

YOUR RIGHT TO KNOW ABOUT SOURCES OF POLLUTION



**A BRIEF INTRODUCTION TO THE PROTOCOL ON
POLLUTANT RELEASE AND TRANSFER REGISTERS**



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December, 2003

The European ECO Forum is a broad, inclusive coalition of more than 200 ECOs (environmental citizens' organisations as well as NGOs with related interests) from countries of the United Nations Economic Commission for Europe (UNECE) region taking part in the so-called "Environment for Europe" process with the final goal of promoting environmental protection and sustainable development in Europe and globally. The aim of the coalition is to serve the ECO community and facilitate their participation in this process, and to work together in order to be stronger and more influential, without detracting from individual organisations' ability to perform separately. The Public Participation Campaign (PPC) is the ECO Forum's issue group responsible for ECO activities in relation to the promotion of participatory environmental democracy throughout Europe and currently is focussing on the practical implementation of the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters.

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introduction

A new international treaty was agreed in 2003 setting out the minimum rules for national systems of public information on sources of pollution. Giving information to the public on the quantities and exact sources of pollutants creates a remarkable stimulus to reduce pollution. Public inventories with this information are widely acknowledged as a tool for improving the management of chemicals, increasing corporate accountability, and capturing the public's attention on environmental matters. Environmental citizens' organisations have been enthusiastic supporters of these inventories, and have an important role to play both in promoting their adoption and in using the data when it is available.

The new treaty is known as the **Protocol on Pollutant Release and Transfer Registers** (PRTRs) and has its immediate origins in the 1998 Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters. The Convention itself marks a milestone in transparency and public participation and it recognises that pollution registers are an important source of information. The Protocol develops the rules for such registers in detail and was adopted at the 2003 "Environment for Europe" Ministerial meeting in Ukraine.

As of the end of 2003, 36 countries and the European Community have signed the Protocol, but it will take several years to enter into force. Any country in the world can become a Party, opening up the possibility for the PRTR Protocol to set a global standard for pollution reporting and transparency.

Pollutant Release and Transfer Registers have a long history and governments have initiated a number of national and international efforts¹. For example, the Netherlands established a very comprehensive pollution inventory as long ago as the 1970s. The first *public* PRTR was the US Toxics Release Inventory, established in 1986. This was at least in part catalysed by the catastrophic accident at Bhopal,

1 For example, Agenda 21 (UNCED, 1992) called for the sound management of toxic chemicals and referred to chemical emission inventories. The OECD, within the framework of the Inter-Organization Programme for the Sound Management of Chemicals (IOMC), developed a guidance manual for governments (1996) on the development of PRTRs (see "Further Information" section). The Stockholm Convention on POPs (Persistent Organic Pollutants) also calls on governments to use transparent reporting methods such as PRTRs.



India, in 1984 when thousands of people were killed by a release of methyl isocyanate from a Union Carbide pesticide plant.

This booklet aims to give an introduction to PRTRs and the PRTR Protocol. It is not an exhaustive description of the Protocol, but tries to set some of its major components in context. Neither is it a definitive or authoritative guide to interpretation of the Protocol. We use examples from existing systems to demonstrate what is possible in a PRTR and list further sources of information for those who would like more detail. This is merely an introduction to the subject but one which we hope gives some grasp of the concepts of PRTRs and uses of the data. It is probably fair to say that all PRTR systems evolve with time as experience grows and some of the ideas in this booklet that go beyond the Protocol are quite ambitious in the first instance². But primarily we hope this booklet will be useful to NGOs and others who are involved in advocating the establishment and use of PRTRs. Insist on your right to know!

The full text of the Protocol (in English, French and Russian) can be found at the UNECE web site: <http://www.unece.org/env/pp/prtr.htm>

Box 1



"The law is having an incredible effect on industries to reduce emissions, and that's good. There's not a chief executive officer around that wants to be the biggest polluter in Iowa." – Tom Ward, plant superintendent at Monsanto's Muscatine, Iowa plant, responding to an emissions report by the Sierra Club and Environmental Advocates, Inc. Quad City Times, June 8, 1990.

From the newsletter of the Working Group on Community Right-to-Know

² The Protocol itself encourages countries to plan ahead "taking into account the possibility of its future expansion" when designing their systems.

pollution information...

The use of *public information tools* on pollution sources has greatly increased. As we grapple to improve protection of our environment, it is very important to know what activities contribute to which problem. A number of countries have begun to catalogue the sources and quantities of pollutants and wastes periodically, often starting with major industrial facilities. Systems can also be devised to identify other sources, such as traffic or agricultural sources. A system that gathers, stores and disseminates this sort of information to the public is called a Pollutant Release and Transfer Register³ (PRTR). Table 1 identifies some types of questions that may be answered with PRTR data (but dependent on the exact scope of any one system).

...and environmental democracy

With an increasing emphasis on public participation and access to information world-wide, PRTRs are an elegant mechanism which help engage the public in pollution and regulation issues. Not only do PRTRs implement the public's right-to-know about pollution in their neighbourhood or on a country-wide basis, they increase the accountability of companies and create pressure to reduce the emissions. The visibility of the information to the public – an absolutely essential part of such a system - stimulates efforts at better management of wastes and toxic chemicals, for example through the use of safer alternatives and cleaner technologies. The information can also help authorities apply more consistent and thorough regulation. Emissions information allows countries to allocate resources more effectively, and prioritise chemicals, industries or environmental media for regulatory action.

³ Releases are direct inputs of pollutants into the environment (e.g. emissions to air); transfers are generally wastes sent to a further facility for processing or disposal. These terms are further explained in Box 2.



Table 1

Question	Sample Data Use	Key Information
How much pollution does a facility generate?	An official identifies companies that release or transfer particular hazardous chemicals and determines where they go.	Chemical name / identifying number; environmental medium or disposal destination
What sensitive populations are located near by?	Students can map their neighbourhood, census data, and pollution sources on home computers.	Locational information (accurate latitude and longitude)
How does a facility compare to other firms in its industry?	An investment researcher learns which companies in a sector have fewer emissions and can investigate which have adopted cleaner technologies.	Industrial sector classification
What environmental data does the facility submit to Government?	A community group readily obtains a factory's environmental permit/s and emission data from a single source.	Facility/site identification ⁴ (unique ID number for all reports from one facility)
How has a firm behaved at its other facilities elsewhere?	A citizens' group quickly finds out if a firm has been a "bad neighbour" at its operations elsewhere.	Parent company identification ⁵
How much pollution does traffic generate in a neighbourhood?	A group of neighbours look at maps to see the quantity of particulates released in a certain area and compare that with industry releases.	Locational information on diffuse sources

Examples of questions that might be asked of data in a pollutant release and transfer register, demonstrating some useful information fields.

4 The PRTR Protocol itself does not force authorities to set up unique identification codes for each industrial facility, but if a number of different environmental permits or reports are relevant, then such a system would help those searching the information to locate all information relevant to one site.

