MAGTFTC-MCAGCC 29 Palms
Environmental Standard Operating Procedure

1 October 2025

Stationary Refrigerant Operations (REF)

Application and Purpose

This guidance applies to individuals who work with stationary refrigerant systems aboard the Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center, Twentynine Palms (hereafter called the "installation"). This includes any person who installs, repairs, maintains, services, replaces, recycles, or disposes of a stationary refrigeration or air-conditioning appliance, or any person who reclaims refrigerants from any heating, ventilation, air conditioning, and refrigeration (HVAC&R) appliance. Typical appliances include comfort cooling, refrigeration, freezers, ice machines, drinking fountains, beverage dispensers, and chillers.

Improper refrigerant management can harm personnel and the environment, and may result in fines, penalties, or enforcement actions that could impact the installation's mission. Refrigerant operations must be managed in accordance with all applicable federal, state, local regulations, and the requirements of this environmental standard operating procedure (ESOP).

Operational Controls

Confirm that the following requirements are followed when maintaining any stationary refrigerant system:

- Certified Equipment: Use refrigerant recovery equipment that is certified by a U.S. Environmental Protection Agency (USEPA) approved equipment testing organization.
- Technician Certifications: Do not service, maintain, or repair refrigerant-containing equipment unless you are an USEPA Section 608-certified technician (refer to Table 1 for certification requirements). Maintain a copy of the certification at the place of business. This must be kept onsite until 3 years after the technician is no longer working as a technician.

  Table 1. Technical Certification Requirements for Servicing, Maintaining, or Repairing Refrigerant-Containing Equipment

Equipment Type	Certification Required
Small appliances (less than or equal to 5 pounds of refrigerant)	Section 608 – Type I
Medium, high, or very high pressure	Section 608 – Type II
Low pressure	Section 608 – Type III
Any type of equipment	Section 608 – Universal

- Do not add refrigerants to any system known to have a leak, except when necessary for seasonal adjustment or to operate the system temporarily to complete a leak repair.

- Do not intentionally release (vent) refrigerants into the atmosphere while maintaining, servicing, repairing, or disposing of refrigerant-containing equipment.
- Evacuate refrigerant to the established vacuum levels outlined in 40 *Code of Federal Regulations* 82.156 before opening or disposing of an appliance.
- Collect, store, and dispose of recovered refrigerants and filters through the Environmental Affairs Hazardous Waste Program. No sales or contractual exchanges are allowed.

If a stationary refrigerant system has a full charge greater than or equal to 50 pounds, the following additional requirements apply:

- Equipment Registration: Register each system (excluding those used solely for comfort cooling) in the California Refrigerant Registration and Reporting System (R3). R3 is a web-based tool used to track refrigerant information, including system maintenance, inspections, leak testing, and disposal. Refer to the R3 website for additional information: https://ssl.arb.ca.gov/rmp-r3/.
- Appliance Inventory: Maintain an appliance inventory that includes the following information for each applicable refrigeration system:
  - Date of initial installation
  - Physical location of equipment (building number)
  - Equipment type
  - Manufacturer and manufactured year
  - Model number
  - Serial number
  - Temperature classification (low, medium, or other)
  - Full charge of each circuit on the appliance
  - Refrigerant type
- Refrigerant Inventory: Maintain a refrigerant inventory that includes the weight in pounds of each type of refrigerant used in the following ways:
  - Purchased during the calendar year (recommend saving purchase orders)
  - Charged into refrigeration system(s) during the calendar year
  - Recovered from refrigeration system(s) during the calendar year
  - Stored in inventory at the facility on the last day of the calendar year
  - Shipped for reclamation and destruction during the calendar year
- Leak Inspections**:** Regularly inspect systems for leaks. The frequency of inspection varies by the size of the system and whether the system has an automatic leak detection system installed. Refer to Table 2 for additional details.

