

Canada's Green Plan and the National Pollutant Release Inventory

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ABSTRACT

In August of 1990, Canada adopted the Green Plan, which is a governmentwide initiative aimed at solving our environmental challenges effectively. This plan commits \$3 billion in new funds over six years — in addition to the \$1.3 billion the government of Canada already spends annually on the environment. One section in the Green Plan states that the government will develop a national database for hazardous pollutants being released from industrial and transportation sources. Reporting requirements for industry will be established by 1992, with the first reports scheduled for public release no later than 1994. Environment Canada has decided to use the U.S. Environmental Protection Agency's Toxics Release Inventory as a model, making the necessary changes to adapt it to a Canadian context. The design of this National Pollutant Release Inventory and the reporting criteria will be determined by consulting with the provinces, territories, and other stakeholders.

We have a picture on the wall at Environment Canada that shows a young girl holding the world globe, and although it has few words, it says a great deal. It represents the two most important things in our lives: our children and our environment. There is no question at all that, if we continue contaminating our planet at the same rate as the past couple of decades, we will not only destroy the quality of life, but most likely life itself. Pollution prevention has to be a top priority, and it must transcend all political barriers, cultural differences, and economic constraints.

Every day we wait in taking preventative measures, we are getting two days further away from the cure. Metaphorically speaking, we're on a runaway train speeding downhill toward certain environmental destruction. Not only are we polluting our air, land, and water with very dangerous, persistent chemicals, but also by clear-cutting our forests, destroying the protective ozone layer, causing global warming, and using

the ocean as garbage dumps, we are destroying the earth's natural ability to cleanse itself. We must deter the industrial nations from their irresponsible polluting activities, and we must help the developing nations jump into the 21st century by supplying aid in the form of state-of-the-art, pollution-eliminating technologies. Instead of tearing around wildly, spending the taxpayers' money on random bits of pollution control to appease the most prominent and noisiest environmentalists, we must first provide some benchmarks from which to establish meaningful controls and measure the effectiveness of our work. A release database similar to the United States' Toxics Release Inventory (TRI) can provide these benchmarks.

Canadian Environmental Protection Act

Canada recognized that the issue of pollution prevention was of prime importance and, on June

28, 1988, the Canadian Environmental Protection Act (CEPA) was assented to by the Canadian government. This act gives the government power to protect human health and the environment from the risks associated with the use of chemicals and from exposure to toxic substances. Under CEPA, Environment Canada is responsible for assessing substances for their impact on the environment and for recommending appropriate restrictions or limits on their use to prevent harm. Health and Welfare Canada is responsible for assessing substances for their potential impact on human health and for recommending appropriate controls on their use. When the assessments indicate a significant risk, the two departments recommend controls or prohibitions on the use of the substance. The government can order immediate action if necessary, and controls may govern any and all aspects of the life cycle of a toxic substance.

The regulations developed under CEPA are designed to control toxic substances in the following broad categories:

- **Existing chemicals** are defined by the Domestic Substances List or DSL.
- **Priority substances** (PSL) are those existing chemicals that must be assessed before February 11, 1994.
- **Toxic substances** (or those deemed toxic through assessment) are those existing chemicals already scheduled in CEPA for regulatory action.
- **New substances** are those that do not yet appear on our Domestic Substances List.

Domestic Substances List

The Domestic Substance List names all the chemicals used in Canada as of January 15, 1990. Industries that develop new chemicals in Canada or who import new or different chemicals have to apply to the federal government to have them added to the DSL and provide enough data for their assessment by Environment Canada and Health and Welfare Canada. This process is designed to control chemicals used in the Canadian environment and to prevent highly toxic or persistent chemicals from entering the country.

Companies were obliged to report all chemicals used if they wanted them to appear on the Domestic Substance List. Now, if a company

eliminates one of its chemicals (and happens to be the only company reporting that chemical), then the substance will be removed from the Domestic Substance List and anyone wanting reinstatement of that chemical on the Domestic Substance List must go through the same procedure described for new chemicals. For this reason, there was a real incentive for the companies to make sure they were identified as users of specific chemicals.

