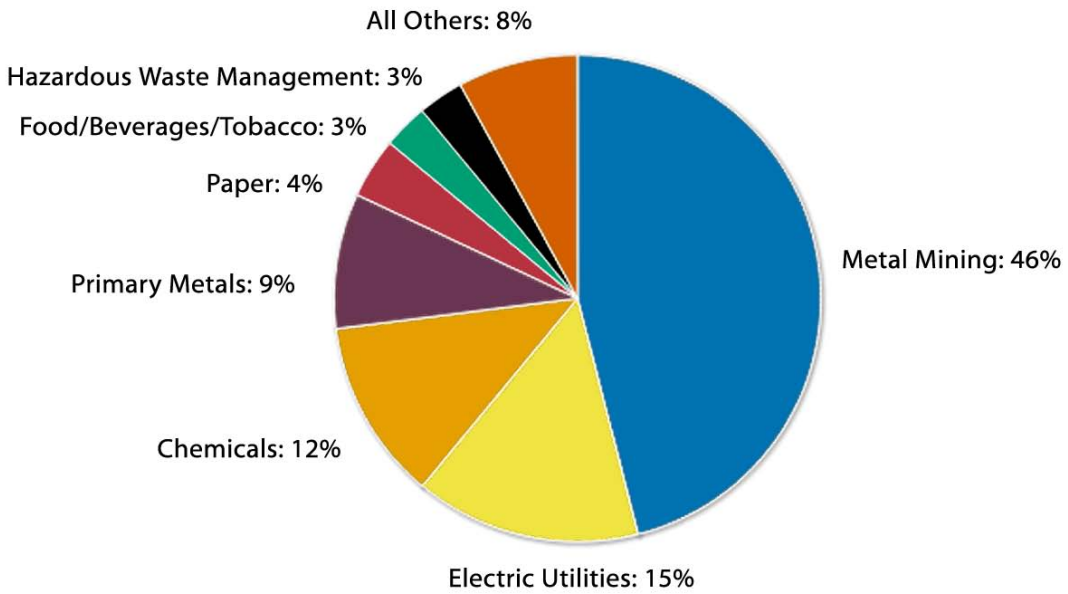
Industry Sector Profiles

Individual industry sectors reporting to TRI can vary substantially in size, scope, and makeup, therefore, the amounts and types of toxic chemicals generated and managed by each differs greatly. Within a sector, however, the industrial processes, products, and regulatory requirements are often similar, resulting in similar toxic chemical use and waste generation. Therefore, it is useful to look at waste management trends within a sector to identify potential emerging issues.

To take a closer look at the individual sectors, Figure 18 shows that in 2011, 92% of all disposal or other releases of TRI chemicals originated from just seven of the 26 TRI industry sectors. More than half originated from just two industry sectors: metal mining (46%) and electric utilities (15%).

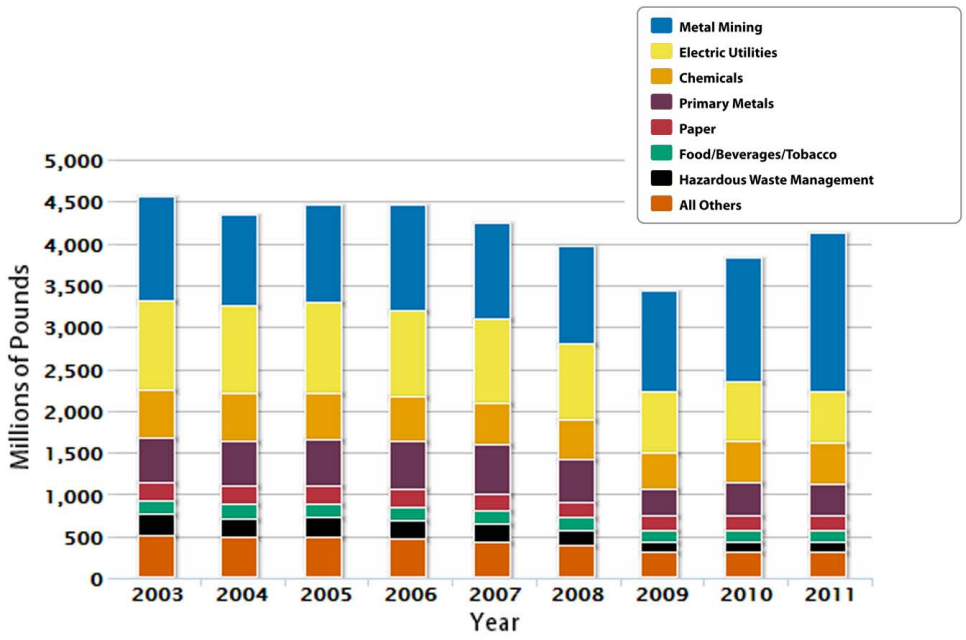
Figure 18. Disposal or Other Releases by Industry, 2011



Over time, the amounts and proportions of TRI chemicals disposed of or otherwise released by each industry sector have varied as shown in Figure 19. All of the seven industry sectors with the largest reported total disposal or other releases, except metal mining, fell from their 2003 levels. Five of them (electric utilities, chemicals, primary metals, paper and food) also decreased from 2010 to 2011.

