A REVIEW OF EXISTING TOXICS RELEASE DATA FOR YEARS 1987-1990.

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ABSTRACT In 1989 the state of Pennsylvania ranked eighth in the nation for annual toxic releases and transfers from manufacturing facilities. This statistic is derived from data required pursuant to the Emergency Planning and Community Right-to-Know Act (EPCRA) for manufacturing facilities with ten or more employees that use, manufacture, or process any of the 320 chemicals identified as toxic by the US Environmental Protection Agency (EPA). These data have been collected by the EPA and reported in a Toxics Release Inventory (TRI) since 1987. This paper reviews the existing TRI data for the years 1987-1990, paying particular attention to its relevance in the state of Pennsylvania. Data are analyzed for the four year period, and the reasons for the differences in reported quantity of toxics during this time span are considered. Another focus of this paper is the voluntary reduction of toxic releases and transfers from facilities due to the mandatory reporting requirement set forth in EPCRA.

The United States Environmental Protection Agency (EPA) defines pollution prevention as an umbrella term used for a wide range of source reduction activities which include toxic use reduction, chemical substitution, process modification, product redesign and better management practices. In an effort to promote a national environmental strategy, the United States Government has established a hierarchy of legislation which mandates toxic release reporting and strives to promote pollution prevention efforts. Federal actions of this sort have increased public awareness about toxic pollution and allowed industries to see the depth of community concern about toxic waste. As industries are faced with the current focus on environmental issues, many have voluntarily turned to pollution prevention practices which offer a cleaner, safer and more cost-effective alternative.

With unfortunate incidents such as Love Canal and other local toxic chemical events there has been an increase in public concern regarding hazardous and toxic chemicals in the community and their subsequent effects on human health. In an effort to deal with citizen concerns in the United States, Congress passed the Emergency Planning and Community Right-to-Know Act (EPCRA) in November 1986. One of the requirements of this Act is that manufacturing facilities with ten or more employees that use, manufacture, or process any of the 320 chemicals identified as toxic by the EPA must report this data on an annual basis. The EPA is then required to compile these facility reports into a computerized database available to the public in a Toxic Release Inventory (TRI). Companies have been required to report this data annually since 1987.

In an attempt to further promote pollution prevention, the EPA initiated the 33/50 Program to reduce toxic waste generation by implementing a strategy of voluntary compliance. Since the availability of the TRI, environmental groups and concerned local citizens have been able to 'point a finger' at industries and areas that display apparently high emission levels. The purpose of the 33/50 program is to encourage a reduction in toxic chemical releases while simultaneously allowing companies to demonstrate their environmental initiative.

The 33/50 Program uses 1988 as a baseline year for toxic industrial wastes and seeks to reduce the generation of 17 high-priority chemicals by 33% in 1992 and an ultimate goal of 50% by 1995. The 17 chemicals targeted for reduction were chosen among the over 320 reported annually to the TRI. These particular chemicals were chosen based upon toxicity concerns, high volume usage by industry and their significant potential for reduction through pollution prevention strategies. In 1988, the 17 high-priority chemicals accounted for 22% of the total quantities reported in the Toxic Release Inventory (1.4 out of 6.4 billion pounds).[1] If the 33/50 Program achieves its desired goal, the amount of toxic waste generated by industrial facilities would decrease by 700 million pounds by 1995. This 700 million pound reduction amounts to approximately 11% of the total toxic wastes generated in the 1988 baseline year.

Based upon data submitted in 1988, over half the companies that reported in the TRI generated one or more of the high-priority chemicals (approximately 6000 companies operating over 12,000 facilities nationwide). Of the 5747 companies that generated 33/50 chemicals, 555 or 9% of them accounted for over three-quarters (1.1 out of 1.4 billion pounds) of the total toxic

waste produced.[2] This group of companies, often referred to as the "Top 600", have been targeted for their need to reduce toxic waste generation by employing pollution prevention practices.