Priority Substances List

The Priority Substances List (PSL) (Table 1) identifies which of the approximately 21,700 substances on the Domestic Substance List most urgently require assessment for their effect on human health and the environment to determine if they should be placed on the List of Toxic Substances. A substance was selected for this list if it met at least one of the following three criteria:

1. The substance causes or has the potential to cause adverse effects on human health or the environment.
2. The substance accumulates or could accumulate to significant concentrations in air, water, soil, sediment, or tissue.
3. The substance is or may be released into the environment in significant quantities or concentrations.

List of Toxic Substances

Canada has a rather lengthy process for dealing with potentially toxic substances (Fig. 1). The substance must first be identified and assessed before a report on the technical methods of control will be made public. If a regulation is the preferred option for controlling the substance, the regulation is drafted. The initial draft is made public, often through meetings that bring together groups, organizations, or persons with an interest in these issues. The process allows public review and involvement at every stage, ensures careful examination of the options, and documents the social and economic effects of compliance. Table 2 gives the List of Toxic Substances and applicable regulations (Schedule I, sections 13, 33 to 37).

Under the Canadian Environmental Protection Act, polluters can be fined up to \$1 million a day or more if they profited from their activities. Corporate officials can also be punished if they authorize or participate in activities that violate

Table 1.—The Priority Substances List.**GROUP 1**

Arsenic and its compounds
Benzene
Effluents from pulp mills using bleaching
Hexachlorobenzene
Methyl tertiary-butyl ether
Polychlorinated dibenzodioxins
Polychlorinated dibenzofurans
Polycyclic aromatic hydrocarbons
Waste crankcase oils

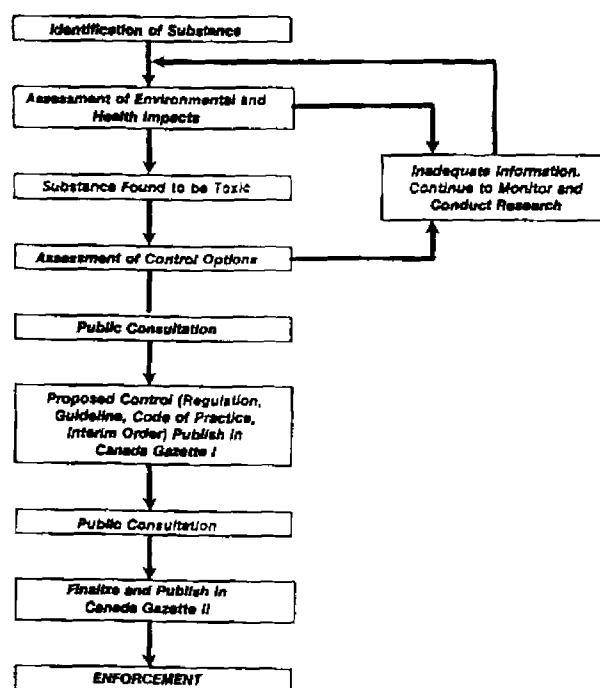
GROUP 2

Cadmium and its compounds
Chlorinated wastewater effluents
Chlorobenzene
Chromium and its compounds
Creosote-impregnated waste materials
Dibutyl phthalate
1, 2-Dichlorobenzene
1, 4-Dichlorobenzene
1, 2-Dichloroethane
Dichloromethane
Di-n-octyl phthalate
bis (2-Ethylhexyl) phthalate
Inorganic fluorides
Nickel and its compounds
Pentachlorobenzene
Styrene
Tetrachlorobenzenes
1, 1, 2, 2-Tetrachloroethane
Tetrachloroethylene
Toluene
Trichlorobenzenes
1, 1, 1-Trichloroethane
Trichloroethylene
Xylenes

GROUP 3

Aniline
Benzidine
Chlorinated paraffin waxes
bis (2-Chloroethyl) ether
bis (Chloromethyl) ether
Chloromethyl methyl ether
3, 3-Dichlorobenzidine
3, 5-Dimethylaniline
Methyl methacrylate
Mineral fibers
Organotin compounds (non-pesticidal uses)

About one third of the priority substances are families of chemicals or effluents, each comprising up to several hundred substances. Dioxins, furans, pulp mill effluents, arsenic, benzene, hexachlorobenzene, polycyclic aromatic hydrocarbons (PAHs), methyl tertiary-butyl ether, and waste crankcase oils are the nine substances slated for earliest assessment.

