

## CSST Myths

*“Over the past 25 years, the gas industry has experienced many changes in the way natural gas is distributed within residential buildings. One of the most **radical** departures from traditional methods (black iron pipe) is the elevated pressure, corrugated stainless steel tubing (CSST) system.”* Robert Torbin, Cutting Edge Solutions, LLC., consultant to Titeflex Corporation, Omega Flex, Inc. employee, and self-professed “Godfather” of CSST.

For years, the CSST manufacturers have been claiming that their products are safe when installed properly. Installed properly has been defined by the manufacturers to mean when the CSST product is bonded and grounded in accordance with their respective Design & Installation Guide and/or the National Fuel Gas Code (most recently the 2009 Edition). When “installed properly”, the CSST manufacturers lay claim that their product will not be damaged by the electrical charge produced by a lightning strike.

Over the years the CSST manufacturers have been successful in convincing organizations such as the National Association of Home Builders (NAHB) that, when properly bonded and grounded, CSST will not be damaged by lightning. However, what the CSST manufacturers are telling builders, plumbers, and the code organizations, cannot be reconciled with the FACTS.

The NAHB has, itself, sponsored a white paper entitled *“Corrugated Stainless Steel Tubing for Fuel Gas Distribution in Buildings and Concerns over Lightning Strikes”* (August 2007), in which it discusses in detail the issue of arcing from lightning causing perforations of the CSST wall and the resulting gas leakage and fires that result. Within its report, the NAHB comments on topics such as lightning impact on CSST, grounding and bonding considerations, what the arcing damage to the CSST looks like (small puncture of the tubing), codes and standards and the known un-reconciled conflicts that exist across the various codes. More specifically, the NAHB recognizes that *“the speed of technology change far outruns the speed of institutional change. Updating the codes simply cannot keep up with the pace of new product introductions and changes to installation practices.”* (NAHB Report, p. 17). Consequently, the NAHB recognizes that the codes cannot keep up with the changes and must turn to and depend upon the manufacturer’s installation guides to supplement the code coverage.

Reliance on the manufacturer’s installation guides is misplaced. In fact, the NAHB acknowledges that the **“acceptance of the CSST manufacturer’s bonding instructions has met with a mixed review around the United States.”** (NAHB Report, p. 17).

For instance, the CSST manufacturers readily admit in their own documents, including Technical Bulletins, that proper bonding and grounding will **NOT** eliminate the risk of damage and fire from a lightning arc, but will only “reduce the risk”.

Furthermore, the CSST manufacturers recognize that there has been a conflict amongst the codes, D&I Guides, and the local building codes as to what constitutes proper bonding and grounding. Those conflicts remain un-reconciled today. In fact, recently the National Electric Code (NEC)

denounced any responsibility for governance over CSST when they determined that they do not have jurisdiction over bonding and grounding CSST.

In Mr. Torbin's own words: *"We all want safer housing, but taken to the extreme, any rule will eventually destroy the very technology it was set up to facilitate. Trying to make CSST completely damage-proof through rigorous code making (though well intended) will force it and the local labor base out of the market."*

This begs the question: What really is at issue here – protecting property and lives, or greed through increased revenue from CSST sales.

When you have at least one CSST manufacturer focused on what is being said about lightning and its product, and not on what can we do to remediate the problem, the consuming public should be concerned. The following excerpted statement was captured in an email from a CSST manufacturer in October, 2007: *"I thought we agreed early on not to use the words fail and failure as they imply the product did not perform properly (withstand lightning). Instead, we were to use the word 'damage' as not (sic) piping system is designed to perform under those conditions."*

Titeflex claims that there should be proper placement and routing of CSST and failing to maintain proper clearance may result in damage to their CSST product from lightning. But, Titeflex only directs the CSST installer that *"[C]are should be taken when installing horizontal runs to maintain as much separation as reasonably possible from other electrically conductive systems in the building."* (Gastite D&I Guide – August 2010). Titeflex does not provide any guidance to the builder or installer on what is meant by "as much separation as reasonably possible"? In other words, the installer will NOT find a clear definition on what the CSST manufacturer means by "reasonable" clearance, yet Titeflex readily places blame on the builder and installer for failing to properly install their product. (See Titeflex Corporation, Gastite Division Counter-claim against builder and CSST installer).

In February 2008, the CONTRACTOR magazine published a story on lightning and CSST entitled "Mechanical, lightning groups at odds over CSST". In this story, a lightning safety education coordinator with the Lightning Safety Alliance was quoted as saying, "We're not sure how big a problem it is. No research was done on CSST and how it relates to fire before (CSST) went into the market." A CEO for one of the CSST manufacturers went on record as saying, "No one has been able to attribute a death or an injury to lightning strikes affecting CSST." Perhaps in 2008 that was a true statement. Today, however, there is at least one confirmed death due to a lightning-induced CSST failure, and four other deaths where it is believed that CSST was a major factor in causing the fire.

Finally, don't be misled by the CSST manufacturers in believing that if installed properly, CSST is safe, when they, themselves, know it is not! ***"Bonding CSST does NOT prevent damage from a direct lightning strike. No product, . . . is immune to the damage caused by a direct lightning strike."***

Brennen Teel was killed on August 24, 2012 in Lubbock, Texas. The home where he was visiting had CSST in the house that was bonded and grounded (see photos page) and installed per the manufacturers instruction. Where multiple holes formed in the CSST from the lightning strike, the black iron pipe also in the home experienced the same lightning strike and was unaffected. In the Summer of 2008, the Godfather of CSST and consultant to the CSST manufacturers, Robert Torbin, published an article on CSST bonding. Here are a few excerpts from Mr. Torbin's article:

Direct and indirect (lightning) strikes on or near structures can cause severe damage to the building and initiate fires that can result in the loss of property and lives.

Although CSST has good conductivity characteristics, it is more susceptible to damage because of its thinner wall. There have been numerous accounts of damage to CSST from both direct and indirect lightning strikes on or near structures containing this type of gas piping system.

Given the potential for lightning to cause severe damage to a building and initiate fires that has resulted in the death of at least one man in Texas, Mr. Torbin found it surprising that most jurisdictions throughout the United States do not invoke "special codes" and/or "standards" to address the damage caused to CSST by lightning.