EPA Equipment Owner Service Compliance Guide

A Process-First Compliance White Paper for FMHero Prospects

How equipment owners meet federal refrigerant compliance obligations — and how FMHero helps make it provable, repeatable, and defensible.

FMHero®

Why This Guide Exists

Federal refrigerant compliance under EPA Section 608 (40 CFR Part 82, Subpart F) and the AIM Act (40 CFR Part 84, Subpart C) is **equipment-centric, event-driven, and documentation-heavy**.

THE REGULATIONS DO NOT ASK WHO YOUR CONTRACTOR IS. THEY ASK:

Can the owner prove compliance for this piece of equipment, for this service event, at this point in time?"

FMHero is designed to answer that question — automatically — by capturing equipment data, refrigerant movement, service activity, and compliance outcomes in a single, defensible system of record.

This paper explains the **process owners must follow**, with **inline regulatory citations**, and shows where FMHero directly supports each obligation.

How to Read This Guide

This guide is organized around **what equipment owners actually do**:

1. Own equipment
2. Service equipment
3. Respond to leaks
4. Fix problems (or decide not to)
5. Prove what happened later

Regulations are cited **inline**, but they are intentionally secondary to the compliance process.

Remember - This is a guide, not legal advice. Rules change and can be subject to legal interpretation and case law. EPA regulations are the minimum standard - many states have far more restrictive regulations.

Understanding the Regulatory Landscape

Equipment Owners and Operators along with the contractors they work with, as well as the supporting wholesale distributors, refrigerant reclaimers, equipment and scrap recyclers, and all others who participate in the industry are subject to federal, and often state, refrigerant management regulations.

This white paper will focus on the federal regulations under Title VI of the Clean Air Act, specifically through Section 608 and the AIM Act provisions.

- **608:** 40 CFR Part 82 Subpart F
- **AIM:** 40 CFR Part 84 Subpart C

From an equipment owner and service provider perspective these two regulations are very similar as the changes brought through the AIM Act dovetail and extend what was previously addressed in 608 through the regulations.

STEP 1

What Do I Need to Know About Each Piece of Equipment?

The Owner's First Obligation: Equipment Awareness

For **stationary refrigerant-containing appliances**, the owner or operator must know and maintain, at a minimum:

- Equipment location (address of the site the equipment is located)
- Equipment identity (typically Make/Model/Serial but can include unit identifiers such as "Rack A" or "RTU 1" as well; identification must be unique to that piece of equipment)
- Refrigerant type
- Full refrigerant charge
- How the full charge was determined
- Installation date
- Any subsequent revisions to the full charge and why the adjustment was made
- Regulatory class (comfort cooling, commercial refrigeration, industrial process, other)
- Operational status (operational, shutdown, mothballed, etc)

This obligation exists **before any leak occurs** and **before any service is performed**.

> **HELPFUL HINT**
> A unit, system or piece of equipment is an "Appliance" (40 CFR 82.152 "Appliance") by definition and each independent circuit in a multi-circuit unit is also considered its own "appliance".

