

OSECO SAFETY CARTRIDGE™ CASE STUDY

ASRC

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Business Problem

The STAR (Strategic Toxic Air Reduction) Program was instituted by the City of Louisville, KY in 2005 to address the presence of cancer causing chemicals in the air around the city. As illustrated in Figure 1, the addition of a Thermal Oxidizer in 2005, greatly reduced stack emissions of 1,3 butadiene at the facility. Subsequent investigation in 2013 revealed on going fugitive emissions from the over 10,000 components in service would still cause the facility to exceed permissible limits.

ASRC Emissions of 1,3-Butadiene from 2003 to 2017

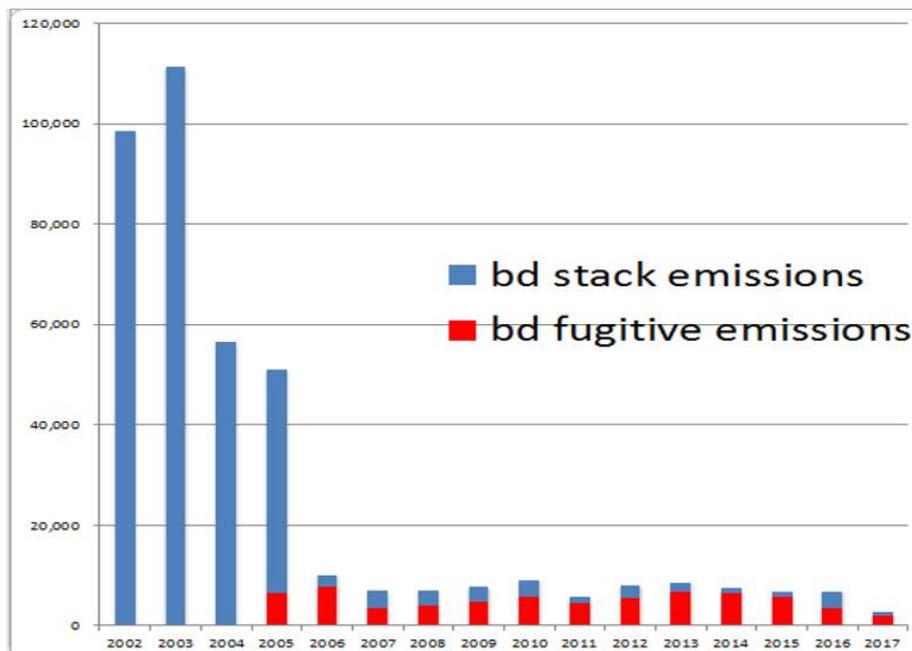


Figure 1 (Graph courtesy of ASRC)

Investigation

ASRC then began a stringent monitoring program at BACT/LAER frequencies and limits (250 ppm) to determine which components need to be replaced. One of the largest sources was from the rupture discs in service at the site. It was noted that many of the rupture disc installations were torqued incorrectly causing them to be prone to leakage both between the disc and rupture disc holder as well as between the rupture disc holder and pipe flange (See Figure 2). It was also noted in many cases the torque values recommended by the rupture disc supplier conflicted with the recommendation for the specific gaskets used in butadiene service.

