- **Incentive for industry to reduce toxic emissions early**
  - **— Allows 6 year extension of deadlines**
  - **— Industry must reduce toxic emissions by 90% (95% for particulates)**
  - **— Provides flexible trading program between chemicals**

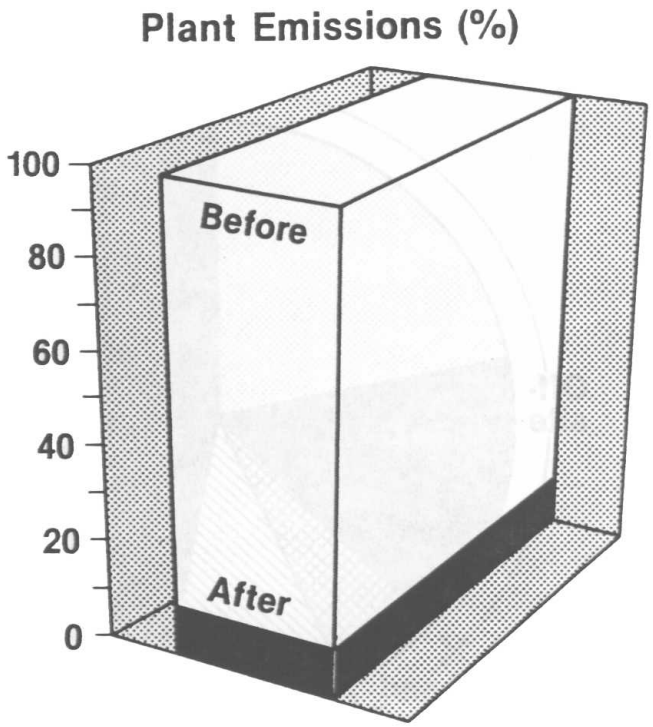


Figure 5.—Air Toxics Early Reductions Program.

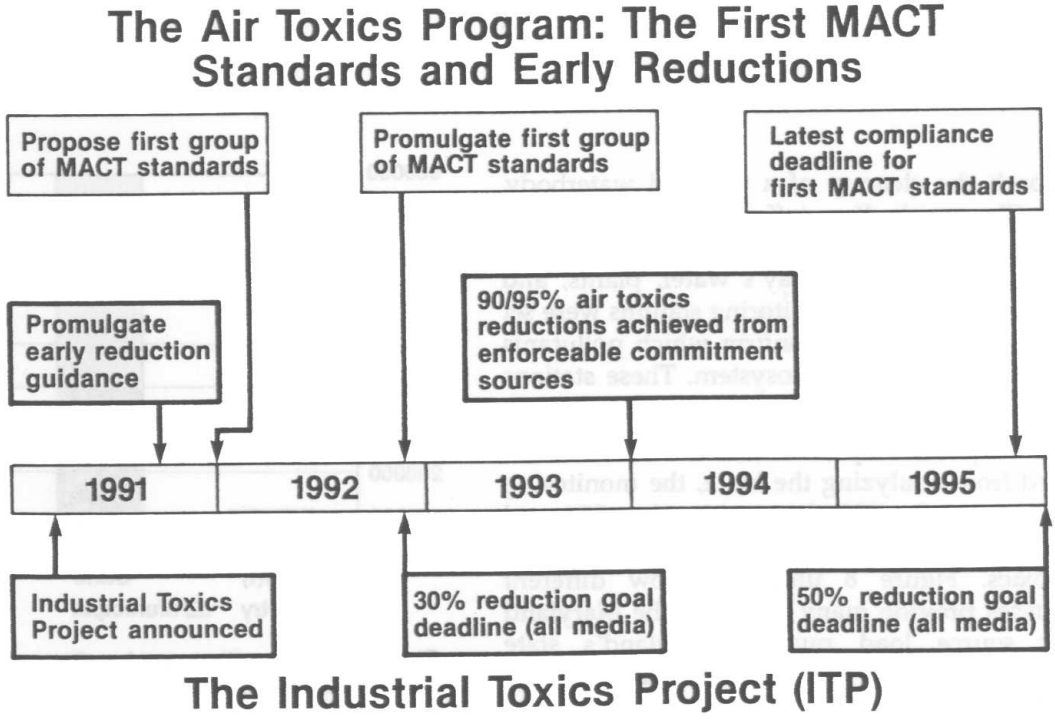


Figure 6.—The Early Reductions (top) and 33/50 (bottom) programs.

States' largest estuaries. The watershed for this bay spans six states along the Eastern Seaboard, from southern New York to southern Virginia.

The bay has been polluted by both point and nonpoint sources. As Figure 7 shows, air deposition accounts for approximately 47 percent of the toxics either released or transferred into Chesapeake Bay.