**Figure 1.—Procedure for assessing substances for regulatory control.**

this act. Anyone who is or may be affected by offenses under CEPA or its regulations can seek an injunction. Any two Canadians can petition the minister of the environment to investigate any offense.

The Green Plan

In December 1990, the Canadian federal government launched its environmental action plan — the Green Plan. The most important environmental action plan ever produced in Canada, it is the source for more than 100 important and well-funded initiatives over the next six years and a comprehensive plan that deals with the environment as interrelated and whole. In addition to the \$1.3 billion Canada already spends annually on the environment, the Green Plan commits an additional \$3 billion in new funds over six years (Table 3).

The Green Plan provides definite targets and schedules that will drive environmental initiatives within federal jurisdictions for years to come and will form the basis on which Canadians can judge our overall performance. This plan has implications to go beyond Canada's borders. The tools we develop and programs we implement will make a contribution to global environmental health in this critical decade of the 1990s.

Table 2.—List of Toxic Substances—Schedule I (sections 13, 33 to 37).

COLUMN I NAME OR DESCRIPTION OF SUBSTANCE	COLUMN II TYPE OF REGULATION APPLICABLE
Chlorobiphenyls that have the molecular $C_{12}H_{10-n}Cl_n$ in which "n" is greater than 2	(a) Prohibited commercial, manufacturing, or processing uses (b) Maximum concentrations in products (c) Maximum quantities and concentrations that may be released into the environment
Dodecachloropentacyclo [5.3.0.0 ^{2,6} .0 ^{3,9} .0 ^{4,8}] decane	Prohibited commercial, manufacturing, or processing uses
Polybrominated biphenyls that have the molecular formula $C_{12}H_{10-n}Br_n$ in which "n" is greater than 2	Prohibited commercial, manufacturing, or processing uses
Chlorofluorocarbon: totally halogenated chlorofluorocarbons that have the molecular formula $C_nCl_xF_{(2n-x)}$	Prohibited commercial, manufacturing, or processing uses
Polychlorinated terphenyls that have a molecular formula $C_{18}H_{14-n}Cl_n$ in which "n" is greater than 2	Prohibited commercial, manufacturing, or processing uses
Asbestos	Limited atmospheric releases from asbestos mines and mills
Lead	Limited atmospheric releases from secondary lead smelters
Mercury	Limited atmospheric releases from chlor-alkali mercury plants
Vinyl chloride	Limited atmospheric releases from vinyl chloride and polyvinyl chloride plants

Table 3.—Green Plan resources (over six years).

I. Life's Three Essentials: Clean Air, Water, and Land	\$850 million
II. Sustaining Our Renewable Resources	\$350 million
III. Our Special Spaces and Species	\$175 million
IV. Canada's Unique Stewardship: The Arctic	\$100 million
V. Global Environmental Security	\$575 million
VI. Environmentally Responsible Decisionmaking	\$500 million
VII. Starting in Our Own House	\$275 million
VIII. Emergency Preparedness	\$175 million
TOTAL	\$3 billion

Two major themes are woven throughout the Green Plan: sustainable development and the benefit of partnerships. Sustainable development is described, in general, as activity in which the environment is fully incorporated into the economic decisionmaking process as a forethought, not an afterthought. It holds that resources must be treated on the basis of their future as well as present value. That approach offers genuine hope of economic development without environmental decline.

This plan was born out of an extensive national multi-stakeholder consultation process: 41 information sessions and 17 consultation sessions were held in towns and cities from coast to coast. The process culminated in 1990 with a two-day national wrap-up session in Ottawa.

