

**INTERPRETATION IC 15-2013-3 OF  
ANSI/ASHRAE STANDARD 15-2013  
SAFETY STANDARD FOR REFRIGERATION SYSTEMS**

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**Request from:** Patrick J. Grant, PE and Ean W. Saltzman, BAE Systems, Inc., Facilities Engineering, 80 M St., S.E., Suite 200, Washington, DC 20003.

**Reference:** This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 15-2013, Section 7.2, regarding refrigerant concentration calculations.

**Background:** The refrigerant concentration as described in Section 7.2 “shall not exceed” the ANSI/ASHRAE Standard 34 Refrigerant Concentration Limits (RCLs). The space-averaged concentration (the total leaked refrigerant mass divided by the volume of an occupied, contaminated space) is held at or below the RCL. No connected spaces (per Section 7.3) are involved. Section 7.2 does not specify whether the refrigerant concentration is a localized concentration (such as in a breathing zone as defined by ANSI/ASHRAE Standard 62.1 or some other breathing zone definition) or the space-averaged concentration. Standard 34 RCLs are carefully selected to “reduce the risks of acute toxicity, asphyxiation, and flammability hazards”, and exceeding an RCL elevates the risk.

**Interpretation #1:** Localized refrigerant concentration above the RCL at any location where an occupant breathes increases risk beyond the intent of Standard 34 and is not permissible. Maintaining the space-averaged refrigerant concentration at or below the RCL is a minimum requirement and assumes that air and refrigerant in the occupied space are well-mixed. The spaced-averaged refrigerant concentration must be reduced as required to maintain localized refrigerant concentration at or below the RCL if well-mixed conditions do not exist.

**Question #1:** Is Interpretation #1 correct?

**Answer #1:** No.

**Comment:** The designer is free to be more conservative by using a smaller volume.

**Interpretation #2:**

- a) Maintaining the space-averaged refrigerant concentration at or below the RCL is sufficient.
- b) The Standard 34 RCLs anticipate increased local concentrations.

**Question #2:** Is Interpretation #2a correct?

**Answer #2:** Yes

**Comments:** For a response to Interpretation #2b, refer the question to ASHRAE SSPC 34.