



REFRIGERATION REVIEW

OSHA and an Ammonia Refrigeration System

As one of the few charter members of IIAR still active, it has been somewhat sad to see well-meaning standards departing significantly from the long standing traditional standards like ASHRAE 15 (i.e., the use of continuous ventilation), and requiring P&IDs when even OSHA doesn't require them.

While the IIAR Standards are well-intentioned, they depart significantly from the original purpose of IIAR, and that was to preserve ammonia as a refrigerant and guard against unnecessary standards and codes (i.e., like the NEC requiring explosion proof starters). I would hope this would be a wake up call for ammonia refrigeration designers to become more influential in the formation of IIAR standards. Our organization is getting so large that it is being influenced by other self-serving adjuncts to our industry -- adjuncts such as PSM providers and equipment salesmen -- that we are losing some of the advantages of ammonia and other natural refrigerants, and encouraging the installation of less efficient systems such as packaged systems, whether they be "Freon" or ammonia. Everyone knows that a central system will always be more efficient.

The following are the results of OSHA citations placed on a large ammonia refrigeration system in 2018 -- all of these citations were vacated (rescinded) in 2019 by an appellate court judge. The fines were issued *BEFORE* IIAR Standards 2, 3, 4, and 5 were released.

Below is a synopsis of the proceedings; a full transcription can be seen as OSHRC Docket

No. 17-1246.

Process Safety Management of Highly Hazardous Chemicals ("PSM") standard 29 CFR 1910.119, with proposed penalties totaling \$70,618.00. The action is now before the Court on the Secretary's complaint seeking an order affirming the citation and proposed penalty and the company's answer denying the alleged violations and appropriateness of the penalties and abatement and asserting the affirmative defense of unpreventable employee misconduct.

CITATION 1

1. Instance (a)

Instance (a) of Item 1 of the citation alleges that the company did not document compliance with its chosen RAGAGEP (Recognized as Generally Accepted Good Engineering Practice), "ANSI/ASHRAE 15-2004, Section 8.11.2.1, as the refrigeration machinery room did not contain ammonia detectors."

(1) The Cited Standard Applies to the Cited Condition

Section 1910.119 is found under *Subpart H -- Hazardous Materials* of OSHA's general industry standards and addresses process safety management of highly hazardous chemicals. The *Purpose* statement of Section 1910.119 provides, "This section contains requirements for preventing or minimizing the consequences of catastrophic release of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards."

THE COURT'S RULING: The IMC (International Mechanical Code) is a RAGAGEP and the company complied with it by operating its ventilation system in the machinery room continuously. The Court concludes the Secretary has failed to establish the company was not in compliance with Section 1910.119(d)(3)(ii). Therefore, Instance (a) of the citation must be vacated.

CITATION 2

The Secretary contends that the company failed to comply with Section 8.11.2 of the ASHRAE 15 Standard, its chosen RAGAGEP: "Each refrigeration machinery room shall have a tight-fitting door or doors opening outward, self-closing if they open into the building, and adequate to ensure freedom for persons to escape in an emergency."

THE COURT'S RULING: Doors are not equipment, either in the plain and natural meaning of the words. Section 1910.119(d)(3)(ii), therefore does not apply to the cited conditions. Therefore, the Secretary has failed to establish the company violated Section 1910.119(d)(3)(ii) with regard to Instances (d) and (e) of Item 1, which must both be vacated.

CITATION 3

The cited standard is a subsection of Section 1910.119(d), which as indicated *supra*, is designed to provide the employer and employees with crucial process safety information "to enable the employer and employees involved in operating the process to identify and understand the hazards posed by those processes involving highly hazardous chemicals." 29 CFR 1910.119(d). In its *Document Request* #1, OSHA requested: "Document(s) exhibiting the maximum intended chemical (anhydrous Ammonia) inventories in pounds (lbs.) in the facility, the method used for determining the maximum intended inventory amount, and the procedures/methods used to ensure that the maximum intended inventory is not exceeded."

THE COURT'S RULING: The Secretary has not shown that either by operational necessity or otherwise, the failure of the company to comply with the terms of Section 1910.119(d)(3)(i)(E) caused employees to be within the zone of danger of exposure to ammonia. Employees who initiated and monitored the recharging process did not refer to the violative documents. The process for recharging described by the employees (monitoring the addition of ammonia to the refrigeration system by observing a computer and the sight glasses of the pressure vessels) did not cause employees to be within the zone of danger to ammonia. Therefore, the Court concludes the Secretary has failed to establish employee access to an ammonia hazard was reasonably predictable. Therefore, Item 3 must be vacated.

CITATION 4

In Item 2 of the Citation, the Secretary alleges the company violated 29 CFR 1910.119(d)(3)(i)(B), which mandates information pertaining to the equipment in the process shall include piping and instrument diagrams (P&IDs). The Secretary argues that a violation occurred when the company "failed to ensure that the P&IDs were accurate and reflected the current process in that the P&ID-9 for the HTRL liquid line in and the HPL liquid line out does not show where it comes from and where it goes out to."

THE COURT'S RULING: The *Process Guide* does not require employers to use P&IDs to provide the necessary information -- it states it *may* use them. No evidence was adduced at trial showing the refrigeration industry had a mandatory written requirement that P&IDs detail the lines going into and out of vessels. No published code or standard with this requirement was shown to exist. The Court concludes the Secretary has failed to establish the company was not in compliance with Section 1910.119(d)(3)(i)(B). Therefore, Item 2 must be vacated.