Table 2. Required Leak Inspections

System Size (Full Charge)	Frequency of Leak Inspection	
	No Automatic Leak Detection System	Automatic Leak Detection System
All Systems	Any time refrigerant is added to the system. Any time oil residue is observed.	
Small Charged Systems (50 pounds < Charge < 200 pounds)	At least once every 365 days.	Within 24 hours of a leak detection system alert.
Medium Charged Systems (200 pounds ≤ Charge < 2,000 pounds)	At least once every 90 days.	
Large Charged Systems (2,000 pounds ≤ Charge)	At least once every 90 days.	

Large systems enclosed within a building must be equipped with an automatic leak detection system.
All automatic leak detection systems must be inspected and calibrated once every 365 days.
< = less than
≤ = less than or equal to

- Leak Rate Calculation**:** A leak rate calculation must be performed each time refrigerant is added to a stationary refrigeration system. The leak rate can be calculated using the following formula:

$$\text{Leak Rate (\%/year)} = \frac{\text{pounds of refrigerant added}}{\text{pounds of refrigerant in full charge}} \times \frac{365 \text{ days}}{\text{no. days since last added or 365 days (whichever is smaller)}} \times 100\%$$

- Leak Repair and Testing: Leaks must be fixed within 14 days of detection. The following tests must be completed to confirm that the system has been repaired.
  - Initial Verification Test: Conduct an initial verification test after completing repairs and before any refrigerant is added or returned to the appliance.
  - Follow-up Verification Test: Once the system is at or has returned to normal operation characteristics and conditions, conduct a follow-up verification test. This must be performed within 10 days of the initial verification test.

  NOTE: If either an initial verification test or a follow-up verification test indicates that a leak is still present, attempt subsequent repair(s)/test(s) within the 14-day window. If the leak cannot be fixed within 14 days of detection, contact the Environmental Affairs Air Resources Manager at (760) 830-8480.

Training Requirements

All affected personnel must be trained in this document and the following:

- General Environmental Awareness training
- CAA Section 608 Certification

Inspections and Corrective Action

The Environmental Compliance Coordinator (ECC) will confirm unit adherence to this ESOP. The ECC will confirm that unit personnel are trained in this ESOP and maintain appropriate documentation in accordance with this ESOP. The ECC will ensure immediate corrective action for deficiencies noted during weekly inspections. Actions taken to correct each deficiency will be recorded on the weekly inspection sheet (including Work Request numbers). Designated personnel will conduct weekly inspections using this ESOP as guidance and the enclosed checklist to document inspections.

Recordkeeping

Records must be kept for at least 5 years. The following records must be readily accessible and maintained onsite:

- Technical certifications
- Appliance inventory
- Refrigerant inventory, including the following:
  - Invoices for all refrigerant purchases
  - Shipment records for refrigerants
- Service records, including the following:
  - Leak detection, inspection, and repair data
  - Leak rate calculations
  - Repair extension requests
  - Chronically leaking appliance reports (any instance in which an appliance leaks 125 percent or more of its full charge in a calendar year **must be reported to USEPA)**

    NOTE: The attached Refrigeration and Cooling System Maintenance Recordkeeping Form satisfies requirements d(1) and d(2).
- Retrofit and retirement plans

Spills and Releases

Refer to the spill response procedures listed in the Abatement ESOP.

References

(a) 40 *Code of Federal Regulations* 82, Subparts F and H
(b) Clean Air Act, Title VI, Sections 604, 605, and 608
(c) 17 California Code of Regulations Division 3, Chapter 1, Subchapter 10, Article 4, 95371 to 95398
(d) Abatement ESOP

Use and Version Control

ESOPs are used to augment instructions contained in official orders and directives, and, where necessary, provide for sufficient control of the installation's significant practices. Environmental Affairs maintains the authoritative, current version of this and other ESOPs on the installation's website: https://www.29palms.marines.mil/Staff-Offices/G-4-Installation-Support-Directorate/Environmental-Affairs/#environmental-sops.

Frequently Asked Questions
Stationary Refrigerant Operations
at MAGTFTC-MCAGCC 29 Palms

What service and leak repair records must I maintain?

