentious issues has been the question of maintaining the accuracy of the data and correcting errors. Since the TRI report is published by a government agency, the public relies upon the data, assuming that it is accurate, up-to-date, and that there are no errors. Considering the mountain of data collected and published, coupled with the fact that most of it is estimated, there are bound to be errors in the data as reported by facilities as well as tabulated by EPA. These errors are difficult, if not impossible to remove from the public record, and a facility with a major error in its records finds it necessary to constantly correct those relying on the published data. For any PRTR, the lack of data reliability could challenge the credibility of the entire system.

Defining the goal of the PRTR

If there is one thing to be learned from the experiences of existing PRTRs or from pilot programs, it is how critical is the need to define the goal of the PRTR. Only with a well-articulated goal will it be possible to make the best decisions, beforehand, on how the chemicals are chosen, whether transfers are included, how accurate the estimates must be, what the system boundaries will be, who must report, etc.

problematic in the environment - that PRTR might list only those chemicals, and they might not just be toxic chemicals, they might include sulphur and nitrogen oxides. That system might appropriately focus only on releases.

Another PRTR could intend to reduce the use of carcinogens. In that case, the list would include only such chemicals or it might not have a list but rather a carcinogenicity threshold. Transfers might be included with releases.

Yet another PRTR might seek to provide the greatest public disclosure regarding environmental exposure to highly toxic chemicals. A special list might be developed and the reporting might be limited to releases alone.

It is worth noting that no single approach is likely to be the best for all of the intended goals, and that the differences in goals will call for different PRTRs. Failure to define the goal upfront will risk that the system to be implemented is not well-suited for the goal.

Only by taking the time to clearly define goals, working first with pilot systems to test approaches, and examining existing systems, can a PRTR planner design the best system to meet the national needs.

Experience in PRTR Implementation and Use

Wilma Subra

Louisiana Environmental Action Network

The Pollutant Release and Transfer Register (PRTR) system in the United States of America is known as the Toxics Release Inventory (TRI). The United States Congress passed the Emergency Planning and Community Right-to-Know Act (EPCRA) in 1986. EPCRA is based on the principle that citizens have a “right-to-know” about hazardous and toxic chemicals in their community. Section 313 of EPCRA requires the United States Environmental Protection Agency (EPA) to establish a Toxics Release Inventory (TRI) of toxic chemical emissions. This information must be made available to the public.

Prior to TRI, citizens were told by industry representatives and regulatory agencies that the smoke stacks at industrial facilities were only emitting steam (water vapour). Then came TRI. Industry reported data suddenly proved that much more than steam was coming out of the stacks. In fact, such a large amount of chemicals was being emitted from the industrial facilities that the State of Louisiana where I live was the #1 state in the nation in toxic releases. The United States consists of 50 states. As a result of the early years of TRI data reporting, community members living around industrial facilities demanded that emissions be reduced. In the State of Louisiana, the facilities reduced their emissions by about one-fifth as a result of public outcry and regulatory agency initiatives. What industries, however, did not do was change their permit limits. The industrial facilities have used the excess permitted emission capacity to double and triple production. As a result of increased production, toxic releases are increasing in the State of Louisiana while toxic releases are decreasing nation-wide.

The citizens of Louisiana thus were extremely successful in having the TRI reporting industrial facilities decrease their emissions. Industrial facilities implemented measures to reduce the quantity of emissions per unit of production. Industry then dramatically increased their production to take advantage of their permit emission allowances. The end result - emissions are increasing. Lessons learned: If emission reductions are to be maintained over the long term for existing industrial facilities, the public has to demand permitted emission limits also be reduced.

Fugitive emissions

The Exxon Chemical Plant in Baton Rouge, Louisiana releases approximately 2 million pounds of toxic chemicals into the air each year. The chemicals produced at the plant are listed at the top of the overhead. One of the less utilised TRI aspects is the differentiation of fugitive versus stack emissions. Over the reporting years, the Exxon facility emitted 25 to 36% of toxic air emissions from the stacks. The largest portion of the toxic emission sources – 64 to 75% - were from fugitive sources. These sources are from leaking flanges, valves, connectors, etc. and are usually close to the ground. These emissions have the potential to have the largest impact on the surrounding communities.

The chemicals released from the Exxon facility as fugitive and stack emissions consist of known cancer causing agents such as benzene, suspected cancer causing agents such as acetonitrile and formaldehyde and a host of chemicals that cause reproductive and genetic effects as well as endocrine disruption.

If the community only works to require tighter controls of permitted stack emissions, the majority of the toxic releases will continue to be emitted. Efforts must be focused on both fugitive and permitted stack emission reductions in order to protect the health of community members living near the industrial facilities.

The need for a focus on fugitive emissions is clearly demonstrated if one considers emissions from oil and petroleum refineries. The fugitive emissions make up 82 to 99% of the air emissions from these refineries in Louisiana, Texas and Washington State. Other oil refineries throughout the United States have fugitive emissions in the 50 to 90% range, with the majority on the higher end of the range. Focusing on the permitted stack emissions would overlook the majority of toxic air emissions.