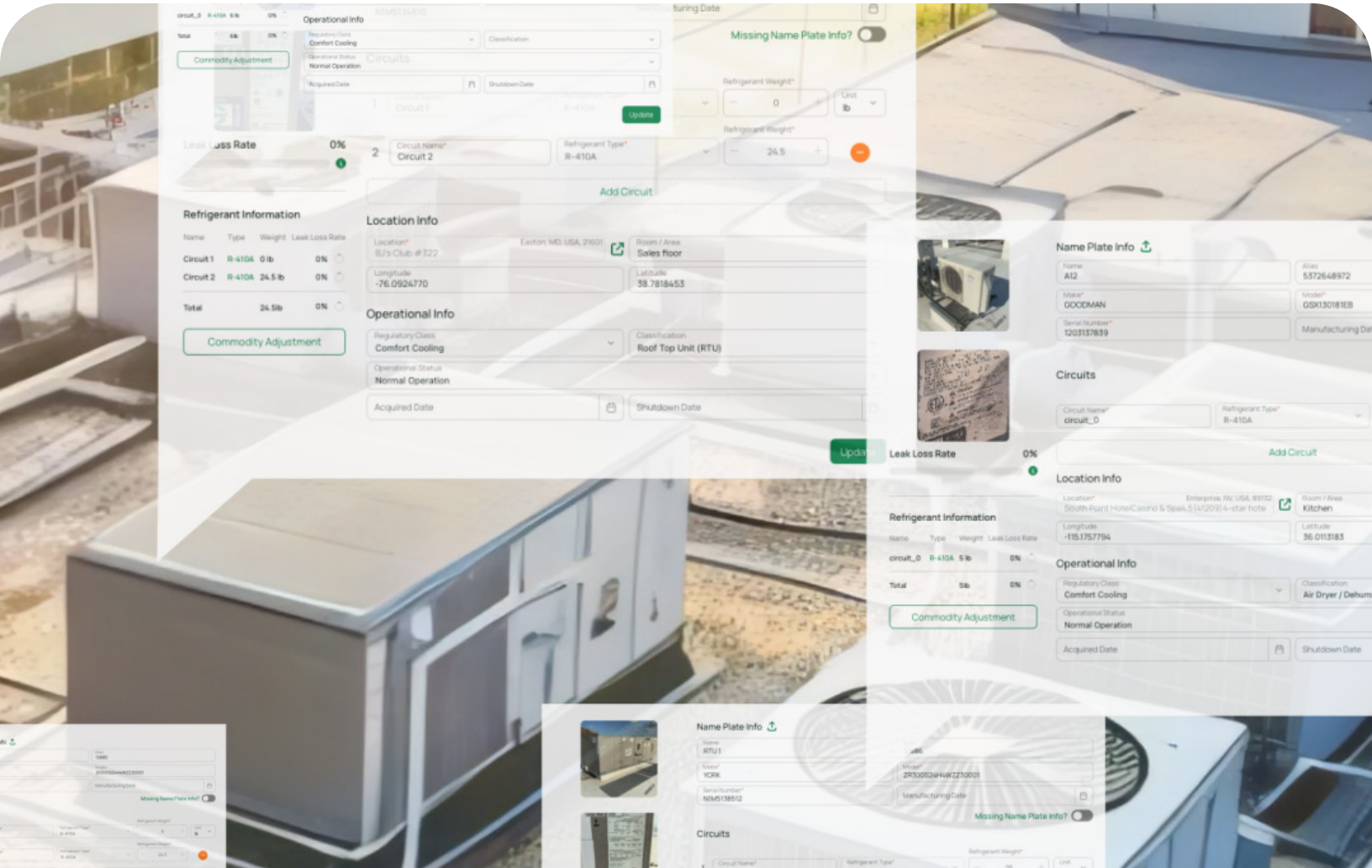
STEP 1

REGULATORY BASIS:

- Owners must determine and maintain full charge and identifying information for appliances ≥15 lb under AIM (40 CFR §84.106(l)(1))
- Parallel recordkeeping exists under Section 608 for appliances ≥50 lb (40 CFR §82.157(l))
- Both regulations apply with equal penalties for non-compliance (see section 11).

HOW FMHERO HELPS

- Centralized equipment registry
- Full charge tracking with method attribution
- Immutable equipment history



STEP 2

What Applies Every Time My Equipment Is Serviced?

NOTE: Before diving into service requirements, owners must first determine which regulations apply to each appliance based on refrigerant type and total charge. See Step 3 for applicability thresholds. **The following steps are required on ALL regulated equipment service events regardless of size or refrigerant type.**

Service Documentation

Technicians are required to provide equipment owners basic information:

- Technician performing the work
- Location of equipment (address)
- Date of work performed (service / install / repair / disposal)
- Part(s) installed, serviced, repaired or disposed of
- Amount of refrigerant added or removed
- Leak(s) inspected, repaired or re-inspected (see step 3 for applicability detail)

REGULATORY BASIS: 40 CFR 82.157(l)(2) ,40 CFR 84.106(l)(4), 40 CFR 84.106(l)(2)

Technician Certification Verification

All technicians servicing covered equipment must hold valid EPA Section 608 certification to ensure the service on their equipment begins with a compliant technician. While the certification obligation rests on the technician, many owners verify certification as part of their contractor qualification process.