Each time an appliance is maintained, serviced, repaired, or disposed of, the following must be documented:

- The identity and location of the appliance
- The date of the maintenance, service, repair, or disposal performed
- The part(s) of the appliance being maintained, serviced, repaired, or disposed of
- Description of service provided (for example, leak inspection, leak repair, or other)
- The amount in pounds and type of refrigerant added/removed, if any
- Purpose of adding refrigerant (for example, leak repair, topping off, initial refrigerant charge, or seasonal adjustment)
- Technician name, certification type, and identification number
- The full charge of the appliance

If a leak is detected, the following must also be recorded:

- Date leak detected
- Date leak repair was completed
- Cause of leak (for example, compressor, piping, and condenser)
- Location of each leak detected
- The leak rate (include the calculation)
- The leak detection method (for example, bubble test, leak detection device, and electronic/ultrasonic; note that this is not applicable when disposing of the appliance, following a retrofit, installing a new appliance, or if the refrigerant addition qualifies as a seasonal variance)
- Description of leak repair
- Initial verification test date
- Follow-up verification test date
- Type(s) of test used
- Results of said test

The *Refrigeration and Cooling System Maintenance Recordkeeping Form* satisfies the previously listed requirements.
If a system is equipped with an automatic leak detection device, records of its installation, annual audits, and calibrations must be maintained for the life of the system.

Am I allowed to continue using equipment that contains a banned refrigerant (such as R-22)?

Yes. Facilities are not required to replace existing systems prematurely.

Can I still service existing equipment that contains a banned refrigerant?

Yes. A facility can use stockpiled, recycled, or reclaimed banned refrigerants to service existing equipment for as long as necessary.

What are the recommended alternatives to banned refrigerants?

The U.S. Environmental Protection Agency's Significant New Alternatives Program (SNAP) maintains a continuously updated list of approved alternative refrigerants: https://www.epa.gov/snap/substitutes-refrigeration-and-air-conditioning. A list of unacceptable substitutes is also available at the following link: https://www.epa.gov/snap/unacceptable-substitute-refrigerants.

When should I replace the equipment or convert it to an approved refrigerant?

There is no immediate need to change, but banned refrigerant supplies will start to dwindle and prices may rise, so it is recommended that facilities gradually replace systems with ones that use approved alternative refrigerants. You have the following three options:

1) Continue to operate the existing system (if the facility has access to recovered, reclaimed, or stockpiled refrigerant).
2) Convert the existing system (retrofit it with a SNAP-approved refrigerant).
3) Retire and replace the system: this is recommended when a system is leaking or approaching the end of its life.

Refrigerant Phase-Out Cheat Sheet
Stationary Refrigerant Operations
at MAGTFTC-MCAGCC 29 Palms

Refrigerant Phase-out Schedule

The production and import of hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs) are slowly being restricted until it is completely banned. Once the effective date has been reached, the production and import are banned. However, a facility can use recovered, reclaimed, or stockpiled refrigerants in existing systems for as long as necessary.
(Regulation: 40 Code of Federal Regulations 82)

Refrigerant	Type	Ozone Depletion Potential	Global Warming Potential[2]	Effective Date for 100% Ban on Production and Import
R-22 (and all blends that contain R-22)	Class II (HCFC)	0.055	1,810	January 1, 2020
R-123	Class II (HCFC)	0.02	77	January 1, 2030
R-134a	HFC (Substitute)	0	1,430	January 1, 2030
R-401a	Blended HFC[1]	0.037	1,182.48	January 1, 2020
R-404a (R-22 substitute)	Blended HFC	0	3,921.60	January 1, 2030
R-407c (R-22 substitute)	Blended HFC	0	2,107	January 1, 2030
R-410a (R-22 substitute) (such as Freon)	Blended HFC	0	2,087.50	January 1, 2030
R-507a	Blended HFC	0	3,985	January 1, 2030
HCFCs/HFCs	--	--	--	January 1, 2030

Refrigerant blends that contain R-22 are subject to the same rules.
Source: https://ww2.arb.ca.gov/resources/documents/high-gwp-refrigerants.