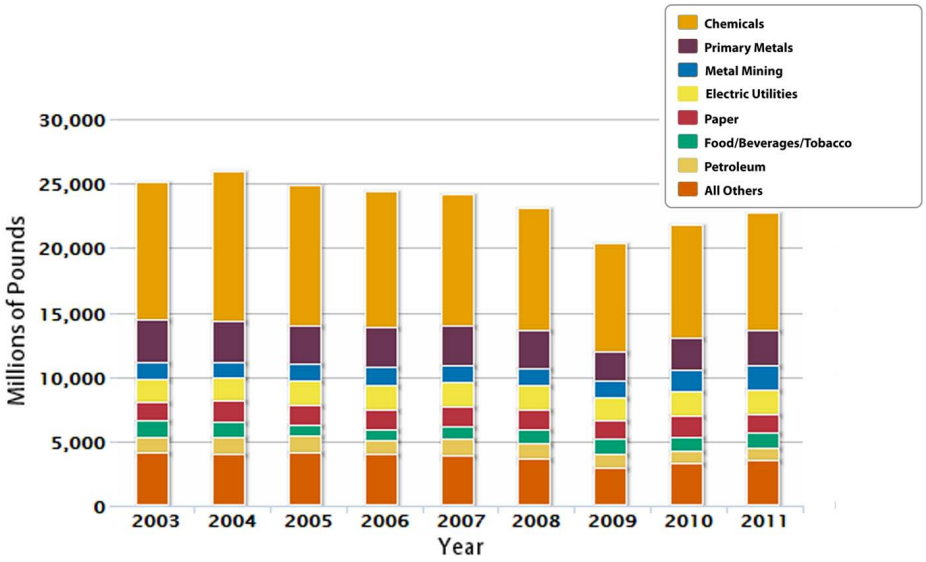
The greatest decrease from 2003 to 2011 was observed in the electric utilities sector with a decrease of 457 million pounds (43%) from 2003, including an 87 million pound decrease from 2010 to 2011. Among other reasons, these reductions may be due to a switch from coal to other fuels and improved pollution controls. In recent years electric utilities have also cited improved estimation methods as another reason for decreases. The metal mining sector reported a 652 million pound (52%) increase since 2003, mostly due to increases in on-site land disposal.

Figure 19. Disposal or Other Releases by Industry, 2003-2011



As shown in Figure 20, the contribution of each of the top seven sectors to the total production-related waste managed has not changed considerably between 2003 and 2011.

Figure 20. Production-Related Waste Managed, by Industry, 2003-2011



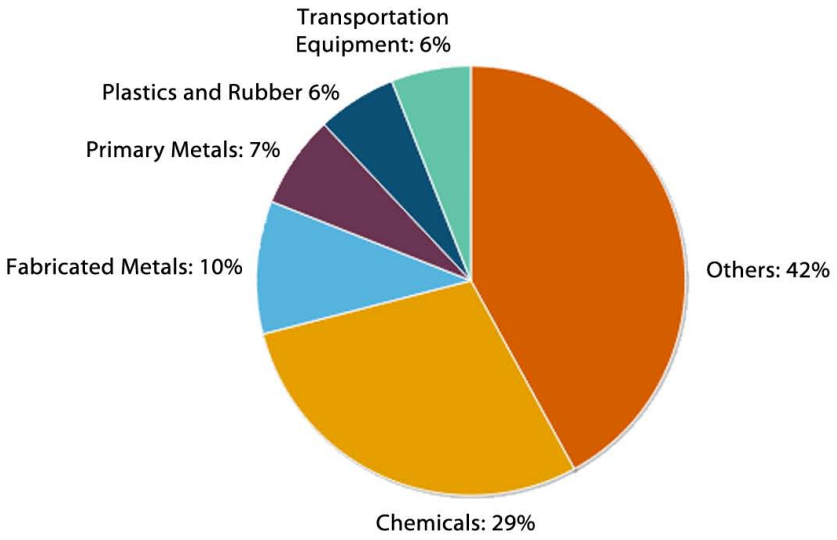
Each year, the chemical manufacturing sector reported more production-related waste managed than any other sector. It now accounts for 40% of the total, down from 43% in 2003. Conversely, the metal mining sector's production-related waste managed accounted for 5% of the total reported across all sectors in 2003 and increased to 9% by 2011.