As a result of fugitive emission data compiled by the Louisiana Environmental Action Network on Petroleum Refineries and presented to members of the EPA Common Sense Initiative Petroleum Refining Subcommittee, a major effort was undertaken to identify sources of leaks. For the last couple of years, data reviews have been performed on public data submitted by refineries to state regulatory agencies. In addition, new technology developments are being pursued to utilise laser sensors to identify leaks within refineries. As a result of compilation of TRI data, a major Reinventing Government effort has been focused on fugitive emissions.

The Public Data Release issued by the US Environmental Protection Agency in June 1998 for the TRI reporting year 1996 presented air emissions for the first time on the basis of fugitive and stack sources. This presentation at the national level will reinforce the work of community groups who have been working to expose the large quantity of fugitive emissions. The PDR data format will also assist new users to understand the large distinction between permitted stack emissions and mostly unpermitted fugitive emissions.

Off-site transfers

The off-site transfers of toxic chemicals reported as a part of the Toxics Release Inventory are sometimes dismissed by citizens as a good thing because the toxins are going somewhere else. However, somewhere else is often to a commercial disposal site or chemical factory that does energy recovery just down the street in their own neighbourhood. Emissions into the environment then occur from these secondary facilities. Historically the commercial disposal sites were not required to report TRI emissions. These facilities will be required to report emissions for calendar year 1998.

The citizens need information on where the off-site transfers are going and what is happening to the waste at the designated destination. This information is available in the annual disposal reports filed with the regulatory agency by each industrial facility. A mechanism is currently being developed by an EPA committee to make information on off-site transfers readily available to the community.

Buffer zones

Toxics Release Inventory data combined with accidental release data have been utilised by citizen groups living on the fence lines of industrial facilities. These citizen groups petition their local and state governing agencies to establish requirements for buffer zones around industrial facilities. Citizens should not have to live on the fence lines of industrial facilities and be impacted by toxic chemicals released by the industrial facilities.

Summary

In communities where existing industrial facilities are located, existing facilities are proposing to expand or new facilities are proposed, TRI data in combination with population statistics and economic indicators can provide valuable information. Together these factors enable communities to determine the current level of pollutants emitted, what are the emission trends, how does the area rank when compared to other areas, and are toxic releases having a greater impact on poor, minority or vulnerable populations. Are there environmental justice issues involved?

No other source of data has and continues to provide community members with information on which they can base decisions in their communities.

Exxon Chemical Baton Rouge Plant

Chemicals produced: Ethylene, propylene, isopropyl alcohol, vistalon rubber, butadiene, MEK, resins, benzene, phthalic anhydride, plasticisers, oxo alcohol, olefins, olefin products

TRI Air Emissions

<u>Chemical</u>	<u>Year</u>	<u>Fugitive (pounds)</u>	<u>Stack (pounds)</u>
Total	1996	1,086,050 (69.5%)	475,727 (30.5%)
	1995	1,461,485 (74.3%)	504,448 (25.7%)
	1994	1,310,690 (71.7%)	517,228 (28.3%)
	1993	1,072,631 (63.6%)	613,912 (36.4%)
	1992	1,927,673 (75.4%)	630,317 (24.6%)

Group A Carcinogen Air Emissions - Chemicals known to cause human cancer

Benzene	1996	23,000	7,900
	1995	53,000	16,000
	1994	66,000	22,000
	1993	42,000	17,000
	1992	120,000	25,000

Group B Carcinogen Air Emissions - Known animal and suspected human cancer causing chemicals

TRI Air Emissions

<u>Chemical</u>	<u>Year</u>	<u>Fugitive (pounds)</u>	<u>Stack (pounds)</u>
Acetonitrile	1996	4,900	6,000
	1995	8,400	2,000
	1994	14,000	2,000
	1993	3,100	3,800
	1992	17,000	2,100
Formaldehyde	1996	1	190
	1995		15
	1994		1,300
	1993		1,100
	1992		4

OIL REFINERIES
TRI Air Emissions

Company	Year	Fugitive (pounds/year) (%)		Stack (pounds/year)
CITGO PETROLEUM				
Lake Charles, LA	1992	1,647,330	87.6	232,423
	1993	1,669,820	85.7	278,404
	1994	1,447,190	85.3	250,330
	1995	2,171,835	89.4	258,698
	1996	1,848,110	85.1	324,586
CONOCO REFINERY				
Lake Charles, LA	1992	588,046	94.6	33,587
	1993	444,907	91.7	40,164
	1994	446,831	89.4	52,759
	1995	456,082	86.4	71,660
	1996	487,160	86.9	73,336
MOBIL OIL CORP				
Beaumont, TX	1992	4,599,857	95.1	237,041
	1993	3,872,443	90.3	413,950
	1994	2,823,993	85.8	466,319
	1995	2,735,687	81.9	603,838
	1996	3,060,664	84.3	571,189
U.S. OIL & REFINING CO.				
Tacoma, WA	1992	35,967	96.1	1,469
	1993	62,011	98.4	1,020
	1994	60,057	99.1	551
	1995	56,763	97.7	1,360
	1996	60,349	97.7	1,433