Chairwoman Woolsey, Ranking Member Rodgers, and members of the Subcommittee on Workforce Protections: thank you for inviting me to testify about the explosion at the Kleen Energy power plant in Middletown, Connecticut. I am an associate professor and chair of the Department of Protection Management at John Jay College of Criminal Justice in New York City. Prior to coming to John Jay College, I spent nearly eight years as a code enforcement official in the Austin and San Antonio, Texas Fire Departments. Currently, I am a member of New Jersey's Fire Code Council and continue to be involved in a variety of code-related issues. I am only representing myself today.

The explosion at the Kleen Energy plant on February 7th, 2010 has exposed a large gap in our national model codes, in particular, provisions dealing with natural gas purging and "gas blow" operations. This incident, in addition to another similar explosion at a ConAgra Slim Jim™ plant in Garner, North Carolina in 2009, demands that this problem be promptly and properly addressed in our model codes.

The inherent danger of purging gas piping of trapped air with natural gas is obvious. While such purging operations are necessary and commonly take place in small installations such as residential gas-fired equipment without incident, the higher volumes of expelled gas in larger commercial and industrial installations presents much greater danger to construction workers and the public. Gas blow operations, conducted with very high gas pressures to remove trapped debris such as slag, are inherently hazardous and present significant danger to workers and occupants in a facility. Stringent regulations are critical to ensure proper safety.

As many of you are aware, our nation relies heavily on the construction and safety codes developed by private, non-profit code-writing organizations such as the National Fire Protection Association and the International Code Council. Their codes and standards are adopted - and in many cases modified – by local governments, states, and the federal government.

The two most relevant codes addressing gas purging operations are the National Fire Protection Association's NFPA 54: *The National Fuel Gas Code* and the International Code Council's *International Fuel Gas Code.* However, electric utility power plants such as the Kleen Energy facility are outside the scoping provisions of both of these two codes. In addition, the high pressure "gas blow" that was used at the Kleen Energy facility, reportedly at 650 psi, is also outside the scope of NFPA 54 and the *International Fuel Gas Code.* It is the scoping provisions of these two codes that create the greatest impediment to ensuring worker safety in the construction and operation of electric power utility plants that utilize natural gas as a fuel.

In the wake of the ConAgra and Kleen Energy incidents, the National Fire Protection Association issued an emergency tentative interim amendment to NFPA 54, changing the gas purging provisions. A subsequent vote taken of the technical committee charged with overseeing NFPA 54 failed to meet the necessary 2/3 affirmative vote needed for permanent inclusion in the code. While these failed provisions were an improvement on the previous code language, these changes would have done nothing to address the

scoping exemptions for electric utility power plants nor would they have dealt with the very dangerous gas blow operations. While the International Code Council has vowed to update the 2012 edition of the *International Fuel Gas Code,* it is unclear what those changes may be.

At the heart of ensuring a safe work environment and public safety in terms of gas purging and gas blow operations is code enforcement. The enforcement of NFPA 54 and the *International Fuel Gas Code* often lies with local government plumbing inspectors, and in some cases, state inspectors. However, these inspectors do not typically inspect the gas pipe discharge areas prior to the purging or gas blow operations nor do they witness the actual operation itself. The codes do not require that an inspection of gas purging operations or gas blows be performed. I do not believe that the Occupational Safety and Health Administration had a policy of inspecting gas purging or gas blow operations at the time of the Kleen Energy explosion.

Looking to the future, I believe that gas purging operations in medium and large scale installations (as defined by pipe size, pressure, gas flow rate) must receive much closer scrutiny. I believe that gas blow operations using natural gas are inherently dangerous and must be prohibited, substituting the use of air or mechanical device such as a "pig."

I recommend the following changes to NFPA 54 and the *International Fuel Gas Code:*

1. **Broaden the scope of these codes to include power plants.** While some modifications will need to be made to the codes, it is crucial that the exception for power plants be eliminated.
2. **Require that medium and large scale installations receive a permit for gas purging operations**. Given the danger involved, I recommend that this requirement be placed in NFPA 54, the *International Fuel Gas* Code, as well as the *Uniform Fire Code* NFPA #1 and the *International Fire Code*. Gas purging operations in medium and large scale installations should not only receive a site inspection and approval of the plumbing inspector but should also receive the concurrent approval of the local fire marshal.
3. **Prohibit gas blows using natural gas**. Gas blows should be conducted using non-flammable gases or mechanical devices such as "pigs" run through the pipe to remove debris.

It is not clear that NFPA 54 and the *International Fuel Gas Code* will ever actually be changed to include power plants within their scopes. In addition, it is not clear that these codes will be amended to prohibit gas blows. These problems are too significant and must be addresses immediately.

I believe that it is imperative that the issue of gas purging and gas blows at construction sites be addressed by the federal government to ensure worker safety. The Occupational Safety and Health Administration (O.S.H.A.) should develop regulations dealing with gas purging and gas blow to operations to ensure worker safety.

I recommend that O.S.H.A. be authorized and charged with developing regulations dealing with all gas purging and gas blowing operations, including the following:

1. **A prohibition on gas blowing operations using natural gas.**
2. **A permit system for conducting gas purging operations in medium and large scale commercial and industrial occupancies.** Regulations similar to the O.S.H.A.'a confined space "lock-out tag-out" permit requirements should be developed to ensure proper gas purging operations in medium and large installations. A permit will ensure that the site of the purging operation has been inspected for proper equipment installation, the necessary monitoring equipment is in place, and that a safe dispersal area has been established prior to conducting the operation.

In closing, I wish to thank the Subcommittee on Workforce Protections for allowing me to testify on this very important issue. I look forward to answering any questions that you may have.