Refrigerant Tech Primer

Refrigerants: Potent Greenhouse Gases

Recovering refrigerant from an existing HVAC system before installation is essential for environmental protection, and regulatory compliance

Applicable Building Types:

All buildings with HVAC systems

Implementation:

During system replacement or major repairs

Why Recover Refrigerant?

1.) Environmental Protection: Refrigerants Are Emissions

Refrigerants, particularly older types like R-22 & 410A have high global warming potential (GWP); some refrigerants are 1100-10,000 times more potent than carbon dioxide. Releasing them into the atmosphere contributes to climate change. Proper recovery prevents emissions and supports sustainability goals.

2.) Regulatory Compliance

Federal regulations, including the EPA's Section 608, mandate refrigerant recovery and prohibit venting. Non-compliance can result in significant fines and penalties.

3.) Diversion Undermines Your Environmental Goals

Building owners who invest in upgrading to a more efficient air conditioning system often do so with the intent of reducing their building's carbon footprint. However, if HVAC installers release the existing refrigerant into the atmosphere instead of properly recovering it & disposing of it, the environmental benefits of the upgrade are immediately compromised. The released refrigerant contributes to global warming, negating the positive impact of the new system's efficiency and lower-GWP refrigerants.

4.) Frustration for Building Owners

From a building owner's perspective, allowing refrigerant to escape is contradictory to their sustainability efforts. They are making a significant investment in greener technology, only to have the environmental benefits erased due to improper handling of the old refrigerant. This can be upsetting, as it not only undermines their goals but also reflects poorly on their commitment to sustainability. Additionally, improper refrigerant disposal may expose them to regulatory and reputational risks.

Where Do Refrigerants Go After Being Recovered?

When refrigerant is recovered, it can either be sent to a certified facility for destruction or processed for reuse in the industry. Destroying refrigerants permanently removes high-GWP gases from circulation, preventing future emissions. This is the most environmentally beneficial option.

On the other hand, recycling refrigerant for reuse keeps it in the industry, reducing the need for new production but also prolonging the presence of high-GWP gases in HVAC systems. While recycling is better than venting, it does not eliminate the long-term climate impact of older refrigerants.

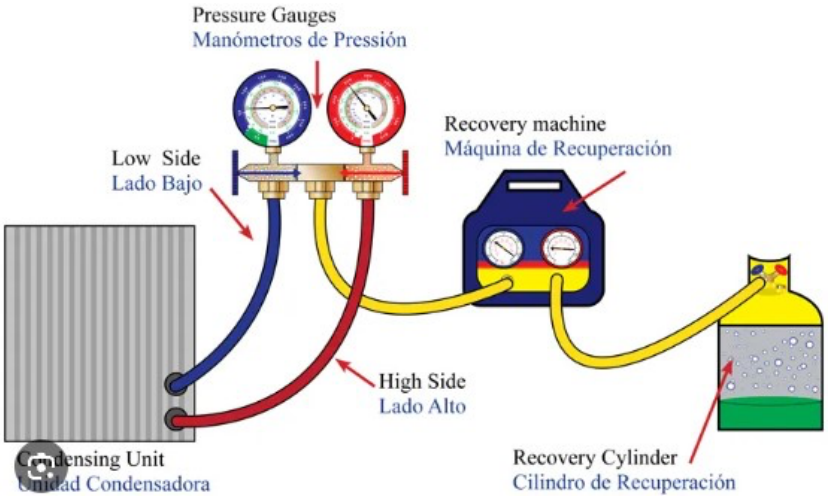
Ultimately, it is the HVAC company’s choice to give recovered refrigerant to a business that either recycles or destroys it, making it crucial for building owners to work with contractors who prioritize environmental responsibility.

Take Action:

1) Solution 1: Observe the Recovery Process!

It is a common yet incorrect practice for technicians to capture refrigerant in the compressor with the intent of removing it later. This is one form of diversion. This method is flawed because it increases the risk of refrigerant release into the atmosphere, defeating the purpose of proper recovery procedures. To ensure refrigerant is handled responsibly, building owners and managers should actively observe the contractor's recovery equipment and the recovery process.

Recovery Equipment Diagram:



By doing so, they can verify that best practices are being followed and that no shortcuts are taken that could lead to refrigerant emissions. Furthermore, building owners should be fully educated about the importance of refrigerant recovery and given the autonomy to manage the environmental needs of their property.

Solution 2: Talk to your Contractor (or Ask)!

An informed homeowner can hold HVAC contractors accountable and ensure that their sustainability efforts are not undermined by improper refrigerant handling. This approach is the most effective way to monitor and prevent refrigerant pollution

Overview:

Refrigerant recovery is a key step in responsible HVAC system upgrades. Ensuring proper removal before installation of a new system enhances efficiency and environmental performance while preventing unnecessary waste.

Resources:

Tradewater.gov

Montreal Protocol

EPA and Refrigerants & Reclaiming