

Technical Q&A: Chemical Storage Safety

Q: What rules and regulations affect the storage, handling and use of hazardous chemicals on-site?

A: Owners of plants that store and use hazardous materials face a maze of regulatory and legal requirements, and often turn to professionals for help.

Before designing a new plant or making changes to an existing one, it is important to understand which codes, standards and regulations apply. Experienced designers understand — or know how to determine — both the intent of codes and any actions required for compliance.

The International Fire Code (IFC) includes requirements covering storage and use of corrosives, toxics, flammable and combustible materials, and other chemicals. State fire codes or National Fire Protection Association (NFPA) standards also may apply. It is

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important to determine which code (and which version of the code) is enforced by the authority having jurisdiction.

Experienced designers also understand that codes don't always agree. One example: The NFPA 400 lists liquefied ammonia gas as flammable, while the IFC specifically excludes the gas from its own definition of flammable. Other rules may apply, depending on chemicals and processes used and what political jurisdictions a project site resides in.

Among items included in codes, which protect workers, neighbors, and first responders, are automatic sprinkler systems; maximum allowable quantities of chemicals within a storage area; detached storage; minimum distances of hazards from other buildings,

public streets and adjacent properties; and explosion controls.

Codes, standards and regulations evolve, based on new knowledge and through experience with on-site events. Such factors could lead to changes in storage requirements and application of existing requirements to a wider range of facilities.

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How It Works

Energy Logistics Service Stays on Top of the Natural Gas Market

In the highly volatile natural gas market, prices are constantly in flux. Between 2000 and 2010, according to Reuters, natural gas prices fluctuated by more than 5 percent once every seven days, making natural gas the most volatile commodity in the world. Even in the era of the shale gas revolution, price instability is the norm.

The spot price of gas, which was above \$4 per dekatherm in 2011, had fallen 55 percent by April 2012. It rose above the \$4 mark again in April 2013, meaning in just one year the natural gas market rallied 125 percent. End users experienced price relief over the summer, but prices again marched upward later in the year.

Keeping on top of natural gas prices is only one component of Burns & McDonnell's energy logistics service. "It's all about providing market insight and intelligence to

the client. Industrial clients, in particular, need to focus on running their processing and manufacturing operations," says Greg Crow, a senior gas strategy consultant at Burns & McDonnell. "Because our energy consulting activities introduce us to a broad range of gas industry players at the national level, we see how a multitude of gas pipelines, utilities and marketers conduct business. Our dynamic view of the marketplace allows us to introduce trending procurement and delivery strategies to our clients.

"Clients hire Burns & McDonnell to procure natural gas for them. As their agent, we buy the gas for specific time frames and schedule it on interstate pipelines using the client's pipeline transportation agreements," Crow says. "We then monitor gas consumption over the course of the month and make supply adjustments with the supplier and the pipeline accordingly."

As part of the service, Burns & McDonnell forecasts the client's natural gas costs for future months. Shortly after a month concludes, customers receive a natural gas cost estimate, enabling them to close their books sooner because they don't have to wait on gas pipeline and supply invoices to arrive.

"Energy logistics is a great complement to many of the engineering consulting services that Burns & McDonnell has offered for years. It is a good fit for those clients whose facilities we manage and those *OnSite* Energy clients who use natural gas to generate power," Crow says. "We have the skillset to help clients understand and evaluate the economics of combined heat and power, with natural gas costs as a key economic driver."

For more information, contact Greg Crow, 816-823-7852.