5 This is not required information under the PRTR Protocol, but would be extremely useful information to incorporate.

the life-cycles of industrial chemicals

As indicated above, very often a PRTR begins with a list of major industries. Their exact locations and their annual releases of listed chemical substances are recorded in a publicly accessible database. It becomes relatively easy for anyone to find out which industrial site has, for example, the highest emissions of sulphur dioxide or particulates or dioxins. Table 2 shows a simple league table of dioxin releases by industries in England and Wales.

Company	Address	1998 release (milligrams)	1999 release	1999 figures as % of 1998
Corus UK Ltd (previously British Steel)	Llanwern Works, Newport NP9 0XN	13,706	12,770	93 %
Corus UK Ltd	Port Talbot Works, Port Talbot SA13 2NG	10,120	5,800	57 %
Corus UK Ltd	Brigg Road, Scunthorpe DN16 1BP	9,470	8,630	91 %
Calder Industrial Materials Ltd	Elswick Works, Newcastle upon Tyne NE99 1GE	8,714	4,820	55 %
Allied Steel and Wire Ltd	Tremorfa Works, Cardiff CF2 2YX	8,130	4,621	57 %
Corus UK Ltd	Teesside Works, Redcar TS10 5QW	7,210	8,700	121 %
Alenoy Ltd	Bowling Back Lane, Bradford BD4 8SS	3,660	100	3 %
IMI Refiners Ltd	James Bridge Copper Works, Walsall WS2 9SJ	3,640	1,380	38 %
ASW Sheerness Steel Ltd	Brielle Way, Sheerness ME12 1TH	2,920	2,118	73 %
AES Drax Power (previously National Power Plc)	Drax Power Station, Selby YO8 8PJ	2,710	1,100	41 %

A league table of dioxin releases to air (Pollution Inventory data, England and Wales). This table shows the top ten dioxin reports from major industrial sites for 1998 and those same companies' releases for 1999. Steel works are a significant source of dioxins in the UK. (Analysis by Friends of the Earth.)



Multi-media approach

A fully-fledged PRTR should at least indicate releases to air, land and water separately and also transfers of waste (such as those that are transported to another facility or site for disposal or recovery). The inclusion of all media (air, land and water) in a PRTR is important and is essential for an *integrated* approach to chemicals management. If only some of the media are included, then there will always be question marks about whether falling emissions from a facility have simply been diverted to another medium. Depending on the pollutant and/or process from which it originates this is not necessarily a realistic possibility, but clarity about this matter is nevertheless an important factor in transparency.

Waste management

The fate of waste streams and their management is also of interest. It is possible to construct a PRTR system so that information on the type of treatment (if any) of the waste can be known. Thus one can see whether waste goes to waste water treatment, landfill, incineration, or recycling for example. This could even be extended to the location of the receiving facility.

Other inputs and outputs

More comprehensive PRTR systems can be used to gather information on the use and/or production of chemicals by a facility, the **storage** of chemicals (particularly if hazardous⁶), and their **transfer into products**. This can give a much broader perspective on the overall life-cycle of a chemical. For example, is a chemical in the waste stream because of its import into the facility or is it produced during the process?

Water and energy use could also be incorporated to increase knowledge of an industry's overall environmental impact. This sort of information is already reported voluntarily by some sectors in some countries.

⁶ The presence of chemicals on a site may pose the most immediate danger to communities. For example, explosive materials or acutely toxic chemicals are an obvious source of hazard.

Production measures

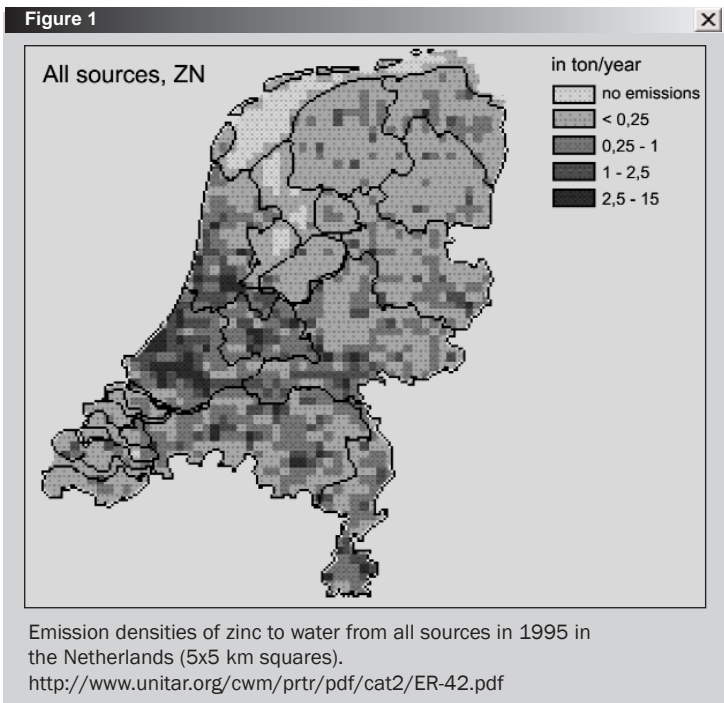
Experience has shown that many companies that show increased emissions or which appear in “top tens” are likely to claim that the reason is because production has gone up, or because they are “one of the largest” companies. Of course this may be so. But with more systematic information this could be much more transparent and would help us look at the **efficiency** of industries or measure decreases in pollution production relative to output.

Companies are often reluctant to report their production levels because of fears of giving their competitors useful information. There are ways to overcome this problem. The most open reporting might be some absolute measure of output from one year to another. This would be an easy indicator for the power generation sector for example. Another way is to publish a relative production level from one year to another. This is not comparable across a sector but shows the change in output of one industrial site to another from one year to the next.



diffuse sources of pollutants

Looking beyond the more obvious industrial smoke-stacks and waste water pipes, there are of course many other sources of pollutants. Many will be relatively small-scale individually but so numerous as to be important. These are known as non-point or **diffuse sources**, and include items such as emissions from traffic or agricultural sources or even domestic households. Small- and medium-sized enterprises are often treated as diffuse sources, since the emissions tend to be estimated by an authority or expert group rather than reported individually. PRTRs can also link in with information on such diffuse sources of pollution. These need some geographic base – for example, traffic emissions could be estimated on a square kilometre basis. Since the database also locates precisely the point emissions (such as the industrial sources) one can get an overview of pollution sources in the whole square kilometre.



an example of an existing PRTR: the US toxics release inventory

The US Toxics Release Inventory was established in 1986 and is managed by the US Environmental Protection Agency (EPA). It has evolved over the years and now captures PRTR data from around 25,000 facilities in the US. The programme incorporates information on around 650 chemicals although because of the use of thresholds (and the limited range of chemicals in use on any one site) the average number of chemical reports per company is only around four. The reports collect a considerable amount of other detail and, combined with investment in public outreach, the TRI programme has stimulated thousands of projects involving a wide range of interested parties. The following lists some of the information types that are collected by the TRI programme.

