

**INTERPRETATION IC 15-1992-4 OF
ANSI/ASHRAE STANDARD 15-1992
SAFETY CODE FOR MECHANICAL REFRIGERATION**

June 27, 1993

Request from: Pierre Guillemette, Roland Guillemette Inc., 3450, boul. de la Chaudiere, Ste-Foy, Quebec, Canada G1X 4B6

References. This request refers to Standard 15-1992, Subsections 5.2.1 High-Probability Systems, 7.2.4 Ventilated Spaces, and 11.13.4.

Background.

1. Subsection 5.2.1 reads:

"5.2.1 High-Probability systems. Any system in which the basic design, or the location of components, is such that a leakage of refrigerant from a failed connection, seal, or component could enter the area under consideration. Typical high-probability systems are (a) any direct or indirect open spray system or (b) any arrangement in which refrigerant-containing parts in the refrigerant circuit are located in such a way that refrigerant leakage could enter the area.

Mr. Guillemette's letter postulates a machinery room with a water cooled liquid chiller (typical indirect closed system) with a mechanical room exhaust system energized by a refrigerant vapor detector per 11.13.4. In this machinery room there is also a ventilation system that recirculates conditioned air to and from occupied spaces. This ventilation system is not designed to draw air from the machinery room space but the air ducting is not air tight and has access doors that could inadvertently be left open. He interprets that such an example would be classified as a low-probability system.

2. Subsection 7.2.4 reads:

"7.2.4 Ventilated Spaces. When an evaporator or condenser is located in an air duct system, the volume of the smallest occupied space, or unpartitioned building story, served by the duct will determine the permissible quantity of refrigerant in the system. Except, if airflow to any enclosed space cannot be reduced below one-quarter of its maximum, the entire space served by the air duct system may be used to determine the permissible quantity of refrigerant in the system."

Mr. Guillemette's letter postulates a direct expansion (DX) evaporator coil located in an air duct system incorporating variable air volume (VAV) boxes serving 10 occupied spaces. He interprets that it is allowed to use the entire space to determine the permissible quantity of refrigerant:

- a. if each VAV box is adjusted with controls so the airflow cannot be reduced below 25 percent of its maximum, and
- b. independent of whether or not a fire damper, which could close and reduce the airflow to zero, is used in one or more of the ducts.

Question 1. Is Mr. Guillemette's Interpretation No. 1 correct?

Answer 1. No.

Comments: Subsection 11.13.2, states that each refrigerating machinery room shall have a tight-fitting door or doors opening outward, self-closing if they open into the building, and adequate in number to ensure freedom for persons to escape in an emergency. There shall be no openings other than doors that will permit passage of escaping refrigerant to other parts of the building.

Doors referred to in Subsection 11.13.2 are considered to be egress or ingress doors, not the doors in the duct work. Openings other than egress/ingress doors include access doors in the duct work. Since there are other openings in the system postulated by Mr. Guillemette, his system would be considered to be a High-Probability System as defined in Subsection 5.2.1.

Question 2a. Is Mr. Guillemette's Interpretation No. 2a correct?

Answer 2a. Yes.

Question 2b. Is Mr. Guillemette's Interpretation No. 2b correct?

Answer 2b. No.

Comment. Subsection 7.2.4, Exception, states if airflow to an enclosed space cannot be reduced below one-quarter of it's maximum, the entire space served by the air duct system may be used to determine the permissible quantity of refrigerant in the system. Therefore, if airflow to an enclosed space can be reduced by more than one-quarter, then that space cannot be used to determine the permissible quantity of refrigerant.