



U. S. Chemical Safety and Hazard Investigation Board

RECOMMENDATION STATUS CHANGE

SUMMARY

Report:	Caribbean Petroleum Refining Tank Explosion and Fire
Recommendation Number:	2010-02-I-PR-R1
Date Issued:	October 21, 2015
Recipient:	Occupational Safety and Health Administration
New Status:	Closed – Reconsidered/Superseded <i>(Superseded by 2019-01-I-TX-R8)</i>
Date of Status Change:	June 26, 2023

Recommendation Text:

Revise where necessary the Spill Prevention, Control and Countermeasure (SPCC); Facility Response Plan (FRP); and/or Accidental Release Prevention Program (40 CFR Part 68) rules to prevent impacts to the environment and/or public from spills, releases, fires, and explosions that can occur at bulk aboveground storage facilities storing gasoline, jet fuels, blendstocks, and other flammable liquids having an NFPA 704 flammability rating of 3 or higher.

At a minimum, these revisions shall incorporate the following provisions:

- a) *Ensure bulk above ground storage facilities conduct and document a risk assessment that takes into account the following factors:*
 1. *The existence of nearby populations and sensitive environments;*
 2. *The nature and intensity of facility operations;*
 3. *Realistic reliability of the tank gauging system; and*
 4. *The extent/rigor of operator monitoring*
- b) *Equip bulk aboveground storage containers/tanks with automatic overfill prevention systems that are physically separate and independent from the tank level control systems.*
- c) *Ensure these automatic overfill prevention systems follow good engineering practices.*
- d) *Engineer, operate, and maintain automatic overfill prevention systems to achieve appropriate safety integrity levels in accordance with good engineering practices, such as Part 1 of International Electro-technical Commission (IEC) 61511-SER ed1.0B-2004, Functional Safety - Safety Instrumented Systems for the Process Industry Sector.*
- e) *Regularly inspect and test automatic overfill prevention systems to ensure their proper operation in accordance with good engineering practice.*

Board Status Change Decision:

A. Rationale for Recommendation

On the night of October 23, 2009, while offloading the contents of a tanker ship, the *Cape Bruny*, into the Caribbean Petroleum Corporation (CAPECO) tank farm facility in Bayamón, Puerto Rico, an estimated 200,000 gallons of gasoline overflowed from an aboveground storage tank into a secondary containment dike with an open drain.

During the overflow some of the gasoline, which sprayed from the tank's roof vents and hit the tank's wind girder as it fell, aerosolized forming a large vapor cloud (estimated to encompass an area of about 107 acres) that subsequently ignited after reaching an ignition source in CAPECO's wastewater treatment facility. The ensuing blast, multiple secondary explosions and fire resulted in significant damage to 17 of 48 petroleum storage tanks. The blast created a pressure wave that registered 2.9 on the Richter scale and damaged approximately 300 homes and businesses, up to 1.25 miles from the site. Fortunately, there were no fatalities and only three people experienced minor injuries offsite as a result of the initial blast. The fires burned for almost 60 hours. Petroleum products leaked into the soil, nearby wetlands, and navigable waterways in the surrounding area.

As part of its investigation, the CSB analyzed relevant regulatory, industry, and consensus standards for safety and management of bulk aboveground storage facilities. While certain environmental statutes and EPA regulations apply to bulk aboveground storage tank terminals, such as CAPECO, the CSB determined that these regulations do not offer robust protections to the public from catastrophic explosion and fire incidents that may occur due to overfilling at such facilities that store gasoline, jet fuels, blendstocks, and other flammable liquids having an NFPA 704 flammability rating of 3 or higher. As a result of this finding, the CSB issued three recommendations to the Environmental Protection Agency (EPA). This status change summary addresses **CSB Recommendation No. 2010-02-I-PR-R1**.

B. Response to the Recommendation

The EPA first acknowledged receipt of the recommendation in an email dated May 31, 2016. In their email the EPA stated that their formal response would be forthcoming. On June 27, 2016, the CSB received a letter from EPA describing their response to the recommendation.

In their letter the EPA stated that this recommendation prescribed a very specific set of regulatory provisions, some of which were already present in federal regulations and fire code requirements applicable to gasoline storage terminals. However, they also acknowledged that the existing regulations did not contain some of the specific provisions of the recommendation. The EPA stated further that their decision as to whether to amend their standards would be based on potential changes to the applicable standards of the American Petroleum Institute (API), National Fire Protection Association (NFPA), and/or International Code Council (ICC).

The EPA reiterated this response in a letter received by the CSB during March of 2022 and again in a letter received during November of 2022. No further response to this recommendation has been received from the EPA.

This recommendation was superseded by **CSB Recommendation No. 2019-01-I-TX-R8** from the CSB's [Intercontinental Terminals Company \(ITC\) Tank Fire Investigation Report \(2023\)](#).

C. Board Analysis and Decision

CSB policy allows a recommendation to be superseded when it is replaced by a new more appropriate recommendation to the same recipient and covering the same or similar issues. **CSB Recommendation No. 2010-02-I-PR-R1** stemmed from an explosion and fire that resulted from a spill of gasoline caused by the overfilling of an aboveground storage tank at a terminal facility. It directed the EPA to add specific requirements for a particular safeguard to aboveground storage tanks. The recommendation also required the EPA to revise, as necessary, the requirements of several of their statutes to prevent or mitigate the impacts of incidents involving flammable liquids at aboveground storage facilities. **CSB Recommendation No. 2019-01-I-TX-R8** is a more appropriate recommendation in that it directs the EPA to expand the scope of their most protective program to include the hazardous materials listed in the previous recommendation by expanding coverage to include all flammable liquids, including mixtures, with a flammability rating of NFPA-3 or higher. The superseding recommendation will be less complicated to implement and enforce and will result in a higher level of protection than the original recommendation when implemented.

The Board looks forward to the EPA's cooperation in implementing the superseding recommendation. Based upon the information above, the Board voted to change **CSB Recommendation No. 2010-02-I-PR-R1** to: "**Closed –Reconsidered/Superseded.**"