The key feature of the 33/50 Program is that participation by industries is on a completely voluntary basis. Since the formal announcement of the 33/50 Program in February of 1991, a wide spectrum of companies have joined in an effort to reduce the generation of toxic waste and adopt pollution prevention as a corporate ethic. According to an EPA 33/50 Progress Report, as of February 1992, a total of 275 companies of the "Top 600" had submitted a commitment to reduce toxic waste generation pursuant to the 33/50 Program. These 275 companies represent almost half of the wastes targeted for reduction (640 million out of the 1.4 billion pounds of toxic waste that are associated with the 33/50 chemicals). In addition, the EPA contacted the remaining 5192 companies that reported use of TRI chemicals. Of this group, 459 committed to the Program. These 459 companies represent an additional 104 million of the 1.4 billion pounds of releases and transfers of the 17 high priority chemicals. This nationwide total of 734 companies represents a total of 744 million pounds of toxic waste.

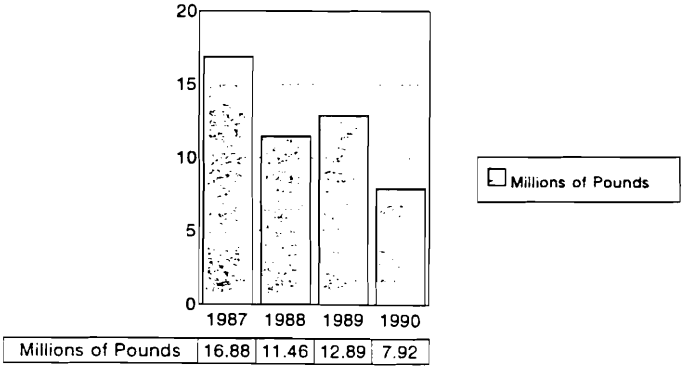
The mandatory requirement of the TRI has sparked extensive interest from citizens, industry, media and legislators. Although the requirement has encouraged the practice of pollution prevention techniques, a number of limitations exist. One of the largest problems cited is the fact that many toxic chemicals used or produced by industry are not on the mandatory TRI report list. Since there are many limitations present in the current legislation, it would be evident that community and environmental groups would expand their goals to include toxic waste reduction projects. An area of great activity is in local governments and Public Interest Groups who are producing studies of toxic pollution by state, region and industry. In addition, the EPA has initiated a state campaign to broaden the awareness and access to the TRI. The state project is being conducted in Pennsylvania. This state was chosen due to its high volume of annual TRI chemical releases.

According to the EPA, companies have been eager to join the 33/50 Program since many have already been pursuing reduction efforts and the 33/50 allows a formal recognition of their endeavors. At the same time, a number of companies have blatantly chosen not to participate. The EPA continually contends that the 33/50 Program is not intended as a substitute for complying with existing regulatory programs. In addition, current enforcements cannot be slackened to encourage participation. The EPA is presently working to sanction the 33/50 Program with the maximum amount of flexibility and coordination.

A number of factors have influenced TRI reporting in its five years of requirement. For instance, in 1987 manufacturers releasing under 75,000 pounds were exempt from TRI reporting. This threshold was lowered to 50,000 pounds in 1988 and further lowered to its current amount of 25,000 pounds in 1989. This change has drastically altered the number of facilities required to report. Other changes include the addition and deletion of chemicals required in the TRI. Issues that make facility specific comparisons difficult include the manner of estimation for releases and transfers, the substitution of chemicals, and changes in production rates for the plant.

CASE STUDY OF USX STEEL

With limitations of this nature in mind, the following chart illustrates the change in total releases for USS Fairless Works (a facility of USX Steel) in Fairless Hills, Bucks County (ranked #1 for total releases 1987-1990). Although a direct cross-year comparison indicates that toxic transfers and releases have decreased substantially over the years, one must consider the varying factors that could have influenced these differences.