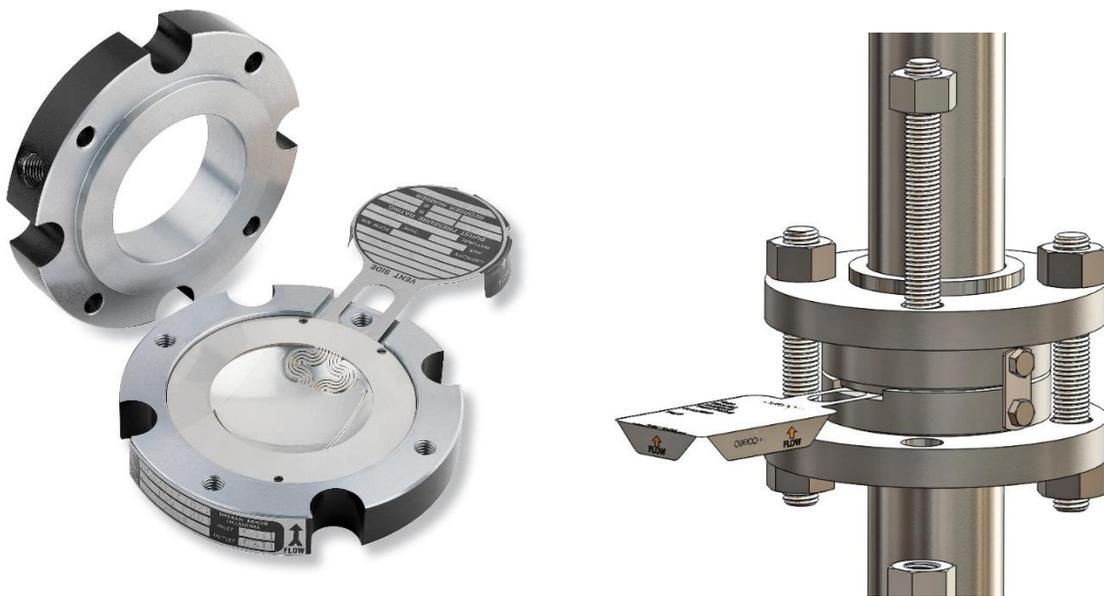


Figure 2

Solution

In 2016, ASRC partnered with Oseco and began implementation of the Oseco Safety Cartridge™ in all butadiene rupture disc applications. As the Oseco Safety Cartridge™ is a one-piece design with no recommended installation torque, the plant simply followed the torque values defined by the gasket manufacturer. The Oseco Safety Cartridge™ also eliminated the traditional leak paths between the rupture disc and holder, leaving only a solid bar stock surface exposed to the environment (See Figure 3). The implementation was completed in 2017.



Figure 3

Result

Once installed, the facility began monitoring, and noted previous rupture disc leakage was eliminated. With this reduction, the plantwide fugitive emissions of butadiene were reduced almost 50% in two years (Figure 4). The Oseco Safety Cartridge™ also reduced the plant's installation time by 75%. Due to its ease of installation, downtime associated with overpressure events has been reduced by over 60%, making the Oseco Safety Cartridge™ highly popular with pipefitters and operations.

5 Year reduction in Fugitives

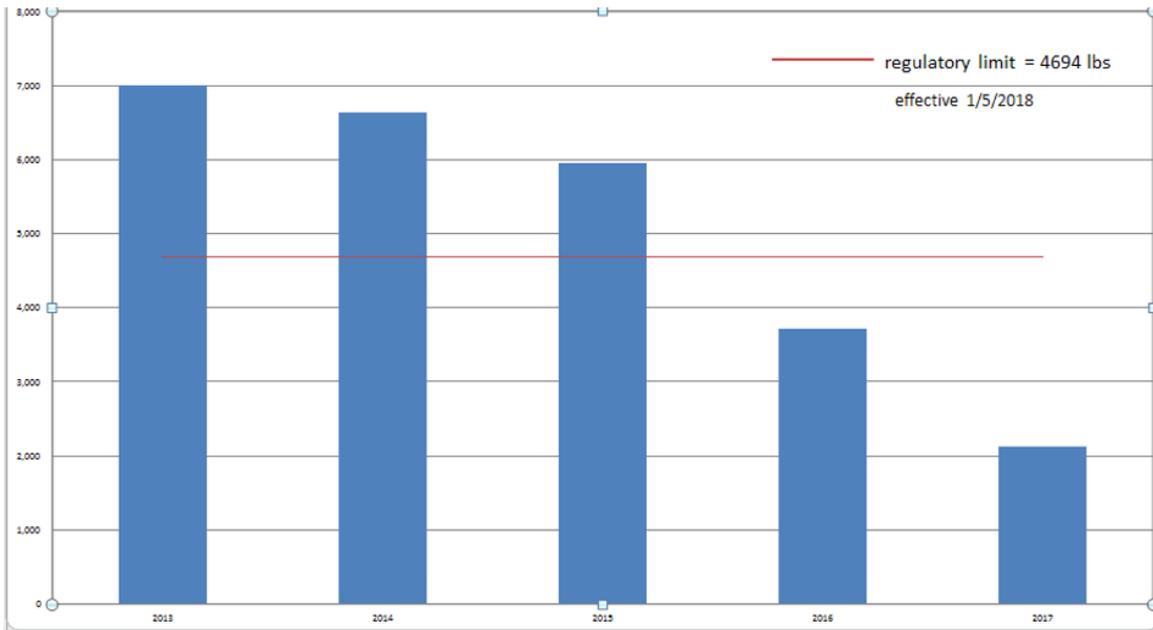


Figure 4 (Graph courtesy of ASRC)

Future Plans

The Oseco Safety Cartridge™ has proved to be the assembly of choice in all critical applications, however it also aids with other common issues such as employee training and downtime associated with an overpressure event. Because of these additional benefits, the ARSC team has elected to continue installing the Oseco Safety Cartridge™ in other difficult applications as a part of their normal change out schedule.