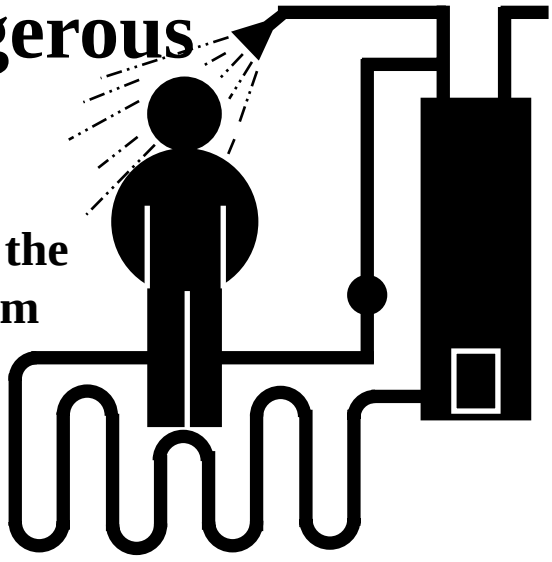
It's a Dangerous World ...



Legionella and the open loop system

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(My thanks goes to Dave Yates for his digging into information and making contacts with the Legionella hunters.)

We live in a dangerous world. If we spent much time thinking about all the things we encounter during a single day that could cause us injury or death, we would probably elect to stay in bed. Howard Hughes spent the last half of his life sealed away in a hermetically sealed apartment. Everything he touched, ate or drank was sterilized. He could afford to live that way... but why would anyone want to?

Keeping things in perspective is what prevents most of us from a debilitating fear of the dangers in life. We regurlarly make value judgements on whethere this thing or that will harm us today. It is part of living. When it comes to designing, manufacturing, installing or using heating systems, we apply those same judgements. No one intentionally sets out to create a heating system that will harm or kill another person, but they all have that potential. Hundreds of people die every year from exploding boilers, carbon monoxide leaks from furnace heat exchangers, blocked flues, fuel explosions from gas leaks or simply trying to light a pilot. Should we ban the flame or pressure vessels? Obviously not.

Does that mean that we should throw caution to the wind and plunge headlong into any new technology that presents itself? I think not. It is our moral duty to weigh the odds and take every reasonable precaution to protect our customers. Life is a series of compromises. When man first discovered how to make fire for warmth and cooking he also discovered a force of destruction and death. How many people have been injured or died from man made flames? Does this mean we should avoid the use of fire? No, we have weighed the odds and determined that the benefits are worth the risk.

Do the benefits justify the risk? You decide.

The use of water heaters as a heat source in open loop radiant systems has been a topic of debate in our industry for many years. As I look back at the Radiant Panel Report over the years I find it to be the most often published and most controversial subject. Recent articles in this publication and others have once again brought it to the forefront. A reoccurring theme is the danger of Legionnaires disease. This is a very real threat to health and safety. There is no doubt that the Legionella bacteria are responsible for many deaths and more illnesses. But, many questions remain unanswered. Even the experts don't agree on why only some people are affected and others are not.

Last month two workers in a Ford Motor Co. plant in Cleveland died of Legionnaires. Two other workers were diagnosed with the disease. The water at the plant is being tested for the Legionella bacteria that can cause pneumonia like symptoms in some people. The bacteria spreads through inhalation of mist from contaminated water. A large cooling tower is suspected as the culprit. The 2500 other employees did not contract the disease. In an unrelated incident a few years ago there was a boiler explosion that killed two workers in another Ford Motor Co. plant and injured many others. Both of these incidents are tragic, but we continue to use boilers and we continue to use cooling towers. Why? Because life is dangerous and we have weighed the odds. At the same time we strive to make boilers safer and find a way to eradicate the Legionnaire bacteria from our water systems.

What we really know about Legionnaire is limited

Here is what we think we know about Legionnaire's disease.

• Most people exposed to the bacteria do not become ill because their immune response will successfully fend off infection.

• No one knows with any certainty why people contract the disease.

• About 20% of those who contract Legionella die from the disease.

• The recorded outbreaks generally involve large potable water systems, especially in hospitals and hotels because of the large surface areas for biofilms to develop and harbor the bacteria.

• Legionella bacterium appear to grow in stagnant water at temperatures

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between 68˚F and 122˚F when the pH is generally below 7.0 and sediment is present.

• Chlorine levels used in typical residential applications are ineffective against Legionella unless there are high residuals and continuous water flows.

How great is the risk? No one knows for sure.

• Some deaths contributed to pneumonia could actually be from Legionella, but nobody really knows.

So where does that leave the open loop radiant systems? Actually, it draws into question most potable hot water in the country. Based on what we think we know, Legionella must be lying in wait in the majority of our homes; waiting for that individual whose immune system is weak to inhale the mist from a shower. There could be an epidemic and we don't even know it. Granted, the open loop radiant system provides more surface area and more stagnant water so, in theory, more breeding grounds for the bacteria. How great is the risk? Again, no one knows for sure, but one has to wonder why this unseen epidemic isn't front-page news.

Here is where the word "perspective" comes into play once again. It is up to our industry to determine whether or not the benefits to our customers are worth the risk. Some will say absolutely not. Others will say that the risk is no greater than is encountered anytime the pilot is lit. Personally, I have already lived in a house with an open system and I would do it again. But, then again, I fly upside down in airplanes for fun.