REGULATORY BASIS: 40 CFR §82.161

STEP 2

UNIVERSAL RULE:

Refrigerant Addition (Charge Event) Triggers Accountability

Every time refrigerant is **added** to an appliance, the owner must:

- Obtain service documentation
- Determine whether a leak rate calculation is required
- Retain records of refrigerant quantities and dates

REGULATORY BASIS: Leak rate must be calculated each time refrigerant is added unless an exception applies 40 CFR §84.106(b); 40 CFR §82.157(b)

UNIVERSAL RULE:

Refrigerant Recovery Triggers Accountability

Every time refrigerant is **removed** from an appliance, the owner must:

- Obtain service documentation
- Ensure technician and recovery equipment are certified
- Document final disposition of refrigerant. (stored onsite or a documented transfer to a reclaimer or contractor solely for the purposes of being reclaimed or destroyed)

REGULATORY BASIS: 40 CFR 82.161(a), 40 CFR 82.154(b), 40 CFR 84.104(a)

Evacuated or Purged Systems

When refrigerant is fully removed from a system (for decommissioning, major repair, or storage), owners must still document the removal event, quantities recovered, and final disposition of the refrigerant. The absence of refrigerant does not eliminate recordkeeping obligations for the removal event itself.

HOW FMHERO HELPS

- Realtime Service Event tracking directly from the technicians in the field
- Service-event-based compliance logic
- Technician certification tracking
- Automatic exception handling and documentation access
- Full traceability and history for all refrigerant movement

STEP 3

Does This Equipment Trigger Leak Rules?

Determining Applicability Is a Size + Refrigerant Question

Owners must evaluate **each appliance** based on:

- **Refrigerant type & GWP (ODS, HFC, substitute)**
- **Total charge / Full charge**

Practical Applicability Framework

- **≤5 LB:** Small appliance rules apply (40 CFR §82.155, §82.156(b))
- **ALL SIZES:** Recovery and venting rules apply (40 CFR 82.154(a), §82.156(a))
- **≥15 LB WITH HFCS OR SUBSTITUTES (>53 GWP):** AIM Act leak repair and recordkeeping rules apply (40 CFR §84.106(a))
- **≥50 LB HCFCS AND CFCS:** Section 608 leak repair and recordkeeping rules apply (40 CFR 82.157(a))

Exceptions (No Leak Rate Calculation Required)

Leak rate calculations are **not required** when refrigerant is added:

- Immediately after installation of new equipment
- Immediately after a retrofit (all leaks are required to be repaired during retrofit)
- As part of complex seasonal variance documentation (40 CFR 82.152, 40 CFR 82.157(l)(10))

REGULATORY BASIS: Exceptions 40 CFR §84.106(b), 40 CFR 82.157(b)

*Important: An appliance can be subject to **both** Section 608 procedural rules **and** AIM leak repair thresholds at the same time.*

HOW FMHERO HELPS

- Automatic applicability determination by charge size and refrigerant
- Built in Rules Engine flags when 608, AIM, state or custom obligations apply

STEP 4

How Are Leak Loss Rates (LLRs) Calculated?

Owner Responsibility

Even if a contractor provides data, **the owner is responsible** for ensuring the calculation is performed correctly.

Two EPA-approved methods exist:

1. **Annualizing Method**
2. **Rolling Average Method**

OWNERS MUST:

- Select one method per facility
- Apply it consistently
- Not change method without following a strict and complex procedure

DEPLOYMENT:

Almost universally, equipment owners have chosen to use the Rolling Average Method for its relative simplicity to understand and deploy.

$$\text{LEAK RATE} = \frac{\text{POUNDS OF REFRIGERANT ADDED OVER PAST 365 DAYS (OR SINCE LAST SUCCESSFUL FOLLOW-UP VERIFICATION TEST SHOWING ALL IDENTIFIED LEAKS IN APPLIANCE WERE REPAIRED, IF LESS THAN ONE YEAR)}}{\text{POUNDS OF REFRIGERANT IN FULL CHARGE}} \times 100\%$$

REGULATORY BASIS: Definition of "Leak rate" 40 CFR §84.102, 40 CFR 82.152

HOW FMHERO HELPS

- Automatic leak loss rate calculations on every appliance
- Facility-level method enforcement

STEP 5

What Leak Rates Are Allowed?

If an appliance exceeds its allowable leak rate, action is mandatory.

Leak Thresholds

- Comfort Cooling (and other): **10%**
- Refrigeration: **20%**
- Industrial Process: **30%**

REGULATORY BASIS: 40 CFR §84.106(c)(2), 40 CFR 82.157(c)(2)

Chronically Leaking Appliance

Any regulated appliance that loses 125% or more of the full charge in a calendar year requires self-reporting to the EPA by March 1 of the subsequent year. (15+ lbs HFC / 50+ lbs ODS).

There are no exceptions.

