Air Quality and the TRI

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ABSTRACT

The Office of Air Quality Planning and Standards, charged with implementing most stationary source regulations under the Clean Air Act, has used the Toxics Release Inventory for many purposes, most recently as a focal point for the debate over development of the list of 189 chemicals called for by the newly amended Clean Air Act. The staff have also employed the TRI to identify industry sectors that need additional regulation and guidance and to choose corporations to work with to voluntarily reduce emission levels. In the future, the staff will use these data to further develop office priorities.

Introduction

Chemical toxics. They can be found in improperly treated sewage wastewater, in stormwater runoff from farms and fertilized lawns, in emissions from chemical plants, and in automobile exhausts. No matter where it comes from, however, toxic pollution is a potentially deadly problem. The U.S. Environmental Protection Agency (EPA) has always worked aggressively toward eliminating toxics in the United States; the Office of Toxics Substances' accomplishments with the Toxics Release Inventory (TRI) affirms the importance of our activities.

Once, toxic problems were believed to be confined to industrial areas, but current research proves that the threat of contamination is much more pervasive. The TRI has presented opportunities within EPA by providing a powerful tool; the Office of Air and Radiation has turned those opportunities into action. We've used the data to build a clear picture of the toxics of most concern in our nation and pinpoint the sources of those toxics.

Picture a jigsaw puzzle that depicts the total of all the air toxics emissions in the United States. Some of the pieces are large and easy to pick out, such as a chemical manufacturing facility; others, such as the misapplication of pesticides by a farmer, are small and harder to locate. It takes all the pieces to complete the puzzle, but the only way to do that is one piece at a time. The Toxics Release Inventory, which provides us with information on 300 individual chemicals in 20 chemical categories, adds many pieces to our air toxics puzzle.

In the United States in recent years, the importance of air toxics control has grown immensely in the eyes of the public. One reason is the accidental release of air toxics in Bhopal, India; another is the publication of the TRI data, which has attracted attention from government officials, industry, environmentalists, and the media. That attention has given EPA's air quality staff momentum and enabled use of the TRI information to target reductions in air emissions of hazardous air pollutants.

Sources of Air Toxics in the United States

Sources of air toxics can be broken down into three categories: industrial point sources, area sources, and accidental releases. The latter are potentially the most serious, as we saw in Bhopal, India, but as the word "accident" suggests, do not lend themselves to the use of a database for regulatory purposes. Area sources, such as the misapplication of pesticides or the release of chemicals by a dry cleaning operation, are the sum total of many small sources that singly may not present a high risk but coupled together, present an unacceptable risk.

Those nonpoint sources are important, but they are not usually as great a risk as the multitude of identifiable point sources in the United States. A point source is a single source of air pollution that is definable. An example would be a manufacturing plant. The TRI has identified 1.7 billion pounds of toxic chemicals that were released to the air from point sources in 1989.

The Role of the TRI in Developing the Clean Air Act

Air emissions comprise about 42 percent of the total releases and transfers tracked by TRI from 1987 to 1989 (Fig. 1) — twice as much as any other category in the entire database and almost half of the whole total. By gathering that information, coupled with estimates of the risk involved, the United States has two more pieces of the puzzle and can establish priorities.

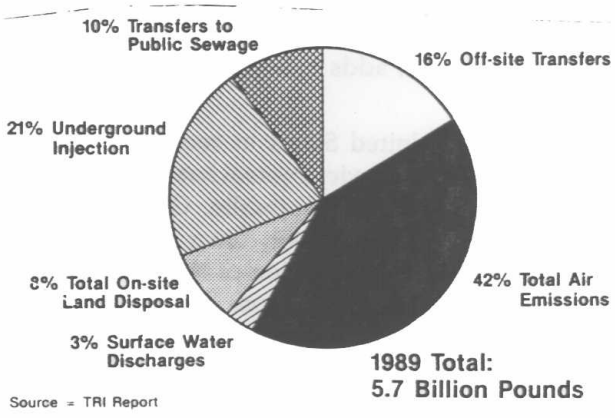

Figure 1.—TRI chemicals: environmental distribution of releases and transfers, 1987–89.

The TRI database helps us plan and delineate where we as a nation will place our resources and efforts and allows us to track our progress. In effect, it helps us keep track of the size of the puzzle.

The TRI data also provide us with much needed information on which toxic air pollutants each industry is contributing to the problem and how much each year. Figure 2 shows the various industries and the amount of air toxic emissions produced by each. EPA's Air Quality Office is developing better control techniques guidance for some of the industries, such as printing and the wood furniture coatings, and has assembled workgroups (called "clusters") to address them from a cross-media perspective.

The petroleum industry is one such cluster where Air Quality and other Agency offices are combining data and resources to reduce emissions to air, land, and water. Another industry being examined from a joint perspective is the pulp and paper manufacturers. TRI is one of the tools the Agency staff use to develop the complete picture of where the industry is located, how much pollution results, and how best it can be be controlled or prevented. Furthermore, EPA can take a look at specific chemicals being emitted in large quantities, information that helps determine priorities.