Most industry sectors reported a decline in total production-related waste from 2003 to 2011 resulting in the overall decrease of 9%; however some sectors increased from 2010 to 2011. In particular:

- Chemical manufacturers increased over 3% each year from 2009 to 2011, bringing production-related waste managed back close to 2008 levels. From 2003 to 2011, they reported an overall decrease of 15% (1.6 billion pounds).
- Metal mining production-related waste managed remained relatively steady from 2003 to 2009, and then increased by 46% from 2009 to 2011.

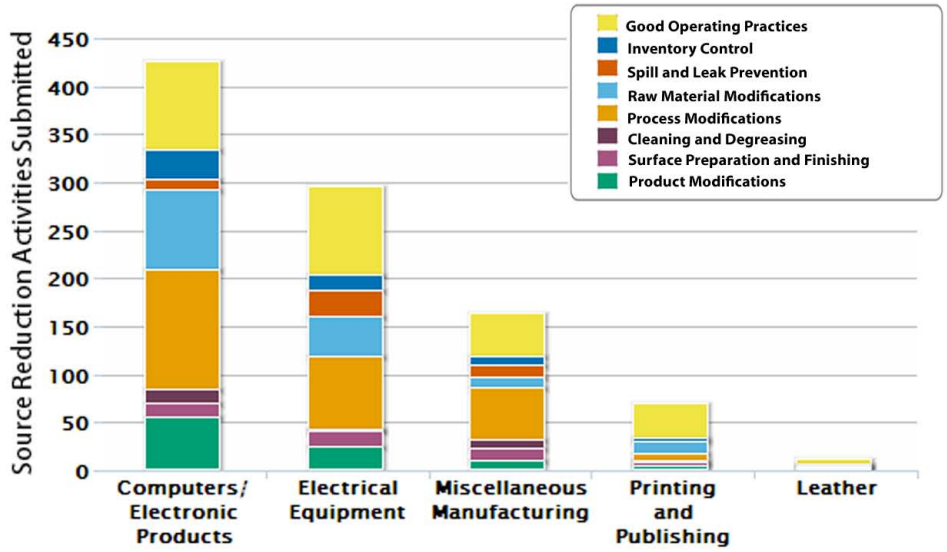
Reductions in production-related waste managed can be a result of various factors, including implementing practices that reduce chemical waste at the source, referred to as source reduction. Among the industry sectors reporting to TRI, facilities in the chemical manufacturing sector reported more newly implemented source reduction activities (2,422) in 2011 than facilities in any other sector. It should be noted that, in part, this reflects the fact that the chemical manufacturing sector submits more reports to TRI than any other sector. Together, the top five sectors reporting newly implemented source reduction activities accounted for more than half of the source reduction reported to TRI, as shown in Figure 21.

Figure 21. Newly Implemented Source Reduction Activities by Industry, 2011
Percent of Total Source Reduction Activities



There were several sectors where more than 20% of the TRI facilities reported source reduction activities in 2011. These sectors are shown in Figure 22. The figure also shows what types of source reduction activities were reported. Miscellaneous manufacturing, which had the third highest percentage of source reduction activities reported, includes facilities that manufacture products as diverse as medical equipment and supplies, jewelry, sporting goods, toys, and office supplies.

Figure 22: Newly Implemented Source Reduction Activities by Industry, 2011
for Sectors with Largest Percentage of Facilities Reporting Source Reduction



While sector-specific waste management trends can be used as indicators of environmental performance, it is important to consider the influence that production and the economy have on chemical generation.

To get an idea of how changes in production levels at TRI facilities may influence disposal or other releases, EPA uses "value added" from the Bureau of Economic Analysis to estimate production for the manufacturing sector (www.bea.gov/industry/gdpbyind_data.htm). Value added is a measure of the contribution of each sector to the Nation's Gross Domestic Product (GDP). While the manufacturing sector does not include all TRI facilities, it does make up 88% of facilities reporting to TRI in 2011. The solid line in Figure 23 shows manufacturing value added (adjusted for inflation) decreased by 4% from 2003 to 2011. For the same time period, the figure shows a 26% decrease in disposal or other releases. This decrease occurs even though production decreased by only 4%. Because one would expect disposal or other releases to decrease proportionally to decreases in production, the graph suggests that other factors were also contributing to the reductions in disposal and other releases.

