

# Facility siting changes for process plant buildings in the works

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Facility siting identifies hazards that may affect process plant buildings, assesses the potential consequences and leads to the development of a means to manage the risks of these hazards. In short, it is a procedure to make sure process building siting (location, construction and function) is appropriate based on the known hazards (toxic, fire and explosion) at the facility.

*API is in the process of developing a new recommended practice concerning the siting of portable buildings at process plants and refineries — API RP-753.*

Past incidents at petrochemical facilities have been the initial catalyst for the recognition of building siting issues.

Observations during the investigation of these incidents have indicated that in many of these accidents, particularly those involving explosions, the people inside a building may be at higher risk to injury than those outside of a building.

Facility siting evaluations are typically performed using guidelines in documents such as the API's RP-752 ("Management of Hazards Associated with Location of Process Plant Buildings") and the American Institute of Chemical Engineers/Center for Chemical Process Safety publication, "Guidelines for Evaluating Process Plant Buildings for External Explosions and Fires."

The analysis includes predicting the consequences to occupants of existing buildings from potential events that generate explosion, fire and toxic hazards while offering solutions to address buildings with occupants at undue risk. Also, new buildings warrant a siting evaluation to identify appropriate locations relative to hazards and proper construction.

API is in the process of developing a new recommended practice (RP) concerning the siting of portable buildings at process plants and refineries — API RP-753. API RP-

753 addresses what types of portable buildings should be sited and where they should be sited, and addresses occupancy of portable buildings and use by nonessential personnel. It identifies appropriate analysis methods for siting portable buildings and gives specific siting distance guidance for vapor cloud explosion hazards. Fire and toxic hazards are also addressed along with general risk reduction recommendations.

A draft version of API RP-753 was published in late 2006 and the final version is anticipated by mid-2007.

API is also planning an update to API RP-752, which addresses management of explosion, fire and toxic hazards associated with all types of process plant buildings. This includes such permanent buildings as control rooms, laboratories, shops, fire stations and administration buildings. The update of API RP-752 was planned to start early this year.

Utilizing the latest software tools for performing building siting evaluations can calculate blast loads, predict building damage using pressure-impulse diagrams, and plot blast contours on a 3-D representation of the plant. Some processes are enclosed in build-

ings, and the confinement presents somewhat of a challenge in predicting the size and severity of the potential explosion. Evaluations may use 3-D computational fluid dynamic (CFD) modeling techniques to track the spread of a postulated flammable release and to evaluate various explosion scenarios.

Facility siting evaluations are related to land-based or downstream operations; however, many of the same technical talents are used to address process safety and fire/explosion hazards related to offshore and port facilities.

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ABS Consulting is a leading provider of facility siting services and has conducted numerous facility siting studies for refining and chemical locations. In addition to site-specific studies, ABS Consulting developed corporate facility siting guidelines and risk criteria for clients. Our studies have analyzed a wide range of explosion, fire and toxic material hazards. We apply blast evaluation techniques and prioritize buildings of concern to provide logical basis and first steps to reduce overall risk to your facilities.

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