Currently, Air Quality is looking at hydrochloric acid, chloroform, ethylbenzene, acetaldehyde, and other chemicals as a result of the amended Clean Air Act (Fig. 3). The TRI was one source of information used by congressional staff to develop a list of 189 toxic chemicals that was included in the revised air toxics provisions.

CEO Voluntary Reductions

In March 1989, EPA published the first TRI reports. By providing the information in a format easily understood by the American public, the Agency created a powerful tool. We put a piece of the air toxics puzzle into the hands of everyone who was interested, and some Americans began using the data to assess air toxic problems in their community.

Zeroing in on cleaner air in 1989, Congressman Henry A. Waxman used the information to create public interest in air toxics issues. Representing California, one of our states with the most serious air pollution problems, Waxman

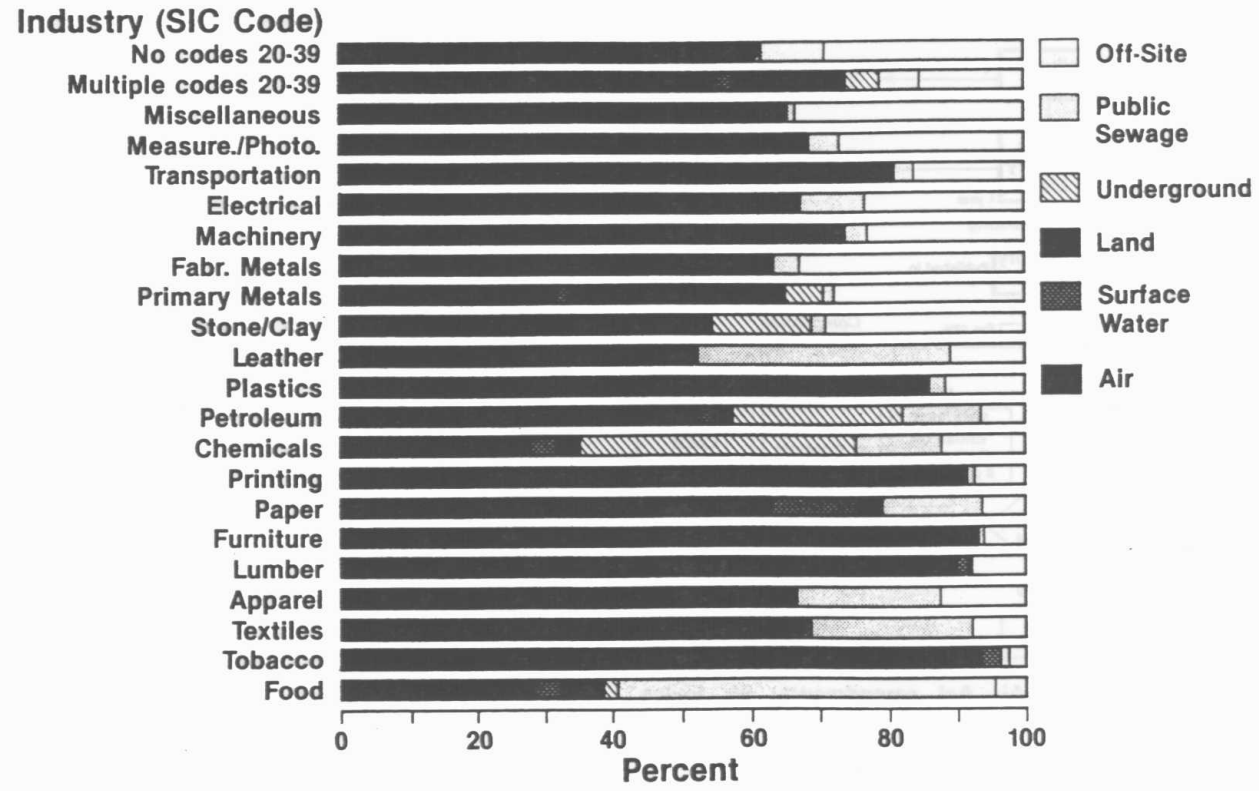

Figure 2.—The environmental distribution of TRI releases and transfers of each industry, 1989.

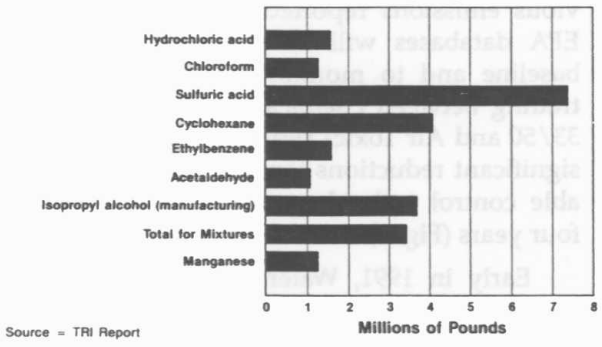

Figure 3.—Increases in emissions to air greater than one million pounds, 1988–89.

was later instrumental in amending the Clean Air Act.

