Comments should only address changes being balloted, truly address technical issues if they are technical comments, and propose alternative language.

Background

During the November 2016 meeting of the Subcommittee for Pressure Relieving Systems Task Force on Standard 521, the task force members discussed the letter (“Status Change Letter, API (BP TXC R4), C-AA, 4-29-2016” – attached after the ballot below) recently received from the Chemical Safety and Hazard Investigation Board (CSB) on the change of status of recommendations made to the API after the CSB investigation of the BP Texas City Explosion in 2005. One portion of the letter led to a large amount of debate as the text implied that there is some need for further modification of API STD 521. The text of concern is highlighted in bold and underlined:

“However, the CSB also wishes to note a concern regarding the new caution inserted into Sections 5.8.7.1 and 5.8.8. The CSB encourages API to provide further guidance in the next published edition as to what applications may introduce new hazards that could result in atmospheric relief being judged to be a “safer approach” so that users do not unintentionally bypass the new mandatory safeguards inserted in these sections to prevent vapor cloud explosions.”

The specific passage referenced is about the need to ensure that all hazards are addressed and that the best possible engineering solution is developed for the complex problem that is disposal system design. For example, a Coker Unit Main Fractionation tower frequently has relief devices with low set pressures (less than 30 psig). Relief fluids from these towers generally consist of low molecular weight fluids mixed with high boiling point heavy hydrocarbons. While discharge into a closed system mitigates the chance for a vapor cloud explosion, it could also lead to new hazards. These may include high back pressures, preventing relief devices from operating properly, or fouling and accumulation of tars and other heavy hydrocarbons in long runs of horizontal piping. Under these circumstances, discharge to a condensable blowdown drum to remove the heavy hydrocarbons and vent the low molecular weight vapors to atmosphere can frequently be a safer alternative. Each engineering design needs to be evaluated separately to ensure that the best alternative is chosen.
The two sections cited by the CSB are API Standard 521 §5.8.7, Knockout Drums Venting to Atmosphere, and §5.8.8, Disposal Through Common Vent Stack. In each location the same cautionary note is present:

“Caution - If there is a vapor cloud explosion hazard associated with one or more relief cases or discharges, then one of the following shall be used:

— disposal by a flare (see 5.7);
— discharging into a lower-pressure system (see 5.6);
— application of HIPS (see Annex E);
— eliminating the relevant relief cases (redesign of equipment, etc.).

Not all of these design options are safer than atmospheric relief for all applications as they may introduce new and different hazards.

The user shall assess hazards other than a vapor cloud explosion associated with the release “

Proposed Modification to API 521 6th Ed:

In order to address the concerns raised by the CSB the following modifications to the text are proposed. The intent of these is to ensure that the design engineer perform a thorough review of the hazards considers all aspects of design prior to choosing these methods of disposal for relief streams. Therefore, the following modifications to the cautionary note are proposed (note edits are in blue font):

Caution—If there is a vapor cloud explosion hazard associated with one or more relief cases or discharges, then one of the following shall be used:

a) disposal by a flare (see 5.7),
b) discharging into a lower-pressure system (see 5.6),
c) application of HIPS (see Annex E),
d) eliminating the relevant relief cases (redesign of equipment, etc.),

Caution – Not all of these design options are always safer than atmospheric relief for all applications as they may introduce new and different hazards. The user shall assess hazards other than a vapor cloud explosion associated with the release and determine appropriate mitigation measures.