- ▶ Name, address and location of facility
- ▶ Name of parent company
- ▶ Contact person at the reporting facility
- ▶ Releases to air – including distinguishing between stack and fugitive releases (e.g. releases through spills or evaporation rather than through specific vents)
- ▶ Releases to water (including the name of the water body)
- ▶ Releases to land (including surface impoundment) and through underground injection
- ▶ Transfers to recycling, energy recovery, treatment, publicly owned treatment works, other off-site transfers, other on-site transfers
- ▶ Source reduction and recycling activities
- ▶ Production ratio or activity index

A recent report on the uses of TRI data by the US Environmental Protection Agency details a number of case studies⁷. It also has many references to further source material. An early and notable achievement in pollution prevention was the establishment and success of the “33/50” programme. This voluntary programme was set up between the EPA and a total of 1,200 industries. It targeted releases

⁷ Despite the relatively high number of chemicals listed, carbon dioxide is not listed.

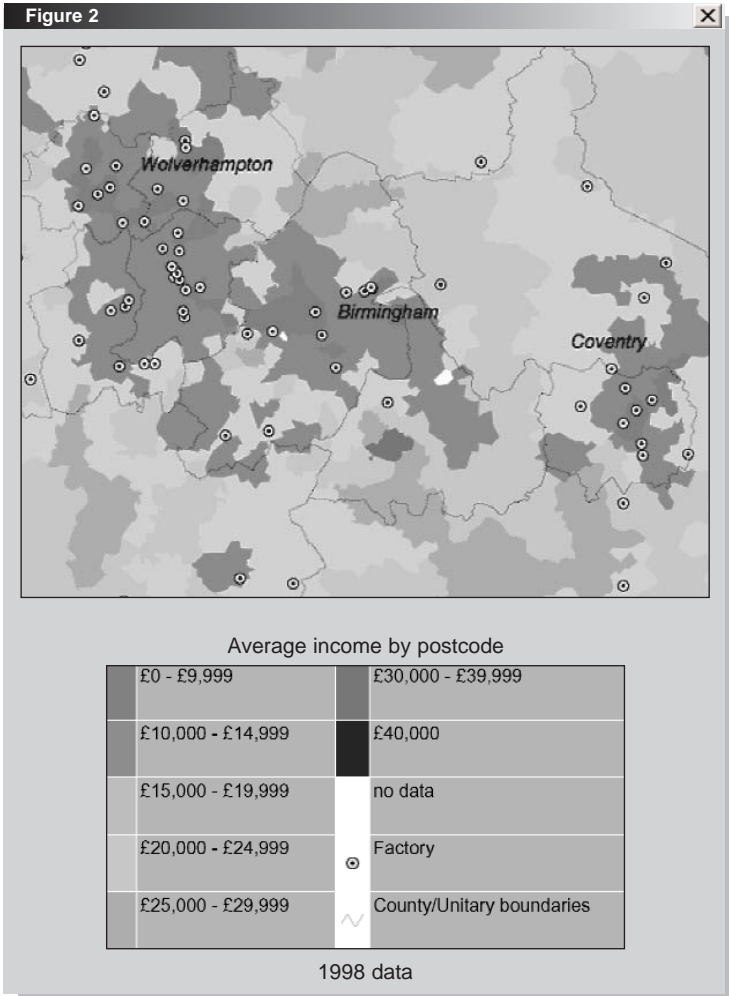


of 17 major industrial chemicals for 33% and 50% reductions within 4 and 7 years respectively. The targets were met one year ahead of schedule.

TRI data has also given citizens a way to engage with local industry. Both emissions and storage of chemicals (some may be acutely hazardous and pose the most immediate threat to residents in the vicinity) are reported in the TRI data. A number of “Good Neighbor Agreements” and similar have been negotiated, agreeing terms for better management of chemicals at certain sites.

A further interesting development has been the use of the data in environmental justice studies. Analysing pollution against socio-economic and/or ethnic backgrounds of local populations has shown some striking results. A study in England showed that the location of major industries was strongly correlated with lower household income (see Figure 2). Another study in Los Angeles that the majority of toxic releases were located in areas where the residents were predominantly people of colour.⁸

⁸ “How are the Toxics Release Inventory data used? - government, business, academic and citizen uses.” It is available at: http://www.epa.gov/tri/guide_docs/2003_datausepaper.pdf



Distribution of factories in the Midlands, UK, according to average household income by postcode sector. (Analysis by Friends of the Earth)
http://www.foe.co.uk/resource/reports/income_pollution.html



Box 2



Releases or Transfers?

Generally, a **release** is a waste or pollutant stream where the pollutants are emitted immediately to the environment. Gases from a chimney stack going into the atmosphere are an obvious example, but sewage sludge spread on a field is likely to have pollutants which are released to the land, and waste waters from a sewage works or industrial process are releases to water.

Releases include *both accidental and routine* releases. It would be useful to distinguish between these types of releases in a PRTR in order to help understand the data at times, but the Protocol does not require this. However accidental releases (such as from an explosion) have to be included in the reported figures.

Transfers on the other hand are wastes that are handed onto another facility, such as an incinerator or recycling facility or treatment process or even just an interim storage yard. These facilities themselves may also produce both releases and transfers.

Transfers are often of solid waste, but can also be liquid waste. The transfer of gaseous wastes is also possible in theory at least, but not very frequent as far as we are aware.

Sometimes an industry may have treatment facilities for wastes within the boundaries of their own property. A company may have built its own incinerator for example. Transfers to such a facility are termed "*on-site transfers*". These have been excluded from the PRTR protocol, although some countries do require reporting and our view is that there is no good reason to distinguish between "on-site" and "off-site" transfers. Both on-site and off-site transfers can give rise to serious and/or long-term pollution of the environment.

elements of the protocol

The PRTR Protocol as a first step mainly concentrates on the waste streams from industrial facilities and notes that PRTRs should accommodate diffuse sources, but it is not a totally comprehensive plan. Countries have scope to incorporate further elements when constructing their own national systems.

The legal basis for the PRTR Protocol

The Aarhus Convention has just two small paragraphs on PRTRs or pollution inventories. Later negotiations expanded on this commitment to produce the PRTR Protocol.

Article 5.9: Each Party shall take steps to establish progressively, taking into account international processes where appropriate, a coherent, nationwide system of pollution inventories or registers on a structured, computerized and publicly accessible database compiled through standardized reporting. Such a system may include inputs, releases and transfers of a specified range of substances and products, including water, energy and resource use, from a specified range of activities to environmental media and to on-site and off-site treatment and disposal sites.

Article 10.2 (i) ... At their first meeting, review their experience in implementing the provisions of article 5, paragraph 9, and consider what steps are necessary to develop further the system referred to in that paragraph, taking into account international processes and developments, including the elaboration of an appropriate instrument concerning pollution release and transfer registers or inventories which could be annexed to this Convention.

