



## U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATION STATUS CHANGE SUMMARY

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| <b>Report:</b>                | TPC Port Neches Explosions and Fire                         |
| <b>Recommendation Number:</b> | 2020-02-I-TX-R4   |
| <b>Date Issued:</b>           | December 13, 2022   |
| <b>Recipient:</b>             | American Chemistry Council                                  |
| <b>New Status:</b>            | Open – Awaiting Response or Evaluation/Approval of Response |
| <b>Date of Status Change:</b> | Not Applicable – Initial Status                             |

### Recommendation Text:

*Revise the Butadiene Product Stewardship Guidance Manual to include guidance on identifying and controlling or eliminating dead legs in high-purity butadiene service. Specifically, provide guidance on the potential for dead legs to be formed when equipment, such as primary or spare pumps, is out of service. In the Manual, also provide guidance on method(s) to identify dead legs that could be formed when equipment, such as primary or spare pumps, is temporarily or permanently out of service. Recommend actions to mitigate, control, and prevent hazardous popcorn polymer buildup in these in-process or temporary dead legs, such as through monitoring, use of inhibitor(s), or conducting maintenance activities to minimize the presence of dead legs.*

### Board Status Change Decision:

#### A. Rationale for Recommendation

On the morning of November 27, 2019, a dead leg between the Final Fractionator A and the manual isolation valve upstream of an offline pump in the TPC Group Port Neches Operations facility's butadiene unit ruptured. As a result of the rupture, approximately 6,000 gallons of liquid, primarily butadiene, was released. The liquid butadiene vaporized upon release forming a flammable vapor cloud that ignited moments later causing multiple fires and explosions. After the initial fires were contained, smaller fires burned for more than one month while isolation efforts were underway.

During the initial explosion two TPC Group employees and a security contractor suffered non-life-threatening injuries. Jefferson County officials reported that five additional minor injuries were suffered by residents of the community. Additionally, the blast damaged nearby homes and buildings and was reportedly felt as far away as 30 miles from the facility. County officials declared a state of disaster and multiple shelter-in-place and evacuation orders were issued.

As a result of the incident, the butadiene unit was completely destroyed and butadiene production operations ceased indefinitely. The incident caused \$450 million in on-site property damage, and an additional \$153 million in off-site property damage. The facility has since been

transitioned to a “terminal and services” operation and on June 1, 2022 TPC Group filed for Chapter 11 bankruptcy.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated the incident and found several safety issues including failures in dead leg identification and control, process hazard analysis action item implementation, control and prevention of popcorn polymer, and providing remotely operated emergency isolation valves. As a result of these findings, the CSB issued two recommendations to the American Chemistry Council. This status change summary addresses **CSB Recommendation No. 2020-02-I-TX-R4**.