



U. S. Chemical Safety and Hazard Investigation Board

RECOMMENDATION STATUS CHANGE SUMMARY

Report:	Shell Polymers Furnace Explosion and Fire
Recommendation Number:	2025-05-I-PA-R2
Date Issued:	September 16, 2026
Recipient:	Shell Polymers Monaca
New Status:	Open – Awaiting Response or Evaluation/Approval of Response
Date of Status Change:	Not Applicable – Initial Status

Recommendation Text:

Based on licensor input and good industry practices, such as ANSI/ISA-61511-2-2018 / IEC 61511-2:2016, Functional Safety – Safety Instrumented Systems for the Process Industry Sector – Part 2: Guidelines for the application of IEC 61511-1:2016 and Part 3: Guidance for the Determination of the Required Safety Integrity Levels, implement and maintain an engineered control to prevent backflow of cracked gas into a furnace during all modes of furnace operation.

Board Status Change Decision:

A. Rationale for Recommendation

On June 4, 2025, an explosion occurred when flammable cracked gas backflowed into the fire box of an ethane cracking furnace at the Shell Polymers Monaca facility in Monaca, PA. The incident occurred because of valve misoperation while restarting the cracking furnace following unplanned maintenance. The furnace was severely damaged, and fifteen employees were evacuated as a result of the explosion. Shell estimated \$95 million in property damage.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated the incident and found several safety issues including an over reliance on administrative controls to control the flow of the flammable gas in the process and deficiencies in the human-machine interface used to control the process's motor-operated valves. As a result of these findings, the CSB issued two recommendations to Shell Polymers Monaca. This status change summary addresses CSB Recommendation No. 2025-05-I-PA-R2.