Industrial sectors

At its core, the PRTR Protocol requires countries to set up mandatory nationwide systems for the reporting and collection of pollution information. The requirements must include **annual reports** by **major industries**. The industry sectors covered by



the Protocol are listed in an Annex (see Annex 1) and most sectors are subject to size thresholds. The thresholds limit the numbers of facilities caught by the system while trying to capture the largest companies.

Substances

If an industrial facility is covered, then it has to submit annual reports on *releases* of up to **86 listed substances** to air, water and land and of *transfers* to disposal or recovery sites (see Annex 2). Most of these are recognisable priority pollutants (greenhouse gases, acid rain gases, ozone depleters, heavy metals and pesticides for example). There are further qualifying thresholds (not shown in the list) which often vary from one medium to another.

What substances should be covered by a national PRTR programme? This is not necessarily an easy question. An earlier draft of the PRTR Protocol had a list of possible *criteria*, but this was eliminated during the negotiations. Out of the entire universe of millions of chemicals (of which maybe around 30,000 are in common use), PRTR programmes inevitably cover relatively few priority chemicals. The longest list in any PRTR at the moment is that of the US TRI programme. This has been expanded to around 650 chemicals, but since the US system is built around *toxic* chemicals, some greenhouse gases such as carbon dioxide are missing. By way of contrast, the EU's current system (see Box 6) only lists 50 chemicals (but does not include carbon dioxide).

One principle of PRTRs (but which the PRTR Protocol does not entirely respect) is that *substance-specific* reporting should be the norm. For example, it is important to be able to track each individual metal and not just "heavy metals" as a group. One cannot know the exact properties of a group of chemicals and important information may be masked by groupings. Nevertheless, there are a number of traditional measures of pollutant such as VOCs (volatile organic compounds) or PM10s (small particulate matter), and these can be useful in PRTR systems.

Reporting of releases

Releases are reported on an annual basis, by weight of the substance released to air, land or water. As touched on above, the reports are affected by the choice of the facility threshold system.

Under the "capacity threshold" system, a further set of thresholds are applied to the releases and transfers themselves. A facility must meet both (on a substance by substance basis) before being required to report releases of that particular substance under the Protocol (although of course countries can set lower thresholds).

Alternatively, a country can choose to apply an "employee threshold" (10 employees) to its industrial facilities. This then links to further reporting thresholds related to the amount of the substance in question that is handled at the facility, known as the "manufacturing, process or use" (MPU) threshold (albeit with a number of exceptions!). But if that threshold is met, then any, even small, amount of substance released is reported.

Thus two similar facilities could report quite differently: one might report, say, 4 kgs of arsenic released to air because it is processing over 50 kgs of arsenic, but the other report would be silent because 4 kgs is less than the threshold for releases to air of 20 kgs.

In our view, the MPU system permits industries to demonstrate clean technology more readily and removes some uncertainty about whether a release is simply not occurring at all or whether it has simply failed to meet the release/transfer threshold. However, there could also be releases from industries that go unreported because the MPU threshold has not been met.

Reporting of transfers

There are also choices that can be made with respect to the way transfers are reported. Countries can choose to require reporting on a pollutant-specific basis or can choose to require reporting of the overall weight of the waste. In the first case, this means that for 200 tonnes of solid waste containing 100 kgs of arsenic, the weight of the arsenic would be reported. Alternatively, the overall weight, 200 tonnes, would be reported, although the report must also identify whether the waste is hazardous or non-hazardous⁹.

⁹ This occurred in order to accommodate countries with existing systems. The US for example sticks to substance-specific reporting throughout its TRI system, but many countries were skeptical about the accuracy of this data and/or the costs of providing it.



Does this matter? Ideally both pieces of data would be available. By reporting on the overall weight of the waste only, crucial information about the actual content of the waste is missing. An expert might know that incinerator ash contains metals, dioxins and a wide range of other substances but this may not be obvious to the average member of the public. Reporting on specific substances makes for a more coherent system.

The choice also affects information about recipients of waste transfers. Where pollutant-specific reporting of transfers is in place, the name and address of the facility receiving the waste has to be identified. But for countries choosing to report on waste quantities, then the recipient is only identified for transboundary movements of hazardous waste. This is not particularly logical, but was the result of the negotiations and reflects the influence of existing systems. It was a disappointment to environmentalists and some countries that supported greater transparency on this issue, but of course there is scope for countries to improve on the Protocol in this respect.

Off-site transfers

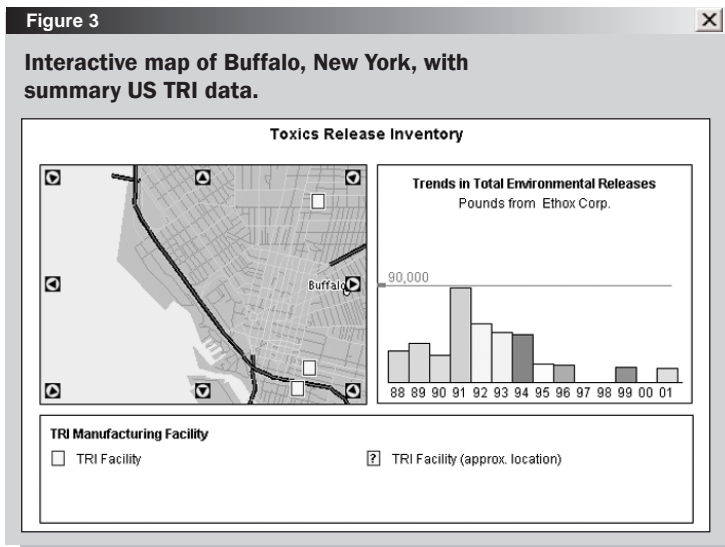
One point to note about transfers is that the Protocol text only incorporates *off-site transfers*. Sending waste for disposal or recovery outside the facility's boundary is reported, but if the waste is disposed of (or "stored" long-term) within the boundary of the facility (*on-site*) then the transfer does not have to be reported. This is not really consistent – both on-site and off-site transfers can cause problems and may be a matter of public interest – but this reflects the outcome of the negotiations. Larger facilities are often more likely to have on-site disposal facilities and thus can avoid the reporting of waste transfers under the Protocol. This means that national systems wishing to create a more level playing field should include reporting of on-site pollutant transfers.

Geographic information

One of the features that has made PRTRs such useful and dynamic systems is the use of precise geographic information. The Protocol requires that geographical location data is submitted by industrial facilities. Diffuse sources also need to be regarded as geographically based, although no particular size area is specified as a basis for this.

Combined with the use of computer mapping systems (geographic information systems) and database search techniques it becomes possible to generate highly visual maps and graphics of selected information. For example, users could choose to look at their immediate locality only, or choose a specific pollutant of interest and plot its releases on a map. There are many good examples of query and mapping tools for PRTR and related data on the Internet now.