The Green Plan represents the unique efforts and commitment of men and women of Canada from every sector of society working together, as partners, in national environmental decisionmaking. Clearly, only by strengthening existing partnerships (such as those developed and solidified during the Green Plan consultation process) and by forming new partnerships will we truly achieve sustainable development.

The National Pollutant Release Inventory

One section of the Green Plan calls for Canada "to develop a better understanding of the nature and quantity of toxic substances being released in Canada," and to this end, "the government will develop a national database for hazardous pollutants being released from industrial and transportation sources." It also states that "the reporting requirements for industry will be established by 1992 with the first report scheduled for public release by the end of 1994."

We were very impressed with the work done by the U.S. Environmental Protection Agency (EPA) and decided that Canada's database, which will be called the National Pollutant Release Inventory (NPRI), will be modeled after the Toxics Release Inventory (TRI). To obtain the maximum amount of exposure and public or industry input during the development of its NPRI, Canada has again decided to use a nationwide multi-stakeholder consultation process to determine the details of the reporting format.

We visited EPA's facilities in Washington, D.C., and were given detailed presentations on the different activities involved in collecting, compiling, and publishing release data. TRI's list of chemicals has remained basically unchanged since the program was started and only a few data handling procedures have been modified slightly. Although we're just beginning to work on Canada's National Pollutant Release Inventory, we will benefit tremendously from EPA's experiences with its TRI.

However, the structure of Canada's NPRI will differ from the United States' TRI. In the United States, Congress specified several of the parameters of the TRI, including the industrial sectors

from which the reports would be obtained, the list of chemicals, and the threshold reporting limits. Initially, about 320 chemicals and 20 chemical categories were specified for investigation, and only industrial facilities with activities falling within the U.S. Standard Industrial Classification (SIC) codes 20 to 39 were required to report. The threshold reporting requirements for chemical use were specified at 75,000 and 50,000 pounds for the first two years, respectively, and then were fixed at 25,000 pounds starting in the third year.

If we look at the same group of industries in Canada and set our threshold reporting criteria at 10,000 kilograms (22,000 pounds) instead of the United States' 25,000 pounds, then we can expect to receive close to 2,000 reports. This compares to about 85,000 reports collected by EPA in 1990.

In trying to estimate the expected number of reports in Canada, we compared the Domestic Substances List to the chemicals covered by the TRI and discovered that only about half (160) of these chemicals show up in Canada. Not only were the companies asked to identify specific chemicals for the Domestic Substance List, but also they had to indicate a usage range for the different chemicals. Figure 2 shows the number of