A number of factors account for the total reduction in pollution for this plant. In 1987, the plant was recovering from a strike. This resulted in an increase in manufacturing so as to compensate for production lost during the strike. In 1988 and the first half of 1989, the facility experienced increases in production due to the economy. However, since that latter half of 1989 to the present, economic conditions have substantially decreased the amount of production occurring at the plant. In 1991, budgetary constraints forced a shutdown of the 'hot-end' portion of iron and steel manufacturing. This alone has accounted for a 40-50% elimination of the toxic wastes produced. Another factor that has affected the total amount of releases is the change in chemicals required to be reported pursuant to TRI reporting requirements. Aluminum oxide, a by-product of iron and steel making was one of the largest releases reported by the facility.[3] This chemical has been deleted from the list of toxic chemicals and therefore has affected the total amount of releases reported by the facility.

The national parent company of USS Fairless Works, the USX Corporation, has agreed to voluntary emission reductions by joining the 33/50 program. Currently no new reduction strategies have been implemented at the USS Fairless plant. However, this plant continues its acid recycling effort which was in effect before the existence of the 33/50 Program. Since the 33/50 Program has only been in effect for a little over one year, it is difficult to assess the results of its implementation.

One of the problems associated with reviewing the TRI database is that companies are required to report only a total annual amount of releases/transfers. Unfortunately, this makes it difficult to ascertain if reductions in releases are due to pollution prevention strategies or a change in the production at the particular facility. As mentioned above, in 1991 the USS Fairless Works facility shut down all operations at the plant except for a small 'coating' operation. This has resulted in a radical decrease in toxic emissions. Therefore, a year-by-year comparison of toxic release data is not feasible without making a correlation with the amount of production occurring at the plant. It should be noted that production values are not a requirement in the reporting of TRI data.

The mandatory reporting requirement of the TRI as set forth by EPCRA requirements is a positive step towards determining potential toxic chemical problem areas. However, as noted in this paper, numerous limitations to this requirement exist which make a through and comprehensive analysis of toxic releases almost impossible. The following table attempts to outline the major weaknesses present in the current specifications of the TRI;

LIMITATIONS OF CURRENT TRI REPORTING REQUIREMENTS

* Over 60,000 chemicals are used or processed by manufacturing facilities. The TRI only requires the reporting of approximately 320 of these chemicals.
* Non-manufacturing and federal facilities are Exempt from reporting as are facilities that manufacture or process less than the threshold amount. Clearly, a collective addition of releases from these exempt facilities produces a substantial impact.
* Cross-year comparisons of total releases are misleading due to the numerous changes in reporting requirements. These changes include the addition and deletion of several chemicals from the TRI report list.
* The manufacturing and processing threshold reporting amount has been dropped from 75,000 pounds in 1987 to 50,000 pounds in 1988 to the current amount of 25,000 pounds since 1989.
* Facilities ordinarily estimate rather than measure the total amount of releases.
* Annual reporting does not reveal peak release rates.
* A high-volume release of a not-significantly toxic chemical may appear to be more detrimental than a low-volume release of a highly-toxic chemical.
* TRI reports reflect releases of chemicals rather than exposure of the general public to the chemical.
* TRI reports only require total releases and transfers. Wastes transferred off-site for recycling or reuse are not reported.
* Total emissions data cannot be used to track pollution prevention strategies. Rather, an analysis of a facility's production amount must be used as a comparison. This is very difficult to accomplish.

With such severe limitations present in the current legislation, it is nearly impossible to make an exhaustive analysis of the TRI data. The case study of the USS Fairless facility only touches the surface of the depth of deficiencies present in the current reporting requirements. However, the US EPA has initiated a "step in the right direction" by mandating toxics release reporting pursuant to EPCRA guidelines, and promoting pollution prevention activities by initiating the voluntary 33/50 Program. It is necessary to realize that the current availability of the TRI data can at best
serve to point to high toxic emission areas. Much more extensive research on chemical toxicity, production values and reporting methods is needed to make thorough judgements about toxics in the community. By researching these areas and further realizing the deficiencies present in the current reporting requirements, local and state groups can further initiate regulatory action to protect the environment and public health.

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FOOTNOTES

1. EPA: Office of Pollution Prevention and Toxics. "EPA's 33/50 Program Second Progress Report". Document No. TS-792A. February 1992. Page 2.
2. Ibid. Page 9.
3. Lewis, Alan. Senior Energy and Environmental Engineer. USS Fairless Works.