The Chesapeake Bay Program is an excellent example of how the TRI is used to strategically

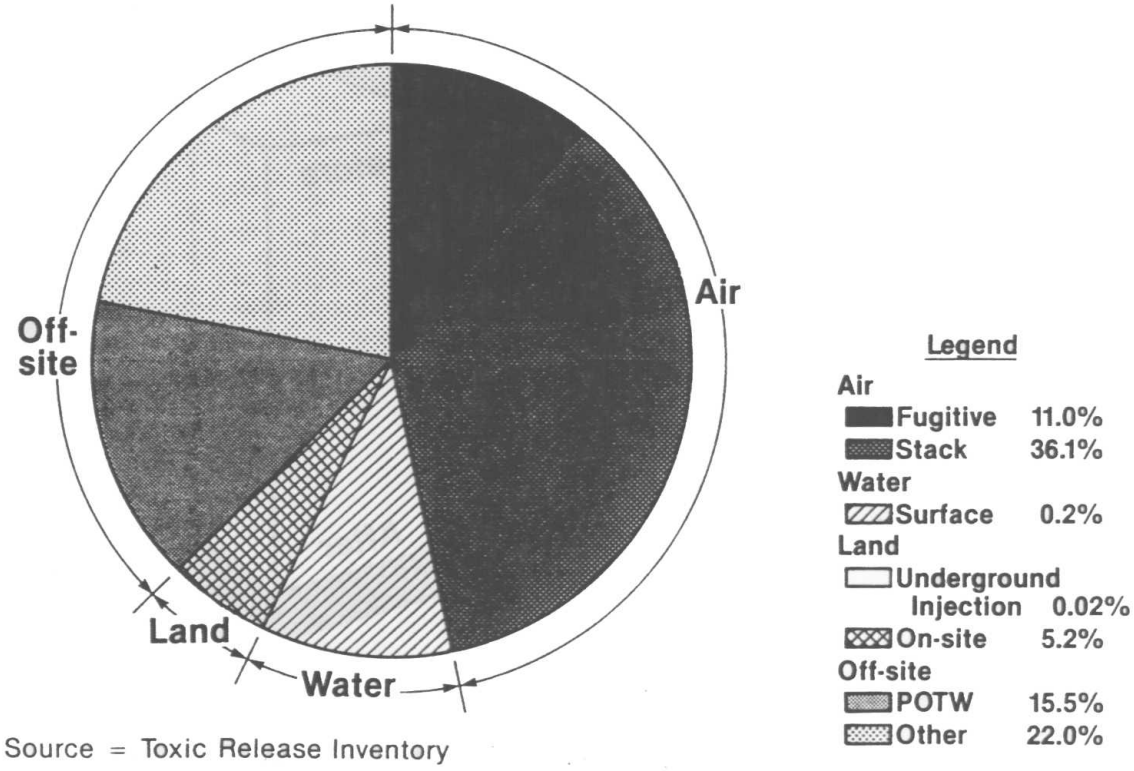


**Figure 7.—The Chesapeake Bay: releases and transfers of TRI chemicals.**

approach the cleanup of a polluted waterbody. EPA's Chesapeake Bay staff set the program up to proceed on different levels. First, it identified toxic chemicals in the bay's water, plants, and animals. Then, three monitoring stations were set up around the bay to confirm which pollutants are entering the bay's ecosystem. These stations mostly track air emissions.

Chesapeake Bay staff take the information gained from analyzing the biota, the monitoring stations, and the TRI along with other EPA and state databases to identify potential point sources of toxics. Figure 8 illustrates how different databases provide many pieces to the Maryland point source load puzzle. Maryland's state database provides staff with estimates of the number of municipal sources. After the state has identified the potential sources through the TRI, it uses computer models to verify whether these sources could have contributed to the problem. Figures 9 and 10 illustrate this process.

Figure 9 shows little progress between 1987 and 1988; however, Figure 10 indicates a more positive picture after the 33/50 program is fully implemented. Adding to these reductions are the goals of the Clean Air Act Early Reduction Program. Companies are just starting to commit to this program, so it is too early to tell which reductions will directly benefit the Chesapeake Bay or the totals. Merck (the pharmaceutical company) and Du Pont's Chemical Manufacturing Division, which have facilities in the six-state region surrounding Chesapeake Bay, are two companies that participate in the program.