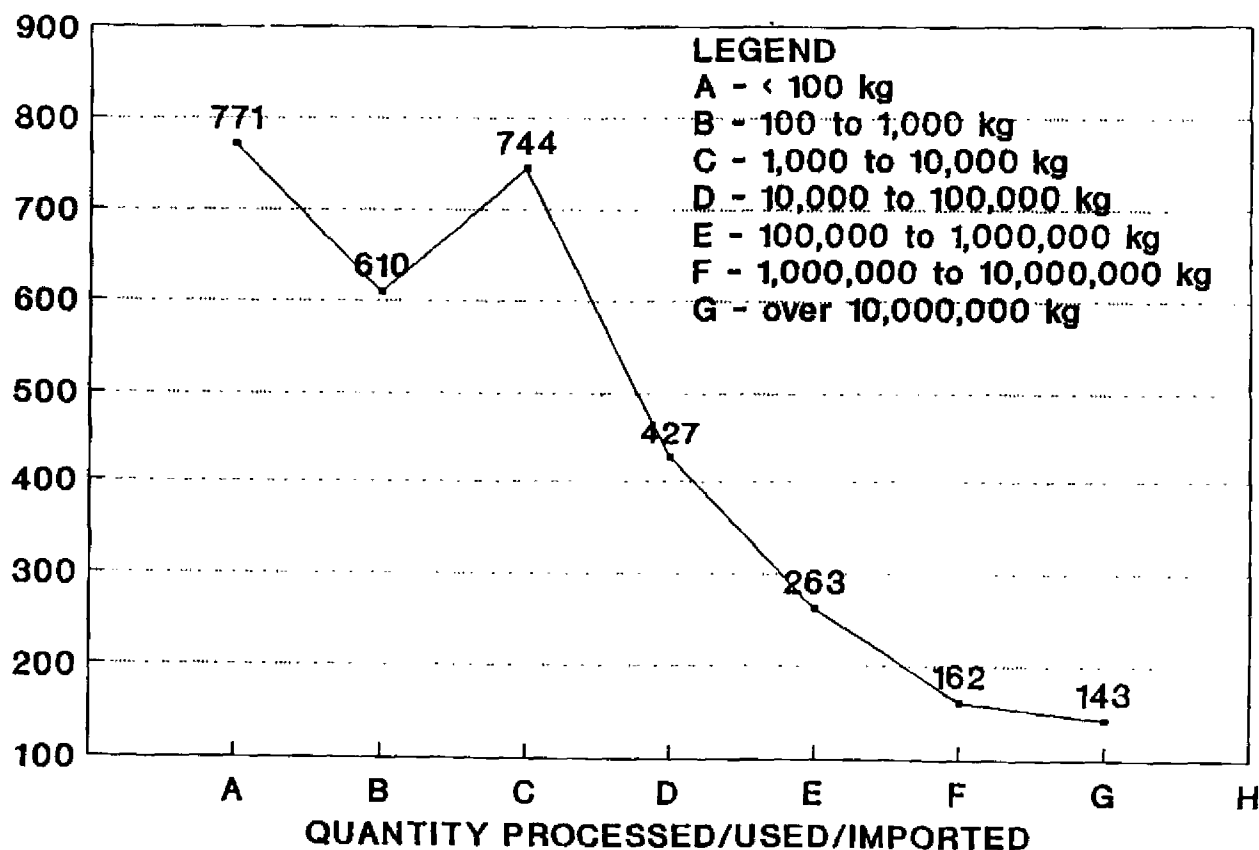


Figure 2.—Domestic Substances List records showing number of reports in different categories.

