

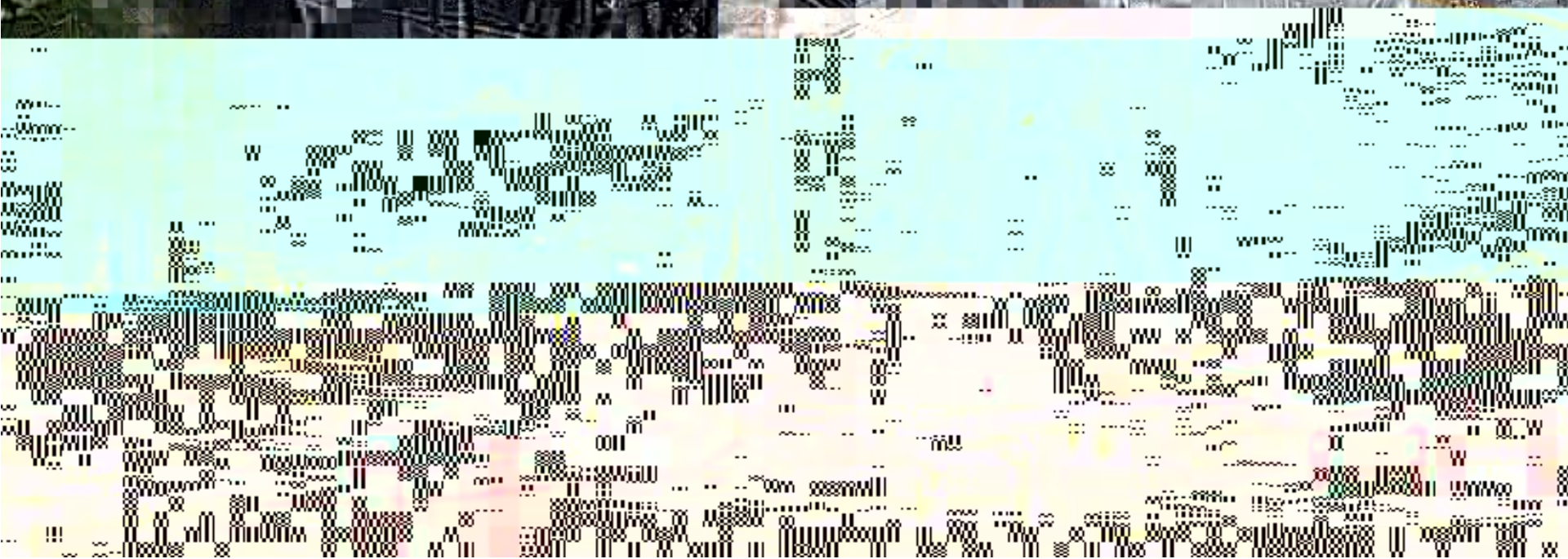
# Natural Gas Equipment Purging Hazards

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# Natural Gas

- On the afternoon of June 9, 2009, 4 workers were fatally injured and dozens injured when an explosion occurred at the ConAgra Foods facility in Garner, North Carolina.
- February 7, 2010-Six workers were fatally injured during a planned work activity to clean debris from natural gas pipes at Kleen Energy in Middletown, CT.







# Events....

- The accident occurred during the installation of a new fuel gas-fired industrial water heater in an interior utility room of the plant.
- The manufacturer, was attempting to purge the new gas line by using natural gas to directly displace the air in the line.
- The purged gas was vented indoors into the utility room, which was ventilated by an exhaust fan.

# Events...continued

- Purging was conducted intermittently over a period of up to two-and-a-half hours....

# Events continued

- Personnel relied on the sense of smell to determine when the piping had been effectively purged of air and whether or not an unsafe release of natural gas occurred.
- Personnel who were in and out of the utility room noticed the gas odor, but most were not seriously concerned and considered the purging activity to be a ***normal part*** of the start-up process
- Over 200 people who had no role in the installation were in the building when the natural gas found an ignition source and exploded at approximately 11:25 a.m.



# “Normal Practice”

ESA reported that it was the company's **normal practice** to purge fuel gas piping directly into the room or area when installing gas-fired equipment. Code officials and other parties told the CSB that they believe this practice to be



*Wherever practicable, directly vent purged gases to a safe location outdoors, away from people and ignition sources.*

- *Purging new or existing gas piping into buildings can be highly hazardous due to the possible accumulation of gas above*

*Purging indoors should only be done in **limited circumstances** where purging outdoors is not practicable.*

*In such cases:*

- nonessential personnel should be evacuated;
- all ignition sources should be controlled or eliminated;
- ventilation should be adequate to maintain the gas concentration well below the lower explosive limit at all times.

*Never rely on odor alone to detect releases of fuel gases.*



*Always use combustible gas detectors to monitor the gas concentration during purging operations.*

- To provide the most accurate information about combustible gas levels, sampling should be conducted frequently or continuously at appropriate locations.
- Meter detects % of LEL (Lower Explosive limit)

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from Chemical Safety Board  
(CSB)

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