Prohibited Substances in New Stationary HVAC&R Equipment Schedule

Do not sell, lease, rent, install, or use any equipment listed below if it is manufactured after the effective date.
(Regulation: 17 California Code of Regulations 95371-95379)

General End Use	Specific End Use	Prohibited Substances	Effective Date
New Air Conditioning Equipment (residential and nonresidential):	Room/wall/window air-conditioning equipment, portable air-conditioning equipment, and residential dehumidifiers	Refrigerants with a GWP of 750 or greater	January 1, 2023
	Other air-conditioning equipment		January 1, 2025
	Variable refrigerant flow system		January 1, 2026
New Chillers	Air conditioning	Refrigerants with a GWP of 750 or greater	January 1, 2024
	Designed for chilled fluid leaving the chiller at temperatures > 35°F		
	Designed for chilled fluid leaving the chiller at temperatures > -10°F and < 35°F	Refrigerants with a GWP of 1,500 or greater	
	Designed for chilled fluid leaving the chiller at temperatures > -58°F and < 10°F	Refrigerants with a GWP of 2,200 or greater	
New Refrigeration Equipment	Refrigerant systems with > 50-pound refrigerant	Refrigerants with a GWP of 150 or greater	January 1, 2022

Legend: > = greater than; < = less than; °F = degree(s) Fahrenheit; GWP = global warming potential; HVAC&R = heating, ventilation, air conditioning, and refrigeration

REFRIGERATION AND COOLING SYSTEM MAINTENANCE RECORDKEEPING FORM

Please complete all applicable sections whenever refrigerant is added to a refrigeration or cooling system with greater than 50 lbs of refrigerants, a leak inspection is conducted, or refrigerant of 5 lbs or greater is disposed of.

SECTION I - TECHNICIAN INFORMATION

Name of Technician: _____ **Company/Organization:** _____

EPA Certification #: _____ **Work Order #:** _____

Certification Type: ☐ Universal ☐ Type I ☐ Type II ☐ Type III

Phone Number: _____ **Name of Apprentice:** _____

SECTION II – SYSTEM INFORMATION

System Serial Number: _____ **Location (Building Number):** _____

System Type: ☐ Commercial (e.g., refrigeration warehouse)
☐ Comfort Cooling (e.g., air conditioners)
☐ Other: _____

Refrigerant Type: _____

Full Charge of Appliance: _____ **lbs** _____ oz

SECTION III – TYPE OF SERVICE

Date of Service: _____

Type of Service: ☐ Preventative Maintenance
☐ Periodic Leak Inspection (quarterly or annual)
☐ Leak Repair
☐ Other: _____

If a periodic leak inspection was conducted, complete the following:

Leak Test Method: ☐ Detector
☐ Bubble Test
☐ Other: _____

Leak Detected? ☐ Yes ☐ No

Refrigerant added? ☐ Yes ☐ No

Amount (lbs): _____

Purpose: _____

Refrigerant recovered? ☐ Yes ☐ No

Amount (lbs): _____

Purpose: _____

Refrigerant disposed of? ☐ Yes ☐ No

Amount (lbs): _____

SECTION IV - LEAK REPAIR AND TESTING

Complete this section if a leak was detected. Leaks must be repaired within 14 days.

Date Leak Detected: _____

Date Leak Repaired: _____

Location of Leak: _____

Cause of Leak: _____

Description of Repairs:

Date Refrigerant Last Added (if less than 1 year): _____

Initial Verification Test

Date: _____ **Results:** ☐ Pass ☐ Fail

Leak Test Method: ☐ Detector
☐ Bubble Test
☐ Other: _____

Follow-Up Verification Test

Date: _____ **Results:** ☐ Pass ☐ Fail

Leak Test Method: ☐ Detector
☐ Bubble Test
☐ Other: _____

SECTION V – LEAK RATE

Complete this section if refrigerant is added.

$$\text{Leak Rate (\%/year)} = \frac{\text{lb refrigerant added}}{\text{lb refrigerant in full charge}} \times \frac{365 \text{ days}}{\text{days since last added}} \times 100\% = \_\_\_\_\_ \text{ \%/year}$$

or 365 days (whichever is smaller)

Does the leak rate exceed 125%? ☐ Yes ☐ No *If yes, notify Environmental Affairs (760-830-8480) immediately.*

Retain a copy of all completed forms for 5 years. Submit to the Environmental Affairs Air Resources Program Manager when requested.