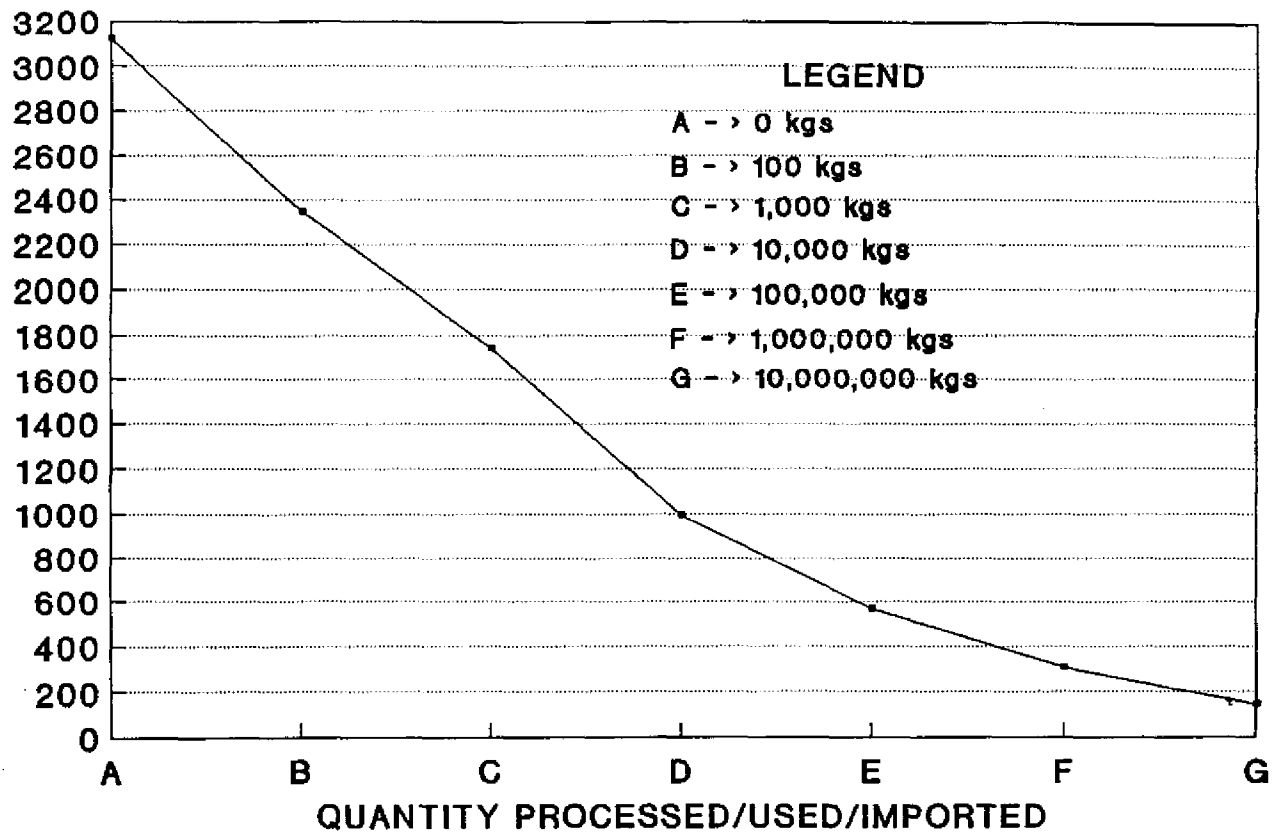


Figure 3.—Number of reports for TRI chemicals found in Canada.

facilities reporting in the different categories. Figure 3 illustrates the total number of reports versus different threshold reporting criteria.

We assumed that all quantities reported were equal to the median of their respective groups and produced Figure 4, which shows the expected percentage of release data captured versus an increasing threshold reporting criteria. As mentioned above, we intend to use a reporting threshold of 10,000 kilograms, which, as you can see from this last graph, will enable us to obtain reports on a high percentage of the total releases.