Figure 23. TRI Disposal or Other Releases and Value Added by the Manufacturing Sector, 2003-2011

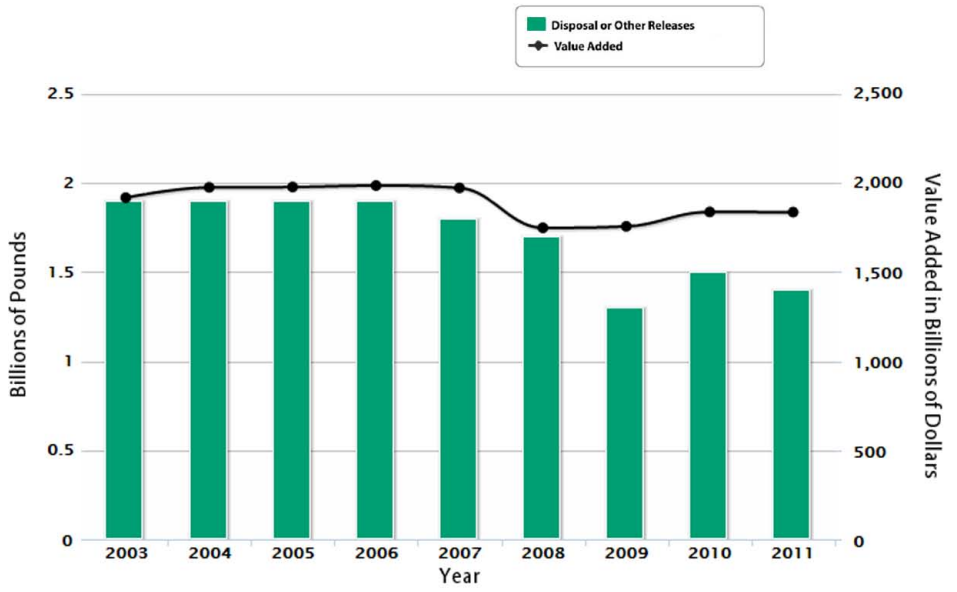
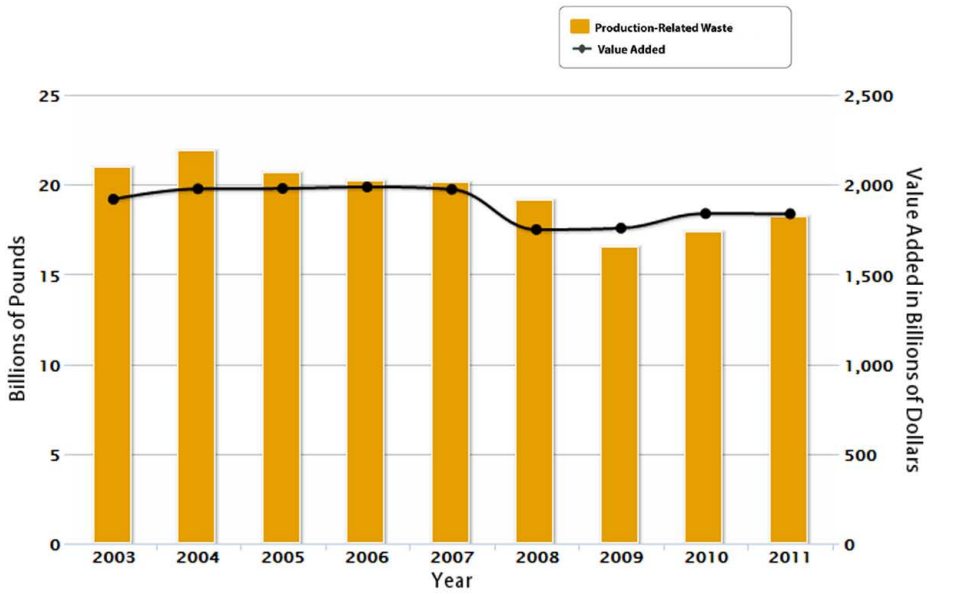


Figure 24 presents the trend in production-related waste managed by the manufacturing sector and the trend in the manufacturing sector's value added (as shown by the solid line). The manufacturing sector's production-related waste decreased by 13% from 2003 to 2011, while manufacturing value added decreased by only 4%. More information on the production trends for individual sectors can be found in the sector profiles in this section.

Figure 24. TRI Production-Related Waste Managed and Value Added by the Manufacturing Sector, 2003-2011



In this section, EPA uses the best available data to present select sectors' economic trends. The sources of the data vary by sector. For the electric utilities sector, electricity generation data from the U.S. Department of Energy were used (www.eia.gov/electricity/data.cfm#generation). Mine production data are from the U.S. Geological Survey (http://minerals.usgs.gov/minerals/pubs/mcs/). The production index from the Federal Reserve was used as an estimate of business activity for the chemical and the automotive manufacturing sectors (www.federalreserve.gov/datadownload/default.htm).