

THE OFFICIAL JOURNAL OF AIRAH

FEBRUARY 2019 · VOLUME 18.1

RRP \$14.95

PRINT POST APPROVAL
NUMBER PP352532/00001

Ecolibrium

Cape crusader

A coastal project aims to be a change agent.



Cause for alarm?

Neil Kenny, AM.AIRAH, from Regulator Australia points out some issues with the way gas sensors measure potentially dangerous refrigerants.



There appears to be some confusion regarding refrigerant gas alarm levels in the Australian standards AS/NZS 1677 (old standard) and AS/NZS 5149 (current standard).

As an example, R410a and R32 are two common refrigerant gases that in concentration replace the air and can cause death by asphyxiation. This is of concern with current variable refrigerant systems, which can have many small head ends connected to a large multi-head system and could asphyxiate the residents of a small unit in an apartment or retirement building.

The Australian standards quote practical limits of refrigerant gas in units of kg/m^3 . This is not practical, because refrigerant gas is measured in ppm (parts per million). R410a is quoted at 0.44kg/m^3 and R32 is quoted at 0.054kg/m^3 .

There is an exposure standard quoted in ppm. However, this is a time-weighted average (TWA) of 1,000ppm, which is an exposure level, generally over eight hours. This has caused some confusion and is being used as an alarm level.

The Japanese standard JRA 4068T – *Requirements of refrigerant leak detector and alarm for air conditioning and refrigeration equipment* is very comprehensive. It mentions that 1,000ppm should not be used as an alarm level due to the chance of false alarms. It recommends an alarm level below 10,000ppm. The nominal refrigerant level in Japan is 5,000ppm.

Comparing these with an O_2 (oxygen) sensor gives a better understanding of the suggested alarm levels for refrigerant gas sensors. As oxygen is 19 per cent (approximately) of air, this is 190,000ppm. An alarm level of say 17 per cent is 170,000ppm, or a drop of 20,000ppm or 2 per cent. The recommended alarm level for a refrigerant gas sensor at 5,000ppm represents 0.5 per cent.

As refrigerant gas alarms will be required more frequently in these multi-head installations, I feel there should be some discussion on refrigerant gas alarm levels for Australia. Japan has done extensive work in this area and has a standard dedicated solely to refrigerant leak detectors and alarms – it would be logical to look at their experience. ■



Sydney-based Taylor Balk, Affil.AIRAH, is a product manager in CSR's Bradford division.

Responsibilities

Learning and understanding the wants and needs of our customers, developing the strategic marketing plan for our ventilation products, forecasting demand, developing marketing campaigns and supporting the wider Bradford team.

Specialty

My specialty is in the residential and commercial ventilation products at Bradford. I have a high level of knowledge and understanding about how to ventilate a building and knowing the right products for the right application.

Passions

I'm passionate about communicating the benefits and necessity of ventilation, especially in residential buildings for management of heat and humidity. I'm also very interested in building for a circular economy and have studied several sustainability-specific subjects at university.

Professional development

I regularly attend industry events, including AIRAH building seminars and industry nights. Both are a great way to continue to learn and engage with industry experts and our customers. I am also in the process of completing a Masters in Management to develop my skills in working with other people.

Inspiring words

"Change your thoughts and you can change the world." – Norman Vincent Peale

Plans for the future

Continuing to learn through practice, and study will always be on the cards for my professional and personal development. I also intend to continue travelling and exploring the world's wonders with my future husband. ■