The geographic information also allows PRTR data to be analysed in combination with other datasets which have a geographic base. For example, census data on inhabitants, locations of wildlife habitats, administrative boundaries, etc. can be combined with PRTR data to develop useful information. Friends of the Earth for example were able to show that in England, major factories were overwhelmingly located in deprived neighbourhoods with lower incomes¹⁰ (see Figure 2).

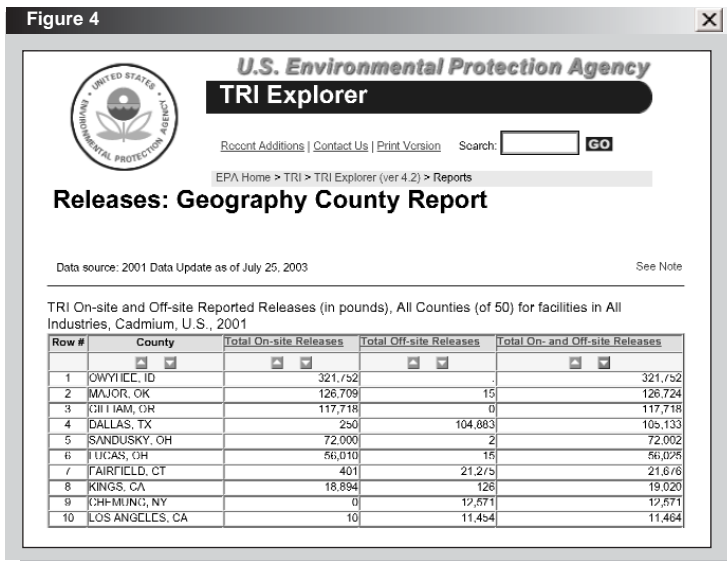


www.scorecard.org/env-releases

¹⁰ http://www.foe.co.uk/resource/reports/income_pollution.html;
http://www.foe.co.uk/resource/briefings/pollution_and_poverty.pdf



Figure 4



Cadmium releases by US county (2001. US TRI data). www.epa.gov/tri

Measurements and validation

Not all the data has to rely on monitoring information. Releases and transfers may be measured but also may be calculated or estimated, and this should be recorded in the database. This is realistic on the whole – monitoring can be expensive, may not be in place all the time and emission concentrations can vary from one moment to another. Monitoring equipment is not necessarily 100% accurate in any case. Calculations on the overall inputs and outputs can provide good information, and can even point to unknown releases. For example chronically leaking valves that have not been recognised as a source of a release may be uncovered if there are “missing” quantities.

It is worth noting here that an annual PRTR does not say anything about the variation in the rate of release that may occur over the year. Some releases may be fairly constant throughout the time period, but many will have different patterns. At its most extreme, a single accidental explosive release may occur within seconds even and be a major part or all of the year’s total. If the date or time

period of a release is important, then it will be necessary to seek more information, such as the original monitoring data (if it exists).

The Protocol does not require authorities to undertake the monitoring or estimation of data for industry. Rather the burden falls to industry to do this job, although data produced for or by regulators already (such as some sort of compliance data) is likely to be useful. This raises the question of the veracity of any data. It is hard to give an absolute assurance of course, but it should be remembered that

- a) the Protocol targets major industries on the whole and it would be hoped they have the expertise to understand their waste streams;
- b) industry gains from its often increased knowledge about its material flows, often finding increased opportunities to save on materials and/or waste disposal;
- c) regulators and/or competent authorities collate the data from industry and are likely to have some knowledge of the regulated facilities;
- d) workers at a facility will also have access to the data and may be in an excellent position to comment on the data from their own facility;
- e) companies will be able to comment on one another's data;
- f) it will be possible to do comparisons across a sector, and indeed from one country to another (although allowance will have to be made for different pollution control technologies that might be in place);
- g) if some sort of production factor (i.e. the activity of the facility) is incorporated in the PRTR it will be easier to judge whether figures given are reasonable; and
- h) the data will inevitably improve from year to year with experience of the system.

This all underlines the importance of stakeholder involvement, discussion, commitment to implementation and the development of a transparent system. It is quite possible that there will be unintentional errors in data in the beginning, both in terms of mistaken calculations by a facility and by simple data entry errors. These become easier to spot as successive years' data accumulates.

The Protocol touches on the issue of quality assurance of data and it is likely that further guidance on this will be produced.



The reporting cycle

A key point is that the PRTR must be nation-wide, so an authority (or multiple authorities as long as they co-ordinate) must be designated to collect the information. The information is to be collected on a calendar year basis and must be then published within 15 months, except in the first instance when two years is allowed. Industries will need to provide the information well ahead of this – preparation, checking and processing the data will take some time. It is up to each country though to set the rules for this.

The PRTR requires *annual reporting*, except after the first round, when it is possible to skip a year.

Thus, if the Protocol enters into force in 2006, the first reporting year will be 2007, and a country will have until the end of 2009 to publish the first report. The second report could be based on 2009 data (to be published by the end of March 2010), then 2010, etc. A country could choose to require reporting for 2008. Some countries already manage to publish in a shorter time scale, but this will partly depend on the scope of the system in place and of course the resources put into the job.

Public accessibility and dissemination

PRTR data is only useful of course when someone looks at it and starts to make comparisons. This not only starts to drive greater understanding of pollution sources, but builds pressure to reduce the quantities and helps set priorities.

Many different groups of the public could be interested in PRTR data: workers, neighbours, students, reseachers, NGOs, investors, the press, industry, local authorities, regulators and policy makers. The Protocol rightly recognises that public access to PRTR data is an essential aspect of such a system. The text is absolutely clear that the PRTR should be “*user friendly and publicly accessible.*”

The Internet has played an increasingly important role in dissemination of existing PRTR systems and the Protocol views “*direct electronic access*” as the primary way of publishing the data. This means that the data should be more or less available 24 hours a day, free of charge, and irrespective of the location of the user, as long as they have access to a networked computer terminal. The Protocol also requires that the information be formatted in such a way that members of the public can easily search for the specific information in which they are interested.

For those that do not have Internet access, Parties must provide information by “*any other effective means*”. Although the NGO coalition would have liked paper extracts to be available free of charge, reasonable costs for copying and mailing can be levied. But in such circumstances the Protocol does require Parties to “*facilitate electronic access ... in publicly accessible locations*” such as in libraries or local authority offices.

A disadvantage between those for whom Internet access is available and those without is apparent. As mentioned above, the use of the Internet and mapping technologies have enabled customised searching for information and have proven to be a particularly powerful way of providing access to information to the public. Interactive programmes can permit users to extract only the information in which they are interested, to sort data as they would like, and to undertake analyses themselves. PRTR data can be searched, sorted and maybe aggregated on a geographic basis, by company name or by chemical for example. Links to ancillary information (for example on the toxic properties of a substance) can help fill in the picture.

Overall, the exact way in which public access is implemented is likely to depend on national circumstances. But governments can be encouraged to develop outreach plans including access to computer networks, the use of information hotlines, press notices and training in how to access and use the data.

