



## U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

<b>Report:</b>	<b>Kleen Energy Natural Gas Explosion</b>
<b>Recommendation Number:</b>	<b>2010-7-I-CT-UR1</b>
<b>Date Issued:</b>	<b>June 28, 2010</b>
<b>Recipient:</b>	<b>Occupational Safety and Health Administration (OSHA)</b>
<b>New Status:</b>	<b>Open- Unacceptable Response</b>
<b>Date of Status Change:</b>	<b>July 25, 2013</b>

### Recommendation Text:

*Promulgate regulations that address fuel gas safety for both construction and general industry. At a minimum:*

- a. Prohibit the release of flammable gas to the atmosphere for the purpose of cleaning fuel gas piping.*
- b. Prohibit flammable gas venting or purging indoors. Prohibit venting or purging outdoors where fuel gas may form a flammable atmosphere in the vicinity of workers and/or ignition sources.*
- c. Prohibit any work activity in areas where the concentration of flammable gas exceeds a fixed low percentage of the lower explosive limit (LEL) determined by appropriate combustible gas monitoring.*
- d. Require that companies develop flammable gas safety procedures and training that involves contractors, workers, and their representatives in decision-making.*

### Board Status Change Decision:

#### A. Rationale for Recommendation

The Board investigated two deadly accidents caused by the release of highly flammable natural gas in the presence of workers and ignition sources. In a June 9, 2009 accident, a technician installing a new industrial water heater at the ConAgra SlimJim facility in Garner, NC, was attempting to purge air from natural gas piping. The released natural gas accumulated inside the building, ignited, and exploded, causing the walls and roof of the facility to collapse. Four individuals were killed, sixty-seven others were injured, and approximately 18,000 pounds of toxic anhydrous ammonia gas were released from the facility's refrigeration system. In the February 7, 2010 accident, workers at the Kleen Energy power plant under construction in Middletown, CT, were conducting a "gas blow" operation, whereby natural gas is forced through the newly-installed fuel gas piping at a high volume and pressure to remove debris. The released natural gas accumulated in a congested area, where it ignited and exploded, killing six and injuring at least fifty.

Despite the hazards of fuel gases and their widespread usage in both construction and general industry, the federal Occupational Safety and Health Administration (OSHA) has no fuel gas safety regulation. Yet, the consumption of natural gas as a fuel in the United States far exceeds that of liquefied petroleum gases such as propane and butane, for which OSHA has specific standards in general industry and construction (Storage and Handling of Liquefied Petroleum Gases, 1910.110 and 1926.153). OSHA also has standards for other far less commonly-used flammable gases such as hydrogen (1910.103) and acetylene

(1910.102). Moreover, 80% of natural gas used in the United States is used in sectors covered by OSHA.

B. Response to the Recommendation

In its December 18, 2010 response to the CSB's recommendation, OSHA described a number of commendable but non-regulatory actions taken in the wake of the Kleen Energy incident, including issuing citations to the parties involved and sending a strongly worded letter to 125 power plants planning to commission natural gas turbines over the next five years indicating that natural gas blows are inherently dangerous and that OSHA would use its regulatory enforcement powers in the event of future incidents. This response was silent regarding other gas processing activities, including purging operations like the one in place at ConAgra, and stated only that OSHA would "consider" promulgating flammable gas safety regulations during its next regulatory review.

In April 2011, Recommendations staff proposed designating this recommendation with the status "Open- Unacceptable Response"; however, this notation item (No. 843) was calendared. Rather than revisit the item at its next public meeting in December 2011, the Board agreed with staff's recommendation that the Chair request an updated response from OSHA. OSHA's second response, dated March 19, 2012, indicated that the agency "does not believe this is the appropriate time to initiate the regulatory process." The letter referenced the new requirements in NFPA 54: National Fuel Gas Code (2012), and the newly-issued NFPA 56 PS: Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems (2012), both of which were the result of CSB-issued recommendations. The letter continued:

"We believe the most prudent approach for OSHA is to monitor the implementation of these new NFPA codes, evaluate their effectiveness at controlling the targeted hazards, and then determine if additional rulemaking is necessary to protect workers."

C. Board Analysis and Decision

The intent of the Board's recommendation was for the agency to urgently develop and issue comprehensive fuel gas safety regulations for both construction and general industry to promote safe conduct of a broad spectrum of gas processing activities (including, but not limited to, pipe cleaning "gas blows" and purging operations). When the Board issued this recommendation, it was aware of the difficulties OSHA faces in initiating rulemaking, and issued recommendations to a variety of recipients, including the National Fire Protection Association, to promote timely, comprehensive safety improvements. The Board did not, however, intend for voluntary consensus standards to substitute for federal OSHA regulations for fuel gas safety. OSHA's decision to defer regulation indefinitely while "monitor[ing] the implementation of these new NFPA codes" is in direct conflict with the intent of the CSB's urgent recommendation. Accordingly, the Board voted to designate this recommendation with the status "Open- Unacceptable Response."