



Pollution Prevention (P2) Spotlight

Reducing Decabromodiphenyl Oxide Waste Management

Overview of Decabromodiphenyl Oxide (decaBDE)

Decabromodiphenyl oxide, also known as decabromodiphenyl ether and decaBDE (CAS 1163-19-5), is a brominated flame retardant. It is used to meet fire safety standards in a broad range of plastics and polymers with applications in diverse sectors, including electrical and electronic equipment, textiles, building and construction materials, and transportation.

Chronic oral exposure to decaBDE causes neurobehavioral effects in animals, and data from studies conducted in mice and rats provides “suggestive evidence of carcinogenic potential”.¹ DecaBDE has high potential for bioaccumulation in wildlife and humans, as do its breakdown products (lower brominated diphenyl ether congeners).²

Quick Stats

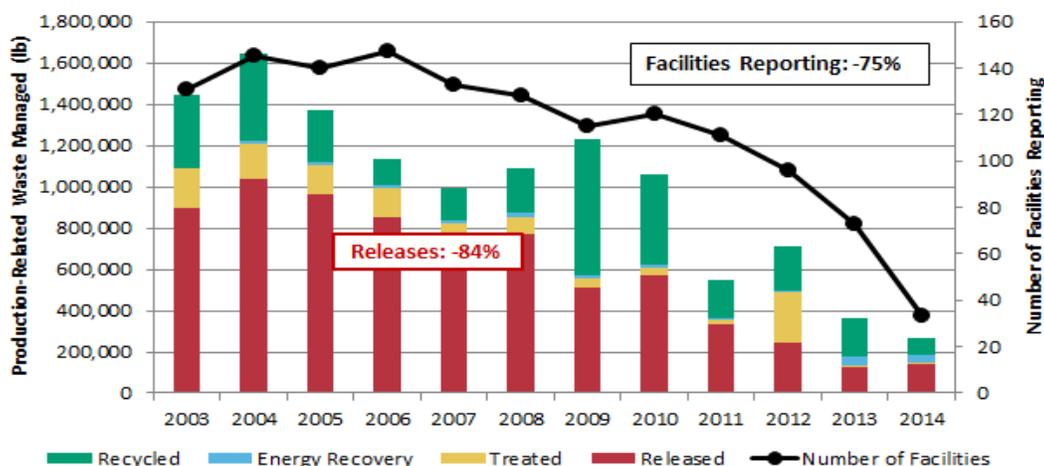
- **33 facilities** reported decaBDE to TRI in 2014, down from 131 in 2003
- **139** source reduction (P2) activities were reported by 47 facilities in the past 5 years
- Facilities reported an **84% decrease** in decaBDE releases from 2003 to 2014

DecaBDE Reported to the Toxics Release Inventory (TRI)

For the 2014 TRI reporting year, the Plastics and Rubber Manufacturing sector (NAICS 326) reported the most decaBDE managed as production-related waste, followed by the Electrical Equipment, Appliance, and Component Manufacturing sector (NAICS 335), and the Textile Mills sector (NAICS 313). These industries reported significant decreases in their releases of decaBDE during the past several years, showing an overall trend toward chemical substitution and other P2 activities for this chemical.

In December 2009, due to the human health and environmental concerns posed by decaBDE, the largest producers and suppliers of decaBDE in the U.S. committed to end their production, importation, and sales of the chemical by the end of 2013. Reported releases of decaBDE decreased by 72% from 2009 to 2014 and by 84% since 2003. During this period, the quantity of decaBDE managed as waste (which includes quantities recycled, used for energy recovery, treated, and released) decreased by 81%, from over 1.4 million pounds in 2003 to less than 0.3 million pounds in 2014. The number of facilities reporting the chemical also declined by 75% over this time period. While facility closures or reduced production levels may explain why some facilities stopped reporting, 61% of the facilities that stopped reporting on decaBDE (2014 or earlier) continued to report to EPA’s TRI Program for other chemicals. This indicates that these facilities remained active but eliminated or at least reduced the quantities of decaBDE they manufacture, process or otherwise use below the respective TRI reporting thresholds for these activities.

Waste Management of decaBDE



¹ EPA IRIS assessment, http://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=35

² DecaBDE Alternatives Assessment, https://www.epa.gov/sites/production/files/2014-05/documents/decabde_final.pdf

Commonly Reported P2 Activities for decaBDE

Over the past 5 years (from 2010 to 2014), 47 facilities have reported implementing 139 new source reduction (P2) activities for decaBDE. Commonly reported activities include substitution of raw materials, changes to production schedules to minimize equipment and feedstock changeovers, and modifying the design or composition of the product.

Facilities have the option to submit text with more details describing their P2 efforts. Examples of P2 efforts involving decaBDE include:

- A [nonwoven fabric mill facility](#) switched to a green chemical.
- A [communication and energy wire manufacturing facility](#) implemented “bleedout” regrinding to include more raw materials that can be reground and reused in the manufacturing process.
- A [urethane and other foam product manufacturing facility](#) reduced the amount of scrap produced, reducing releases of decaBDE.

DecaBDE is a TSCA Work Plan Chemical

EPA develops Toxic Substances Control Act (TSCA) Work Plan Chemical Assessments to evaluate the risk associated with these chemicals and formulate risk management actions.

In 2014, the Agency added DecaBDE, an EPA Action Plan chemical, to the TSCA Work Plan for Chemical Assessments. To learn more, visit EPA’s [TSCA website](#).

Note that not all substitutes for decaBDE are necessarily safer, which can make the identification of safer alternatives that are functional in any specific application a challenge. To address these concerns, EPA’s Design for the Environment (DfE) Program conducted and finalized an [alternatives assessment of decaBDE](#) in January of 2014.² The report identifies potentially viable flame retardant alternatives to decaBDE, provides hazard profiles on decaBDE and 29 chemical alternatives, and discusses considerations for making substitution decisions.

Facility Focus: Dekoron Wire & Cable LLC

Berkshire Hathaway’s [Dekoron Wire & Cable facility](#) in Mount Pleasant, Texas, manufactures industrial cables. After discontinuing operations that processed a material containing decaBDE, the facility switched to a material compliant with the European Union Directive on Restriction of Hazardous Substances (RoHS), which restricts the use of certain hazardous substances commonly used in electrical and electronic products. By 2012 the facility no longer had to file TRI reports for decaBDE. Similar information is available for other TRI-reporting facilities in EPA’s [TRI P2 Search Tool](#).

