

**INTERPRETATION IC 15-2013-1 OF
ANSI/ASHRAE STANDARD 15-2013
SAFETY STANDARD FOR REFRIGERATION SYSTEMS**

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Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 15-2013, Sections 7.3.2.2 and 7.3.2.3, regarding plenums and ductwork in the calculation of volume for refrigerant concentration limit (RCL).

Background: A VRF system in which indoor terminal units are installed in a variety of locations (ceiling, wall, or floor) is used to condition air in the occupied space. A separate, dedicated outdoor air system (DOAS) is used to deliver conditioned outside air to the same space. The DOAS has a ducted supply and plenum return. The VRF terminal units take air from the occupied space and return conditioned air to the occupied space, but are not directly connected to the plenum or other ductwork. The DOAS system is not operated continuously. Since the VRF terminal units are not in the supply ductwork or plenum return, refrigerant could potentially leak directly into the occupied space without traveling through ductwork or plenum.

Interpretation: Section 7.3.2.3 specifically states that supply and return ducts and plenums shall be included when calculating refrigerant quantity limits. This means these volumes can be used in the calculation even if the leak potential components are not located within these specific ducts/plenums.

Question: Is this Interpretation correct?

Answer: No

Comment: The **Background** describes two independent refrigerating systems, namely a DOAS system and a VRF system employing multiple indoor terminal units. The refrigerant concentration in the occupied space is computed separately for each system and compared to the RCL. The **Background** states that the DOAS system is not operated continuously and may be ‘off’. The DOAS system is therefore controlled in such a way that it would not always act to disperse refrigerant that may leak from VRF indoor terminal units into the plenum or ductwork. If the refrigerant concentration is based on these additional volumes, leaking refrigerant from the indoor terminal units could concentrate in the occupied space alone, and could rise to a level that poses a danger to occupants who may be present.

Please note that there is an editorial error in Sections 7.3.2.2 and 7.3.2.3; “refrigerant quantity limit” should read “refrigerant concentration limit” or RCL.