As a result of the attention Congressman Waxman drew to the amount of air toxics produced by various industries, EPA Administrator William Reilly initiated a project for the Office of Air Quality Planning and Standards: to persuade the chairmen of 25 prominent United States corporations to participate in a voluntary, cooperative effort to reduce their industry's toxic emissions. The group was then narrowed to nine chief executive officers (CEOs) representing 40 of the 205 facilities whose emissions were believed to produce the highest cancer risks. Air Quality worked with these CEOs to identify ways in which their emissions could be lessened, and, in September 1990, they committed to reduce their companies' air emissions.

These commitments did not stem from regulation but are the direct result of public attention and creative cooperation between EPA and industry. They illustrate how the collection and use of data can facilitate toxic reductions. Two months later, in November 1990, the United States Congress amended the Clean Air Act.

The Clean Air Act

The chart in Figure 4 outlines the major components of the air toxics provisions of the amendments' air toxics provisions. Under the 1977 Clean Air Act amendments, EPA regulated air toxics by establishing a level of acceptable risks for toxic or hazardous air pollutants. This was a very difficult task, and all too frequently it ended in dispute and litigation. In the new provisions, hazardous air pollutants will be regulated by placing them into categories or groups and then determining the control technology or

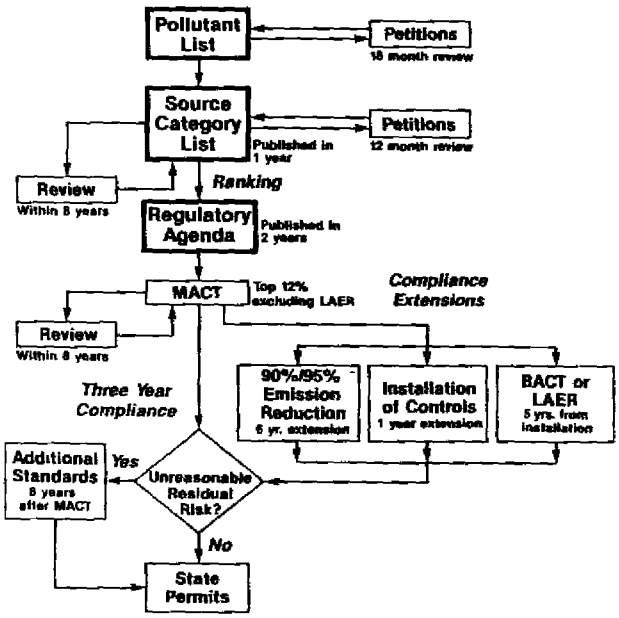

Figure 4.—Clean Air Act amendments: air toxics provisions.

technique that can maximally reduce the toxic air emissions.

In Figure 4, the three highlighted boxes indicate where the TRI plays an important role in our regulatory process. This is also true for media other than air, including solid waste and water.

The first box is the pollutant list. By examining TRI data on emissions from United States industries and evaluating scientific data on toxicity of certain pollutants, EPA will establish a list of toxic chemicals or pollutants to use as a basis for regulating air toxics. As a result, the Agency may modify the list of 189 chemicals established by Congress for the Clean Air Act.

The second box — source category list — represents the requirement that EPA list all categories and subcategories of sources of chemicals on the pollutant list. By using the TRI, Air Quality can identify some of these sources.

The third box — regulatory agenda — represents the Clean Air Act requirement that EPA determine the priority or order in which regulations are created for these categories. Again, these decisions can't be made in a vacuum; all available tools, including TRI, are needed to create this order. By using the data (the pieces of the puzzle), we can decide how and when the puzzle picture should be changed. As a large industrial nation, the United States cannot set new regulations for all its industries simultaneously. Priorities must be established.

The emission reduction box in Figure 5 refers to the Early Reductions Program. As part of the newly amended Clean Air Act Air Toxics provisions, companies may apply for a compliance extension by participating.

Early Reductions Program Under the Newly Amended Clean Air Act

During 1991, the Office of Toxic Substances has been working very hard to set up the 33/50 or Industrial Toxics Project, a voluntary program that encourages companies to reduce emissions to all media, including air.

In the Clean Air Act Early Reductions Program (Fig. 5), commitments made by companies are legally enforceable because the act excuses them from complying with the new air toxic standards for six years. Both programs expect to achieve significant reductions over the next four years. To comply with extensions, companies must reduce their emissions 90 percent (95 percent for particulates) from a baseline mutually agreed upon with EPA. The information on previous emissions reported to the TRI and other EPA databases will be used to establish that baseline and to monitor reductions. Note that trading between chemicals is allowed. Both the 33/50 and Air Toxics programs expect to achieve significant reductions through maximum achievable control technology (MACT) over the next four years (Fig. 6).

Early in 1991, Water Quality used the TRI database to select the names of 1,000 candidate companies for the Early Reductions Program. Although the program will not be final until January 1992, Air Quality has already begun to work with companies to identify how they can take part in it. Committed to participate are: Allied Chemical, Du Pont, Merck, 3M, and Monsanto, with many other companies expressing interest. Air Quality is planning to promulgate an air toxics standard for chemical plants and expects a heavy concentration of submittals from chemical plants in early 1992.

The Chesapeake Bay Program

Both the Early Reductions and the 33/50 programs will play a role in restoring and preserving the Chesapeake Bay, one of the United