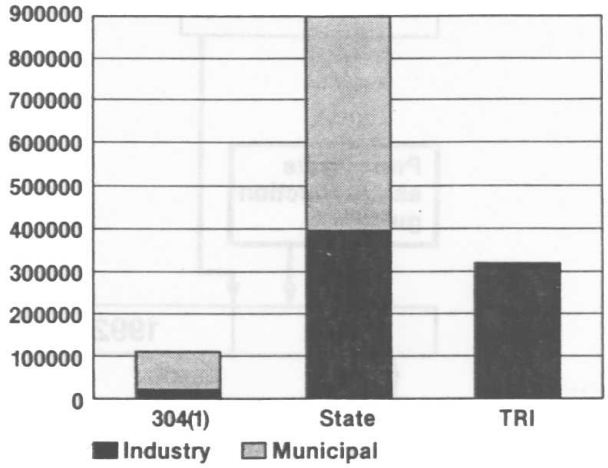


**Figure 8.—The Chesapeake Bay: Maryland point source load estimates from different sources.**

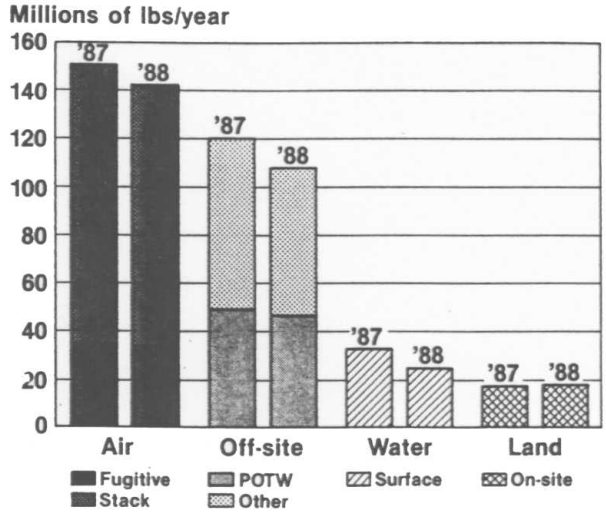


**Figure 9.—The Chesapeake Bay: TRI releases to different media, 1987–88.**

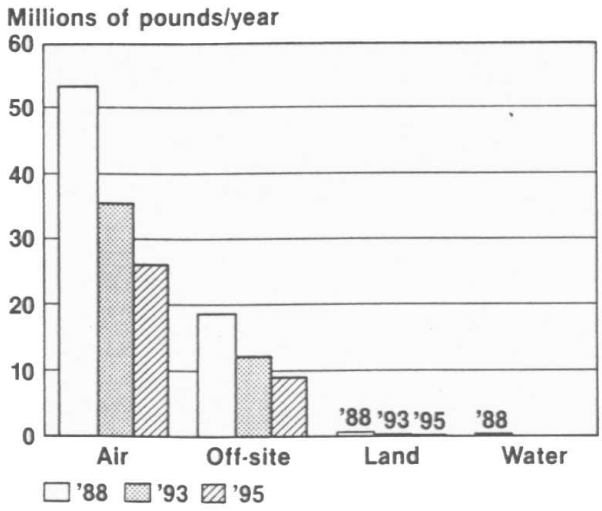


**Figure 10.—The Chesapeake Bay: projected 33/50 reduction.**

## The Great Lakes

The Great Lakes region of the United States, comprised of five lakes and eight states, shares a common border with Canada. EPA's Great Lakes Program, in existence much longer than the one for Chesapeake Bay, is another example of how the TRI has helped focus efforts on an area. In addition to choosing priorities, the Great Lakes Program has used TRI to target geographic areas of concern that will take priority.

Program staff targeted sources from the TRI, which will be curtailing emissions through the 33/50 multi-media programs, hazardous waste sites on the National Priority List, and locations where hazardous spills have occurred.

In Chicago/Gary, Illinois, and Detroit, Michigan, the staff will use the TRI to reduce emissions from area sources. The Early Reductions Program will also reduce toxic air emissions in these targeted areas and to all the Great Lakes. So far, EPA has commitments from Monsanto and Allied Chemical plants in Region V. Both companies manufacture chemicals.

## Conclusion

This presentation has attempted to illustrate a picture of the air toxics jigsaw puzzle in the United States and explain how EPA is filling in all of the pieces, both large and small, from the sources of air toxics to how the TRI data have helped determine priorities for action and identify both toxics and their sources.

I return you to this image because this is where the United States started: an assessment of the problem to draw the picture on the puzzle so we can begin to piece it together.

Toxics — they pervade the land, water, and air from sources too numerous to name, but they are a universal problem. The solution, then, is up to us. It takes creativity and determination to establish an inventory like the TRI. However, if we learn from one another and fill in the jigsaw puzzle one piece at a time, we will have a multi-pronged method of attack to identify and ultimately eliminate toxics from our picture.