Access to justice

The Protocol requires a review procedure to be available to any person who considers that a request for information has been wrongly refused or ignored. It is worth remembering that, for parties to the Aarhus Convention, the article in the Protocol on access to justice (and others that deal with rights) does NOT override the Aarhus provisions. The interaction between the Protocol and the Convention is beyond the scope of this booklet, but, for example, the Aarhus rights (including rights of access to information and right to participate in decision making) will be relevant when Parties to the Aarhus Convention transpose the Protocol.



Public participation

The public are encouraged to be involved in the development of national PRTR systems by the Protocol, but the article on public participation is brief. This is disappointing for a Protocol developed under the auspices of the Aarhus Convention. And even more so given that many if not all practitioners in the world of PRTRs regard stakeholder involvement as a key to successful development and implementation. In our view, NGOs should really insist on public consultation and involvement. It would be very useful for environmentalists to get involved in a country's planning process – for example by sitting on steering groups or advisory committees that meet to assist with the development of national PRTR systems.

Box 3

POTENTIAL USERS OF PRTR DATA

- Neighbourhood community groups and individuals
- Workers and management at industrial facilities
- Pollution abatement companies
- Pollution control and planning authorities
- Local, regional and national government
- Emergency planning services
- School teachers and students
- Investment and insurance analysts
- The press

Confidentiality

The Protocol recognises that there may be some rare situations where the public interest in release of information can be weighed against confidentiality needs of international relations, commercial interests, the course of justice, intellectual property rights, or personal privacy rights. In these cases, public disclosure must be shown to have an adverse effect and the public interest in disclosure must also be taken into account. In addition, it must be indicated that information has been withheld. Thus (in a totally hypothetical example) a register might state that 6.5 kgs of “substance X” was released to air and that substance X is a “an organo-

halogen and possible human carcinogen, a proprietary catalyst". The text of the Protocol states: "...the register shall indicate what type of information has been withheld, through, for example, providing generic chemical information if possible, and for what reason it has been withheld."

Starting points for registers

Existing permit systems and reporting requirements for pollutant monitoring can provide a starting point¹¹. Existing registers created by separate laws for air, water, hazardous waste, toxic substances, pesticides, and emergency planning also can provide a starting point although it is essential to note that they may well need re-organisation. Existing systems are often not linked to each other coherently and may not be organised in such a way as to be searchable by company, industry, substance or geographic area.

Prospects for implementation

The value of PRTRs has been demonstrated many times – in its uses by communities, industrialists themselves, authorities and governments, and NGOs. Yet it is clear that their uptake needs to be accelerated. NGOs, community groups, workers' organisations should all be calling for the establishment of PRTRs as providing essential public information about pollution of our environment and as a tool for better management of toxic chemicals. Implementation will require a lot of work for many countries of course, and NGOs need to be active and keep reminding the governments of the public's interest in pollution reporting.

Towards a more comprehensive PRTR

Here is a brief summary of some issues that did not make it into the final Protocol, even though the NGO coalition argued for their support and their inclusion was debated.

Any country can go further than the Protocol, thus there may be scope for including some of these items in a country's PRTR.

¹¹ It is important to note that monitoring data expressed as a concentration (such as milligrams per litre) which is often used to monitor the performance of a plant is not sufficient for a PRTR. A PRTR reports on the quantity over a period of time, usually a year (e.g. in kilograms).



- ▶ Criteria for helping establish the pollutant list
- ▶ Nuclear sector and radioactive substances
- ▶ Petrochemical storage facilities
- ▶ An indicative list of diffuse sources (e.g. traffic, small- and medium-sized enterprises, agriculture)
- ▶ On-site transfers (i.e. within the boundaries of a facility)
- ▶ Transfers of pollutants through products
- ▶ Storage of pollutants
- ▶ Identification of destinations for *all* of off-site waste transfers
- ▶ An indicative list of databases of information to which a PRTR should be linked, such as radioactive substances, radiation, noise
- ▶ Water use, energy use
- ▶ Resource use (a concept which was not discussed in detail - it could cover individual pollutant use or more economic related resources such as timber, coal, iron ore)
- ▶ Distinction between extraordinary/accidental and routine releases
- ▶ Parent company identification

Box 4

Article 4 of the Protocol



Core elements of a pollutant release and transfer register system

In accordance with this Protocol, each Party shall establish and maintain a publicly accessible national pollutant release and transfer register that:

- (a) Is facility-specific with respect to reporting on point sources;
- (b) Accommodates reporting on diffuse sources;
- (c) Is pollutant-specific or waste-specific, as appropriate;
- (d) Is multimedia, distinguishing among releases to air, land and water;
- (e) Includes information on transfers;
- (f) Is based on mandatory reporting on a periodic basis;
- (g) Includes standardized and timely data, a limited number of standardized reporting thresholds and limited provisions, if any, for confidentiality;
- (h) Is coherent and designed to be user-friendly and publicly accessible, including in electronic form;
- (i) Allows for public participation in its development and modification; and
- (j) Is a structured, computerized database or several linked databases maintained by the competent authority.

Who has signed the Protocol

An encouraging number of countries (36 plus the European Community - listed below) signed the PRTR Protocol at the Environment for Europe Ministerial meeting in Kiev in 2003. Ratification will require a lot of work for many countries and NGOs need to be active and keep reminding the governments of the public's interest in pollution reporting. A simple letter could raise awareness - why not congratulate your government and press for NGOs to be part of an implementation group? If your country is not a signatory, then express your disappointment but note that the Protocol can be joined by any country in the world.

Armenia	Germany	Serbia and
Austria	Greece	Montenegro
Belgium	Hungary	Slovenia
Bosnia and	Ireland	Spain
Herzegovina	Italy	Sweden
Bulgaria	Latvia	Switzerland
Croatia	Lithuania	Tajikistan
Cyprus	Luxembourg	The Former Yugoslav
Czech Republic	Netherlands	Republic of
Denmark	Norway	Macedonia
Estonia	Poland	Ukraine
European Community	Portugal	United Kingdom of
Finland	Republic of Moldova	Great Britain and
France	Romania	Northern Ireland
Georgia		

Throughout the world, a number of countries have established systems - although of varying quality: the Netherlands, Sweden, Norway, Czech Republic, UK, US, Canada, South Korea, Japan, Mexico and Australia have their own national systems or are close. Many of these can be investigated via the Internet and we provide links under "Further Information".



Box 6



The European Pollutant Emission Register

The EU countries have a head start with a pre-cursor to a PRTR system which was established under the Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EEC). This Directive relates to the permitting of industrial and intensive agricultural facilities, and a later Decision 2000/479/EC established a public information tool, the European Pollutant Emission Register (EPER).

EPER lists 50 chemicals and industries caught by the scope of EPER have to report their releases to water and/or to air, but not to land. This means that the EPER inventory is not totally integrated across the media. Transfers are not included. The register is first due to be published internationally in 2004, but individual countries should already have collected the data (mainly for 2002) and it should already be available in individual EU countries.

