



## Safety with Steam

Ignoring pressure or temperature ratings of hoses or couplings can be deadly

BY PHIL KIMBLE

**Every good purchasing agent** has an array of sources for the products necessary to keep his company's business running smoothly. Vendor catalogs are valuable tools that provide the experienced procurer with a wealth of information. This same information in the hands of someone not quite as seasoned can have dire consequences.

One department in a food processing plant was responsible for off-loading molasses from railroad cars. The rail cars need to be heated to get the molasses to flow, especially in the winter months. This heating process was accomplished by connecting a line from the plant's steam system to the rail car.

A new purchasing agent was looking for replacement heating lines. As he was looking through catalogs the solution crystallized. He sat back with a smile wondering why no one had come up with this before. Though the

catalog noted that the hose temperature maxed out at 200 degrees Fahrenheit and steam is 212 degrees, he believed that all manufacturers put a little 'fudge factor' in their numbers. Eager to impress his boss with the cost savings, he placed his order.

After reviewing an invoice for more of the new heating lines, the plant manager was getting concerned about how fast they were wearing out. Even with the cost savings, the new ones were actually more expensive because they had to be replaced so often. But his crew liked how easy they were to use. He was about to call the purchaser to discuss this when his phone rang. The panicked voice on the other end told him to get to the rail yard immediately—there had been an accident.

When one of the yard crew members disconnected the heating line from an empty car, he had forgotten to relieve

the pressure before disconnecting it. The line still had 90 psi in it when he released the coupling levers. The hose exploded from the car and the metal coupling struck the worker, killing him.

Pressure and temperature for saturated steam is directly related. In this case, 90 psi steam is actually 331 degrees F not 212 degrees. Hose and couplings designed for the rigors of steam service are the only ones that should ever be used. Not only is steam very hot, it is compressible. Sudden release is an explosively violent reaction that can carry deadly force.

Doing a little independent research does not make one an expert. Never exceed the maximum recommended pressure or temperature rating of either the hose or couplings. And remember, the assembly working pressure is always rated to the lowest rated component, hose or coupling. If in doubt, contact the expert: the manufacturer. Guessing can be a deadly game. ■