

Office of Recommendations

Charles B. Barbee, Director of Recommendations

Amanda Johnson, Recommendations Specialist

Adam Henson, Recommendations Specialist



**U.S. Chemical Safety and
Hazard Investigation Board**

Highlighted Recommendations

- API (Chevron R31)
- API (CAPECO R7)
- API (Williams R4)
- API (Williams R5)

Chevron Richmond Refinery Fire

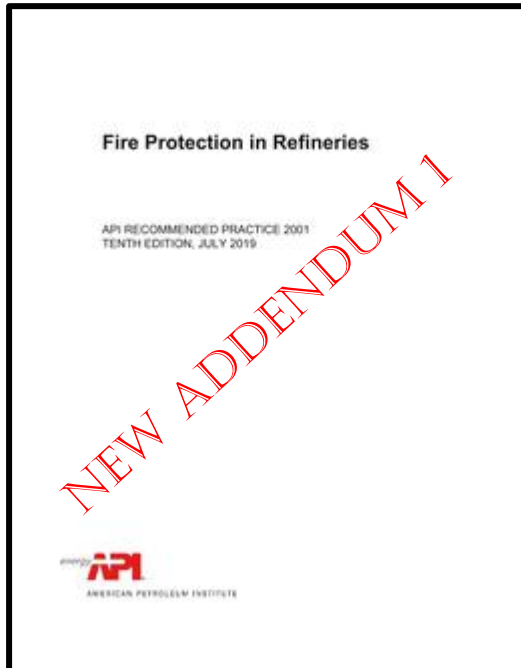


- August 6, 2012
- Catastrophic pipe failure resulting large flammable hydrocarbon release, ignition, and large fire
- 6 injured workers, 1,500 people in surrounding communities sought medical attention

CSB Recommendation R31 to American Petroleum Institute (API):

Revise API RP 2001: Fire Protection in Refineries. Requires a process fluid leak response protocol when a process fluid leak is discovered, ICS structure, pre-response meetings, establishment of a hot zone, etc.

Chevron Richmond Refinery Fire



API Implementation of R31:

- API Committee & CSB discussed API RP 2001
- API published Addendum 1 to API RP 2001, 10th Edition on October 24, 2024
- Addendum 1 included a Leak Response Protocol, pre-planning response scenarios, management of unignited material leaks, reinforcement of ICS structure, etc.

Closed – Acceptable Alternative Action

Caribbean Petroleum Corporation (CAPECO) Refinery Tank Explosion & Fire

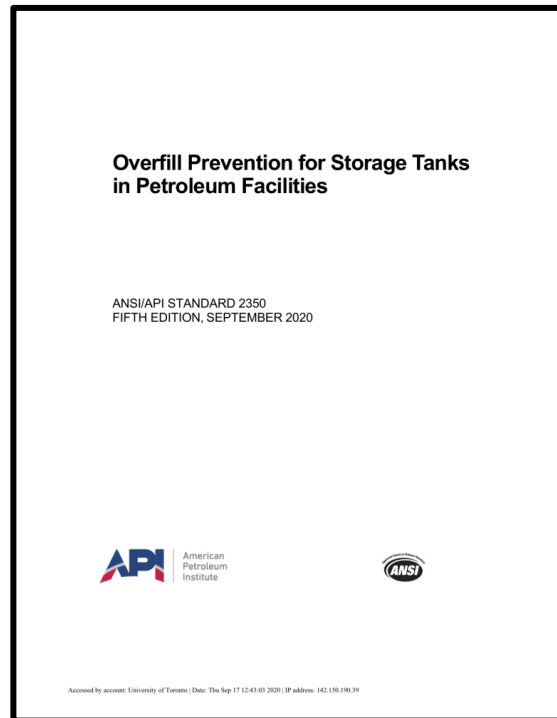


- October 23, 2009
- Overfilled above ground storage tanks during tankship offload, 200,000 gal of gasoline found ignition source; multiple explosions and fire
- Major damage to facility & approx. 300 nearby homes; significant env damage

CSB Recommendation R7 to American Petroleum Institute (API):

Revise API STD 2350, Overfill Protection for Storage Tanks in Petroleum Facilities, to require the installation of an automatic overfill prevention systems for existing and new facilities at bulk aboveground storage tanks storing highly flammable liquids.

Caribbean Petroleum Corporation (CAPECO) Refinery Tank Explosion & Fire



API Implementation of R7:

- API Committee & CSB discussed API STD 2350
- API published the 5th Edition of API STD 2350 in September of 2020
- The 5th Edition addresses a comprehensive overfill prevention system, that includes AOPs and meets the requirements listed in the subparagraphs of the recommendation

Closed – Acceptable Alternative Action

Williams Olefins Plant Explosion and Fire



- June 13, 2013
- During non-routine ops, reboiler rupture due to over-pressurization while isolated from pressure relief device
- 2 worker fatalities, 167 injured

CSB Recommendation R4 to American Petroleum Institute (API):

Revise API STD 521: Pressure-relieving and Depressuring Systems, by defining the various types of equipment operating statuses, including “standby” and “out-of-service.” Specify pressure relief requirements for each type of operating status.

Williams Olefins Plant Explosion and Fire



API Implementation of R4:

- API Committee & CSB discussed API STD 521
- API published the 5th Edition of API STD 521 in June of 2020
- The 7th Edition provides guidance, recommendations, and alternatives to assist owner/users in defining pressure relieving requirements for all modes of operation including “standby” and “out of service” as well as the design of pressure-relieving and vapor depressuring systems at various facility types

Closed – Acceptable Alternative Action

Williams Olefins Plant Explosion and Fire



CSB Recommendation R5 to API:

Revise API STD 521: Pressure-relieving and Depressuring Systems, to require a pressure relief device for overpressure scenarios where internal vessel pressure can exceed what is allowed by the design code.

Williams Olefins Plant Explosion and Fire



API Implementation of R5:

- API Committee & CSB discussed API STD 521
- API published the 5th Edition of API STD 521 in June of 2020
- The 7th Edition cautions against relying solely on administrative controls to address overpressure hazards; it also brings attention to the fact that block valves have the potential to leak and cautions that this may lead to hydraulic expansion and overpressurization of isolated heat exchangers

Closed – Acceptable Alternative Action

Completely Closed Out All Recommendations:

- **CAPECO Refinery Tank Explosion and Fire**
- **Williams Olefins Plant Explosion and Fire**
- **2 investigations addressed:**
 - 2 fatalities
 - 170 injured
 - 300 homes damaged
 - Significant property and environmental damage
- **14 Recommendations issued; all are Closed**