All the chemicals that are listed under EPER are incorporated into the Protocol and many of the industry categories are the same or similar, so there is much in common between the two instruments. Given that all the EU countries and the European Community have signed the Protocol, EPER should develop into a proper PRTR in line with the Protocol in the future.

1. Activities listed in Annex I of the protocol

This is a summarised list to give an indication of the types of industry that are included in the Protocol. For the exact list and size/capacity thresholds, please consult Annex 1 of the Protocol.

Oil and gas refineries	Paper and board plants
Power stations	Wood preservation plants
Metal and steel works	Intensive pig and sow rearing
Underground and opencast mining	Intensive aquaculture facilities
Cement and lime clinker	Slaughterhouses
Asbestos works	Some food and beverage processing
Glass and ceramic works	Textile treatment
Chemicals production	Tanneries
Fertilizer production	Surface treatment facilities using organic solvents
Pesticides production	Carbon and electrographite production
Pharmaceuticals production	Large shipyards
Explosives and pyrotechnics	
Incinerators and landfills	
Large municipal waste-water treatment plants	

Some facilities that were dropped from earlier drafts of the Protocol, despite arguments for their retention include *nuclear power stations and petrochemical storage facilities*. But these are obvious candidates for inclusion in a national PRTR.

2. Substances listed in Annex II of the Protocol

Methane	Ammonia	Sulphur hexafluoride
Carbon monoxide	Non-methane volatile organic compounds	Sulphur oxides
Carbon dioxide	Nitrogen oxides	Total nitrogen
Hydrofluorocarbons	Perfluorocarbons	Total phosphorus
Nitrous oxide		Hydrochlorofluorocarbons



Chlorofluorocarbons	Endrin	Ethyl benzene
Halons	Halogenated organic compounds (as AOX ¹²)	Ethylene oxide
Arsenic and compounds (as As)	Heptachlor	Isoproturon
Cadmium and compounds (as Cd)	Hexachlorobenzene	Naphthalene
Chromium and compounds (as Cr)	Hexachlorobutadiene	Organotin compounds (as total Sn)
Copper and compounds (as Cu)	1,2,3,4,5,6-hexachlorocyclohexane	Di-(2-ethyl hexyl) phthalate
Mercury and compounds (as Hg)	Lindane	Phenols (as total C)
Nickel and compounds (as Ni)	Mirex	Polycyclic aromatic hydrocarbons (PAHs)
Lead and compounds (as Pb)	PCDD +PCDF (dioxins +furans)	Toluene
Zinc and compounds (as Zn)	Pentachlorobenzene	Tributyltin and compounds
Alachlor	Pentachlorophenol	Triphenyltin and compounds
Aldrin	Polychlorinated biphenyls (PCBs)	Total organic carbon (TOC)
Atrazine	Simazine	Trifluralin
Chlordane	Tetrachloroethylene	Xylenes
Chlordecone	Tetrachloromethane	Chlorides (as total Cl)
Chlorfenvinphos	Trichlorobenzenes	Chlorine and inorganic compounds (as HCl)
Chloro-alkanes, C10-C13	1,1,1-trichloroethane	Asbestos
Chlorpyrifos	1,1,2,2-tetrachloroethane	Cyanides (as total CN)
DDT	Trichloroethylene	Fluorides (as total F)
1,2-dichloroethane	Trichloromethane	Fluorine and inorganic compounds (as HF)
Dichloromethane	Toxaphene	Hydrogen cyanide
Dieldrin	Vinyl chloride	Particulate matter (PM ₁₀)
Diuron	Anthracene	
Endosulphan	Benzene	
	Brominated diphenylethers	
	Nonylphenol ethoxylates and related substances	

12 AOX stands for "adsorbable organohalogens".

examples of activities

Central and Eastern Europe:

Regional Environmental Centre plans to support the early implementation of the PRTR Protocol

One of the priorities of the REC activities has been to give support to the development of the new Protocol on PRTRs in the past two years. This work has been funded by the Ministry of Housing, Physical Planning and the Environment of the Netherlands and the Royal Ministry of Environment of Norway, who are thanked for their support.

After its adoption at the Kiev "Environment for Europe" Conference, the focus of the REC activities is now to support both the early implementation of the Protocol and further work on issues which could not be accommodated at this stage by the UNECE Working Group. This includes issues such as on-site transfers, storage, expanded reporting on diffuse sources, waste-specific reporting of transfers and harmonisation of the approaches between the European and other PRTR systems.

The REC has organized a series of round table meetings to provide a forum for dialogue among stakeholders in nine accession and six Southern European countries. These informed participants about the content of the Protocol, gained feedback from them and made a contribution to the discussion on the future ratification and implementation of this instrument. Also, pilot projects have been initiated and started in Bulgaria, Czech Republic and Poland and are planned in Slovakia and Hungary. These aim to help develop national PRTR systems, to discuss the strategies to implement these registers in harmony with the PRTR protocol as well as the requirements of European Union directives. These small projects support awareness-raising, information sharing and involvement of NGOs and other stakeholders, initiate and facilitate discussions of needs, steps, measures and strategies leading to the establishment of such systems. Regional workshops have been



organized to share the expertise and experience with countries which have mature PRTR systems in place and with experts of different international organizations such as UNECE, OECD and UNITAR which have experience in PRTR matters.

The experiences and recommendations for strategies to establish PRTR systems in CEE countries have been summed up in a report "Developing and Implementing Integrated Pollutant Release and Transfer Registers in the Accession Countries of Central and Eastern Europe". This was distributed in the Kiev Conference and is available at the web site of the REC at:

<http://www.rec.org/REC/Publications>.

With thanks to Magda Toth Nagy (Head of Public Participation Programme), Regional Environment Centre, Szentendre, Hungary

PTRs in Russia and the NIS region

Extensive industrial development in the USSR has led to continuing environmental pollution in many Newly Independent States. Some regions suffer from nuclear contamination as well as chemical pollution. People's health is affected by a variety of sources: the nuclear industry, chemical enterprises, metallurgical plants, incinerators, etc. Radioactive pollution and its influence on people's health has been well investigated, but knowledge of chemical contamination, including by persistent organic pollutants, and the health risks has many gaps.

Development and establishment of pollutant release and transfer registers (PTRs) in the NIS will be an important step towards environmental improvement in the region. Some initial projects have begun to analyse PTR data together with health information.

Countries with economies in transition, especially smaller ones, will need help in implementing the Protocol. This could be in terms of financial support and information exchange, but also support for public awareness and training campaigns to encourage the establishment and use of PTR data in the NIS. In the meantime, quite small-scale pilot projects (even on a scale which could be initiated by NGOs and/or local authorities) can help stimulate ideas and enthusiasm.

