

## Loss Prevention Engineers Risk Reports (Flammable Gas Piping Systems and Combustion Equipment Recommendations)

When it comes to flammable gas piping systems and combustion equipment loss prevention risk engineering reviews, are your clients receiving comprehensive qualified expert risk assessments with valid meaningful recommendations and advice? Perhaps not? Why?



CEC Combustion Safety conducted a random sampling and analysis of recent risk engineering field reports from various firms. Based on our analysis, there was a clear trend demonstrating a further need across the industry for additional natural gas systems and combustion equipment training for field risk engineers who develop the loss prevention risk reports for their clients.

More value can be provided to client field risk engineering reports related to flammable gas piping systems and fuel fired combustion equipment if risk engineers receive periodic training on piping and equipment basics, changes to relevant codes and standards, and hazard abatement opportunities based on real case studies.

**Below are just a few examples of the kinds of things that were missed in many of the risk engineering reports for facilities that we reviewed. These issues are applicable to manufacturing facilities, power generation, and institutional/large commercial facilities.**

1. Lubricated plug valves not serviced (isolation compromised).
2. Manifolding of vent lines and inadequate venting systems from regulators and shut-off valve systems (gas accumulation risks inside of buildings).
3. Main fuel Safety Shut Off Valves (SSOV's) not being leak checked annually (makes for explosion risks).
4. Air flow switches set wrong (makes for inadequate purging and light off explosion exposure).
5. Obsolete burner management systems, (enhanced business interruption risks).
6. Lack of procedures related to routine flammable gas venting, purging, and re-introduction.
7. Improper flammable and inert gas meters for measuring concentrations to comply with required codes and standards procedures.
8. Staff not trained on isolation, purging, and re-introduction procedures per code and standards.
9. Inadequate purge points designed into piping systems.
10. Improper infrastructure design of process and emergency venting on piping systems making safe venting of flammable gasses very difficult and enhancing risks.

## How big is the problem?

CEC reviewed more than 30 site reports and found nothing about main fuel (natural gas) distribution systems indicated on any of them. This is despite the fact that in the last three (3) years more than a billion dollars in gas piping related incidents have occurred that made for the death of more than a dozen people. Also, despite the US Chemical Safety Board asking NFPA to create a new standard for high pressure gas piping related maintenance, NFPA 56. Clearly, the risk engineering world has not caught up with this megatrend.

## In CEC's opinion, a loss prevention risk report of meaningful value should consider identification and reporting of items such as:

- Main fuel isolation capabilities in the case of an emergency
  - Do valves exist?
  - Where are they?
  - Does the location of valves meet with applicable code requirements?
  - Are emergency shut off valves labeled?
  - Do handles exist?
- Valve maintenance
  - Do the existing manual valves function?
  - Are they being serviced (codes require annual maintenance of some styles of valves).
- When work on gas distribution systems is being performed: is there a safe gas piping purging plan and do maintenance procedures exist for handling flammable gasses?
- Are safe work procedures, per NFPA56, written and validated, then implemented by trained staff?

CEC Combustion Safety can assist your field risk engineers through additional combustion equipment training programs and site loss prevention engineering risk audit services for flammable gas systems.

Our firm is regularly contracted for fuel systems and combustion equipment assessments for many large global companies such as Ford, General Motors, Alcoa, Dana Corporation, and many other well-known diverse industrial process and manufacturing organization for markets like pharmaceuticals, chemicals, metals, glass, petroleum, and food & beverage. CEC also works with some risk engineering and insurance firms for training and providing expert combustion related services.

It's important for your team and clients to truly understand all of the risks. The flammable gas piping and combustion equipment hazards can be complex and require a specialist. Additionally, there have been many technology and code changes in the last 5 years alone. This area of expertise is 100% of our business focus. CEC has staff dedicated to being on code committees and following important changes in the field. It's not something that most risk engineers can typically do effectively due to the specialization and years of experience that is needed to be effective.

If you'd like to better understand loss prevention risks associated with flammable gas systems and combustion fuel equipment, CEC would like to help. Contact Al Uronis for more information.

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