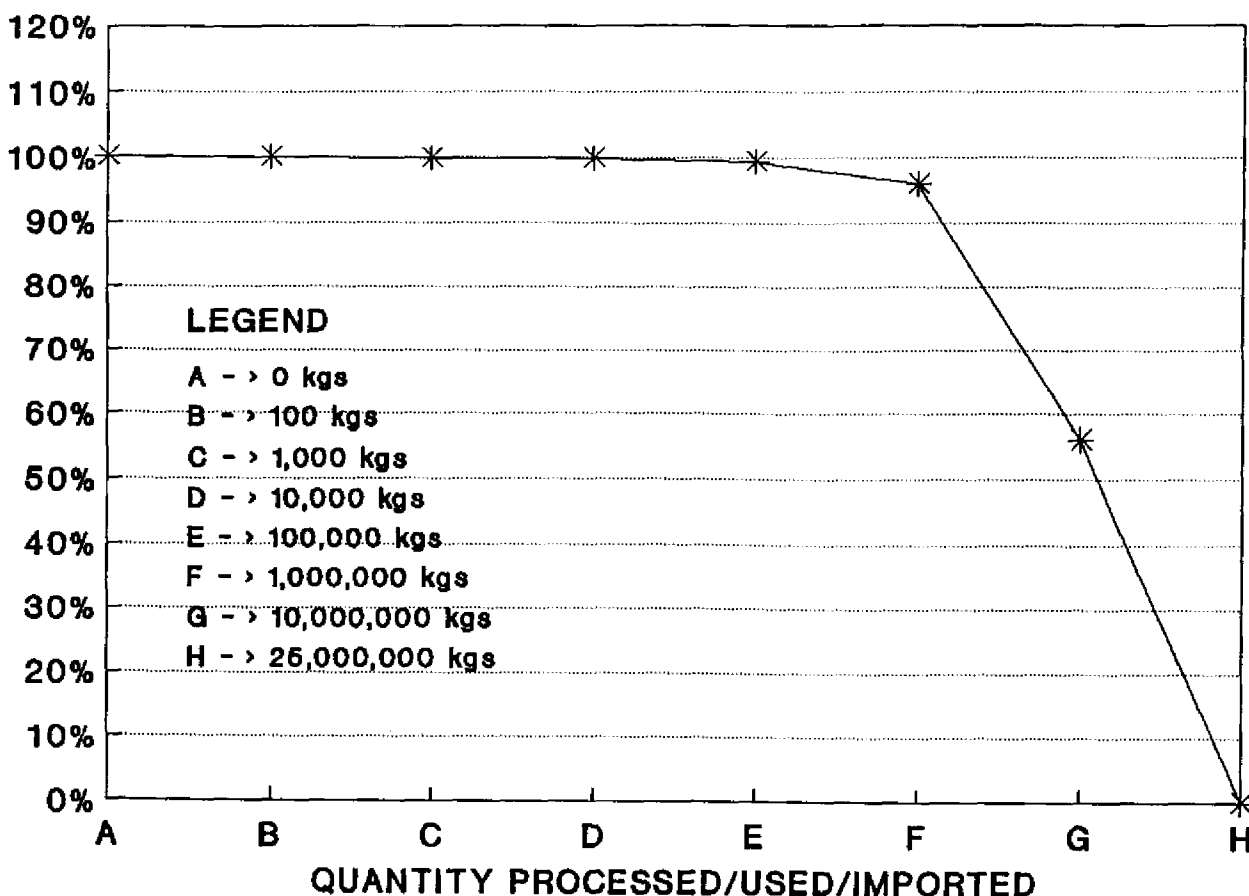
In spite of the fact that we are required to collect data from the transportation sector, as specified in the Green Plan, we will still have a relatively low number of reports to process and therefore will be able to look at a broader list of chemicals or other industrial sectors, such as mining, agriculture, or forestry.

Setting Up the NPRI

In trying to take advantage of the consultation process, an initial scoping was held with a limited number of stakeholders from various sectors. At

this meeting, we decided that the best way to proceed would be to form a steering committee of 15 to 20 members made up of representatives of stakeholder groups, such as health, industry, environmentalists, and labor. Their mandate is to advise and assist in the development of the essential information and analysis necessary to set up Canada's National Pollutant Release Inventory and identify any varying opinions among the stakeholders regarding the design of this NPRI.

This steering committee will meet about five times over the course of 1992 and, if necessary, will designate smaller working groups to deal with specific issues. During this consultation process, a series of nationwide information sessions will be held to present the NPRI work to the stakeholders. Following the information sessions and most of the steering committee meetings, one or two consultation workshops will be held where the stakeholders can discuss the design of the NPRI. At these meetings, stakeholders will be asked to validate the steering committee's recommendations and try to resolve any outstanding issues. Associations and networks will be invited to select participants to represent them at the workshop.



BASED ON 1988 DATA

Figure 4.—Data collection effectiveness.

As a starting point, we will use TRI with very few modifications and present this to the committee for their consideration. We fully expect that our steering committee will recommend that we add other chemical substances to the TRI list and expand into other industrial sectors with our reporting requirements.

We are presently mailing information on the NPRI to about 1,800 environmental and 100 industrial associations. We also will try to contact as many of the industries as possible that may be required to report under the NPRI requirements. We hope to take advantage of the work done by EPA on its Toxics Release Inventory.

Conclusion

I would like to stress the importance of having a database like TRI. It is a tool that can be used as a pointer to identify hotspots or areas that merit our attention or as a benchmark or reference point for further investigation or regulation. Environmental agencies and public interest groups can use the data to encourage facilities to cut back on pollutant releases. These data will be used to help reduce toxic emissions and, in Canada's case, help implement our Green Plan goal of a healthy environment and a sound, prosperous economy.