A number of countries in the NIS have decided to start pilot projects on PTRs. They are Kazakhstan, Russia, Ukraine and Uzbekistan. Progress has been made in Ukraine, Uzbekistan and Russia where workshops and/or pilot projects in certain localities are under way.

Further PTR development in Russia

Although Russia has not signed the PTR Protocol, work on PTRs is underway at a regional level with some international agency support. Nine pilot regions have declared their desire to develop regional PTRs, and work has begun in the Astrakhan region, Volgograd region, Perm, St. Petersburg and Arkhangelsk region. Samara, Irkutsk, Cheliabinsk and Ekaterinburg regions are also interested.



The activity is co-ordinated by the Centre of International Projects (CIP), along with UNEP-Chemicals and with participation of representatives of environmental and public health ministries and agencies, and regional administrations.

Volgograd city has a pilot project partly because NGOs have been very active in establishing a PRTR system. A leading role has been played by Volgograd-ECOpress. They initiated the development of publicly available data for a chemical enterprise called "KAUCHUK", a major polluter in the city. Other major sources of emissions have now been identified in the region, along with a list of the polluting chemicals.

The project has also considered emissions from vehicles, land contamination by ferrous metallurgical installations, and pesticide pollution of soils. A PRTR of agricultural lands was developed in one area in the vicinity of Volgograd city and Voljsky town. The PRTR includes reporting on the presence of mineral fertilizers, persistent organic pollutants, and heavy metals. Pesticide levels in soil and vegetables are also being determined as an additional source of information. These may develop into environmental contamination maps and be a useful adjunct to PRTR data.

St. Petersburg has identified and listed major sources of emissions (motor transport, industrial enterprises), prepared an index of chemicals polluting the territory of the city and done a quantitative assessment of emission levels for air pollutants.

The **Perm region** has developed a computer version of a PRTR already, including data on the emissions of hazardous mixtures into air and on sewage. In addition, a database for the calculation of the possible impact zones of energy facilities has been developed. Future plans include harmonising the PRTR with PRTR in other regions and to improve the PRTR software and databases, and to use the information to help underpin decision-making.

The **Astrahany region** project has looked at major point sources for air emissions, listed enterprises for the PRTR, listed the pollutants and considered pollution from major motorways. It has also

considered the quantities of dangerous air pollutants from industrial, agricultural and municipal sources. A comparative analysis of atmospheric pollution and child morbidity has also been prepared.

The most contaminated territories of the **Arkhangelsk region** have been identified (Arkhangelsk, Nvodvinsk, Severodvinsk, Koriajmu). There is great need for a PRTR in the region for a number of reasons. There has been an increase in industrial production and its impact on the environment, and a great amount and range of pollutants are released. There is no systematic approach for collecting and analysing information on pollutant releases and transfers, with no unified database on pollutants yet a variety of diverse sources of information on the quality of the environment.

Major point sources for pollutant emissions into the air have been determined (pulp and paper mills, heat electric power stations, construction enterprises, transport), along with a list of polluting chemicals. In addition, a comparative analysis of atmospheric pollution and people's health has been prepared.

With thanks to Olga Speranskaya, ECO Accord, Moscow, Russia



further information

The United Nations Economic Commission for Europe web pages on the PRTR Protocol include the text of the Protocol (so far in English, Russian and French). Unofficial translations into other languages are also likely to become available.
<http://www.unece.org/env/pp/prtr.htm>

UNITAR (United Nations Institute for Training and Research) (2003). *National Pollutant Release and Transfer Register Capacity Building Library: A Compilation of Resource Documents* (2nd Edition, 2003).

This is an extensive collection of documents on PRTRs, and links to other relevant websites are also provided. It is available on CD or on-line.
<http://www.unitar.org/cwm/prtrcd/index.htm>
Alternatively, the CD is available from: Jorge Ocaña <cwm@unitar.org>

UNITAR is also developing a "virtual classroom" tool to help support national efforts to implement the PRTR Protocol.
<http://www.unitar.org/cwm/b/prtr/vr.htm>

OECD (1996): *Pollutant Release and Transfer Registers: Guidance Manual for Governments* (OCDE/GD(96)32).

This is a key document which was produced in conjunction with a series of international multi-stakeholder meetings, including representatives of government, industry and NGOs. OECD has also produced a number of other documents on PRTRs. The guidance manual is available at:
[http://www.oelis.oecd.org/olis/1996doc.nsf/LinkTo/ocde-gd\(96\)32](http://www.oelis.oecd.org/olis/1996doc.nsf/LinkTo/ocde-gd(96)32) (English)
<http://www.oecd.org/dataoecd/18/30/1901146.pdf> (Russian)

The OECD also has an important programme under way concerning release estimation techniques.
http://www.oecd.org/document/11/0,2340,en_2649_34411_1913419_1_1_1_1,00.htm

National PRTR systems

Australia: National Pollutant Inventory

<http://www.npi.ea.gov.au>

Canada: National Pollutant Release Inventory

http://www.ec.gc.ca/pdb/npri/npri_home_e.cfm

England and Wales: Pollution Inventory

http://216.31.193.171/asp/1_introduction.asp

Japan

<http://www.prtr.nite.go.jp/english/summary2001.html>

The Netherlands: Datawarehouse Emission Inventory

<http://dm.milieumonitor.net/en/index.htm>

Norway

<http://www.sft.no/bmi/> [which has a link to pages in English]

Scotland

<http://www.sepa.org.uk/data/eper/mainpage.htm>

Sweden

<http://www.naturvardsverket.se/prtr/>

United States: Toxics Release Inventory

<http://www.epa.gov/tri/>

North America - Commission for Environmental Cooperation (CEC). Their "Taking Stock" report is a compilation of comparable PRTR data from Mexico, the United States and Canada.

<http://www.cec.org>

The US states of New Jersey and Massachusetts collect extra information on inputs of chemicals and on chemicals in products.

Massachusetts:

<http://www.turi.org/turadata/WhatsTURA/OverviewOfTURA.html>

New Jersey: <http://www.nj.gov/dep/enforcement/rppr-summary.htm>



Other sites

The "Scorecard" web site of the NGO Environmental Defense allows a great range of queries of US Toxics Release Inventory data and other databases. It has an extensive database of information on specific chemicals, uses lots of graphic comparisons and is well worth exploring.

<http://www.scorecard.org>

The Working Group on Community Right-to-Know supports a network of right-to-know advocates with an inspiring record of community activism in the US.

<http://crtk.org/index.cfm>

Silicon Valley Toxics Coalition and Clary-Meuser Research Network web site has many links to PRTRs, related data and research projects.

<http://www.mapcruzin.com/globalchem.htm>

The Regional Environmental Centre for Central and Eastern Europe (REC-CEE) have a Public Participation Programme which has made substantial contributions to the discussion on PRTRs in the CEE region.

<http://www.rec.org/REC/Programs/PublicParticipation.html>

In the Czech Republic, the Pilsen Environmental Foundation provide pages on PRTRs in English and Czech.

<http://www.ecn.cz/prtr/index.stm>

