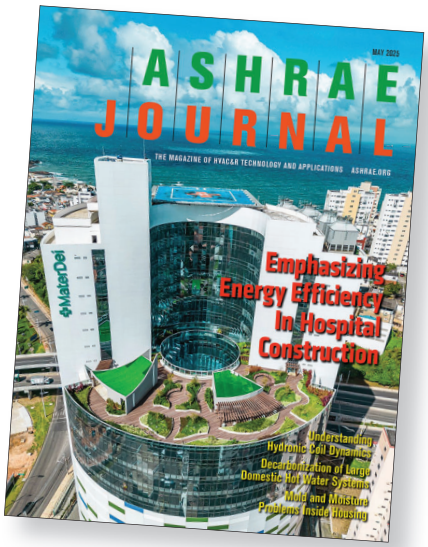
Transitioning to Low-GWP Refrigerants

The May 2024 *ASHRAE Journal* article, "Refrigerant Flammability and the Transition to A2Ls," offers a discussion of the HVAC industry's move toward refrigerants with a lower global warming potential (GWP). However, targeting refrigerants with GWP below 700 is only a half-step. If U.S. policy encourages this as a destination, we risk facing another costly transition within the decade.



Ultralow GWP refrigerants (<10) are already available and viable. Many A2L options still rely on polyfluoroalkyl substances (PFAS)—persistent, toxic substances linked to environmental and health risks. Europe is already moving to ban PFAS-based refrigerants. We should not repeat history by trading ozone depletion for global warming, only to move next to carcinogenic compounds.

Natural refrigerants—CO_2, hydrocarbons like propane (R-290), and ammonia—are already proven. R-290, in particular, is efficient, affordable, abundant, and widely adopted in Europe and Asia. Yet U.S. safety codes and equipment restrictions prevent its widespread use.

To remain competitive and avoid future disruption, the U.S. must enable—not obstruct—the manufacture and adoption of HVAC equipment based on natural refrigerants. Otherwise, we risk putting American manufacturers at a long-term disadvantage while perpetuating a cycle of reactive transitions.

Jonathan Heller
Member ASHRAE
Seattle, Wash.

PANSULLA RESPONSE

Last year's interview aimed to inform HVAC professionals about the U.S. transition to A2L refrigerants—why it's happening, what it requires and how the industry is preparing to ensure a sustainable shift to lower-GWP solutions. The intention was not to go into detail on specific refrigerant options. An end user is free to use whatever equipment they would like, provided it is compliant for the application.

A2L refrigerants represent an intentional, science-based step forward—reducing GWP while maintaining the safety, performance and scalability the HVAC&R industry demands. GWP is just one factor out of many in the selection of a refrigerant. As noted in ASHRAE's own position document, refrigerant selection must be based on a holistic analysis—not a single factor like GWP or chemical class. Please reference section 3.1 of ASHRAE's "Position Document on Refrigerants and Their Responsible Use" for more information.

A2L refrigerants have been rigorously evaluated and approved by many global technical and regulatory agencies. As an example, several A2L refrigerants were listed in SNAP Rule 26, which was finalized in May 2024 from the U.S. EPA. The intention of the SNAP program is to help identify safer alternatives to ozone depleting substances and HFCs to reduce environmental and health risks. Another relevant example is ASHRAE Standard 34. The purpose of ASHRAE standard 34 is to "establish a uniform system for assigning reference numbers, safety classifications and refrigerant concentration limits to refrigerants." Based on their rating system, the "A" in A2L designates low toxicity as determined by a robust set of toxicological data.

On the topic of PFAS, the UNEP EEAP 2022 assessment report provides some commentary on this topic as it relates to the refrigerant industry. The assessment notes there are over 4,730 substances that can be classified as PFAS and because of their differing characteristics and toxicities, they should not be grouped together for risk assessment purposes. But not all PFAS are the same, and policy should reflect that nuance.

As for "natural" refrigerants like CO_2, propane,

and ammonia—they have their place, but they're not universally applicable. A2Ls offer a broader, more practical path forward for many applications, especially where safety and energy efficiency are critical.

Andrew Pansulla
Member ASHRAE
West Chester, Pa.

Combating Mold

In his May 2025 column, "Understanding Mold and Moisture Problems Inside Housing," Dr. Tsongas provided an excellent summary of the issue with real-world examples and practical recommendations. However, while his conclusion notes that ASHRAE has a "wide array of useful, relevant publications" in addressing mold, he did not mention ASHRAE Standard 62.2, *Ventilation and Acceptable IAQ in Residential Buildings*.

While ASHRAE Standard 62.2 does not have a specific mold control section, many of its requirements align with Dr. Tsongas' recommendations or would help address the issues he raises, and some of these were developed with moisture control in mind. For example, a core requirement in ASHRAE Standard 62.2 is local exhaust for kitchens, bathrooms, and dryers. Similarly, the dwelling-unit ventilation requirement in ASHRAE Standard 62.2 would help address the issue he raises regarding moisture from new concrete. It recently added a requirement for a moisture barrier covering crawlspace ground and other bare earth, another recommendation of Dr. Tsongas.

ASHRAE Standard 62.2 requires ventilation and ground covers for both new and existing homes, with more flexibility for the latter. While it does not currently call for stand-alone dehumidification, the committee is currently developing such a proposal.

Following ASHRAE Standard 62.2 is not a guarantee against mold. For example, Dr. Tsongas points to mold growth due to leaks, and ventilation could only reduce—not eliminate—the resulting problems. However, ASHRAE Standard 62.2 should be considered one of ASHRAE's "useful, relevant publications" in tackling the issue of mold in homes.

Marian Goebes
Oakland, Calif.

TSONGAS RESPONDS

I want to thank Marian Goebes for her letter regarding my fundamentals column "Understanding Mold and Moisture Problems Inside Housing." I wholeheartedly agree with her suggestion and reasoning that ASHRAE Standard 62.2 should be considered one of ASHRAE's "useful, relevant publications" in tackling the critical issue of mold in homes. I also very much appreciate her kind words regarding my column. Thank you very much, Marian.

George A. Tsongas, Ph.D., P.E.
Member ASHRAE
Portland, Ore.