This 125% threshold is based on **total refrigerant loss during the calendar year**, not the calculated leak rate. This means losses accumulate even after a successful repair process the leak rate to 0%.

Scenarios that could apply:

- Copper thieves cause a 100% loss on a system that had previously leaked 25% that year (even if that system had already been repaired and the leak rate legally "reset" to 0%)
- A previously leaky system was repaired, subsequently had a catastrophic failure of a pressure relief and lost 100% of its charge
- An on-site fire caused catastrophic loss of all equipment — any regulated equipment with leaks greater than 25% that year prior to the fire must be reported

REGULATORY BASIS: 40 CFR 84.106(j), 40 CFR 82.157(j)

HOW FMHERO HELPS

- Real-time exceedance alerts allowing time for correction prior to violation
- Appliance-specific thresholds
- Chronically leaking system tracking and notification system

STEP 6

What Happens When an LLR Is Exceeded — and What Must I Do?

An exceedance creates a **legal obligation to act**.

Owners must choose one path:

- Repair the leaks
- Retrofit the appliance
- Retire the appliance

Doing nothing is not allowed.

Repair Process Requirements

- Identify and repair leak by a certified technician
- Initial verification test
- Return system to normal operating parameters
- Follow-up verification test

Timelines

- 30 days from leak exceedance to repair (120 days if an industrial process shutdown is required)
- 30 days to initial verification of repair (concurrent with repair timeline)
- 10 days from initial verification to follow-up verification

The timeline can be compressed to a single day by completing the entire process in one service call:

> *CHARGE EVENT INDICATES A LEAK > LEAK FOUND > LEAK REPAIRED > LEAK REPAIR INSPECTED > CHARGED TO NORMAL OPERATING PARAMETERS > FOLLOW-UP VERIFICATION TEST COMPLETED*

Likewise the federal regulatory clock can be as short as 10 days:

> *CHARGE EVENT INDICATES A LEAK > LEAK FOUND > LEAK REPAIRED > LEAK REPAIR INSPECTED FOLLOW-UP VERIFICATION NOT YET PERFORMED*

STEP 6

REGULATORY BASIS:

- Process and timelines (40 CFR §84.106(d-e), 40 CFR 82.157(d-e))
- Mandatory corrective action (40 CFR §84.106(c)(1), 40 CFR 82.157(c)(1))

HOW FMHERO HELPS

- Repair / corrective action timeline tracking
- Verification test documentation
- Timeline alerts and deadline management

STEP 7

Ongoing Inspections After Repair

After the repair is completed, ongoing leak inspections are required to ensure that the leak rate remains below the threshold for a full year.

Inspection Frequency by Equipment Size

- **QUARTERLY:** Refrigeration and Industrial Process with 500+ lbs
- **YEARLY:** Refrigeration and Industrial Process (HFCs) with 15–500 lbs
- **YEARLY:** Refrigeration and Industrial Process (ODS) with 50–500 lbs
- **YEARLY:** Comfort Cooling and Other (15+ lbs HFCs, 50+ lbs ODS)

Systems with 1,500+ lbs (with a GWP >53) require an **Automatic Leak Detection System (ALDS)**.

STEP 7

What Must Be Inspected and Who Must Perform Inspections?

All visible and accessible components, except:

- Under insulation, under ice, underground, behind walls, or otherwise inaccessible
- More than 2 meters above personnel support surfaces
- Where components are unsafe to inspect (site personnel determination)

Inspections must be performed by certified technicians

INSPECTION EXCEPTION:
Automatic Leak Detection System

The ongoing leak inspections can be substituted with an approved ALD.

- Only the portions of the system covered by the ALD do not require inspection
- The ALD must be audited or calibrated annually
- The ALD must meet regulatory requirements to qualify

REGULATORY BASIS: 40 CFR 84.106(g), 40 CFR 82.157(g)

HOW FMHERO HELPS

- Inspection scheduling and tracking
- ALDS documentation and audit reminders

STEP 8

What If I Need More Time?

Extensions

Extensions may be requested when:

- Parts are unavailable
- Other regulations prevent timely repair
- Safety or radiological concerns exist
- Custom-built equipment requires long lead times

Requests must:

- Be submitted electronically
- Be signed by an authorized official
- Include detailed justification

If EPA does not object within the review period, the request is considered approved.

REGULATORY BASIS: 40 CFR §84.106(f), 40 CFR 82.157(f)

Mothballing

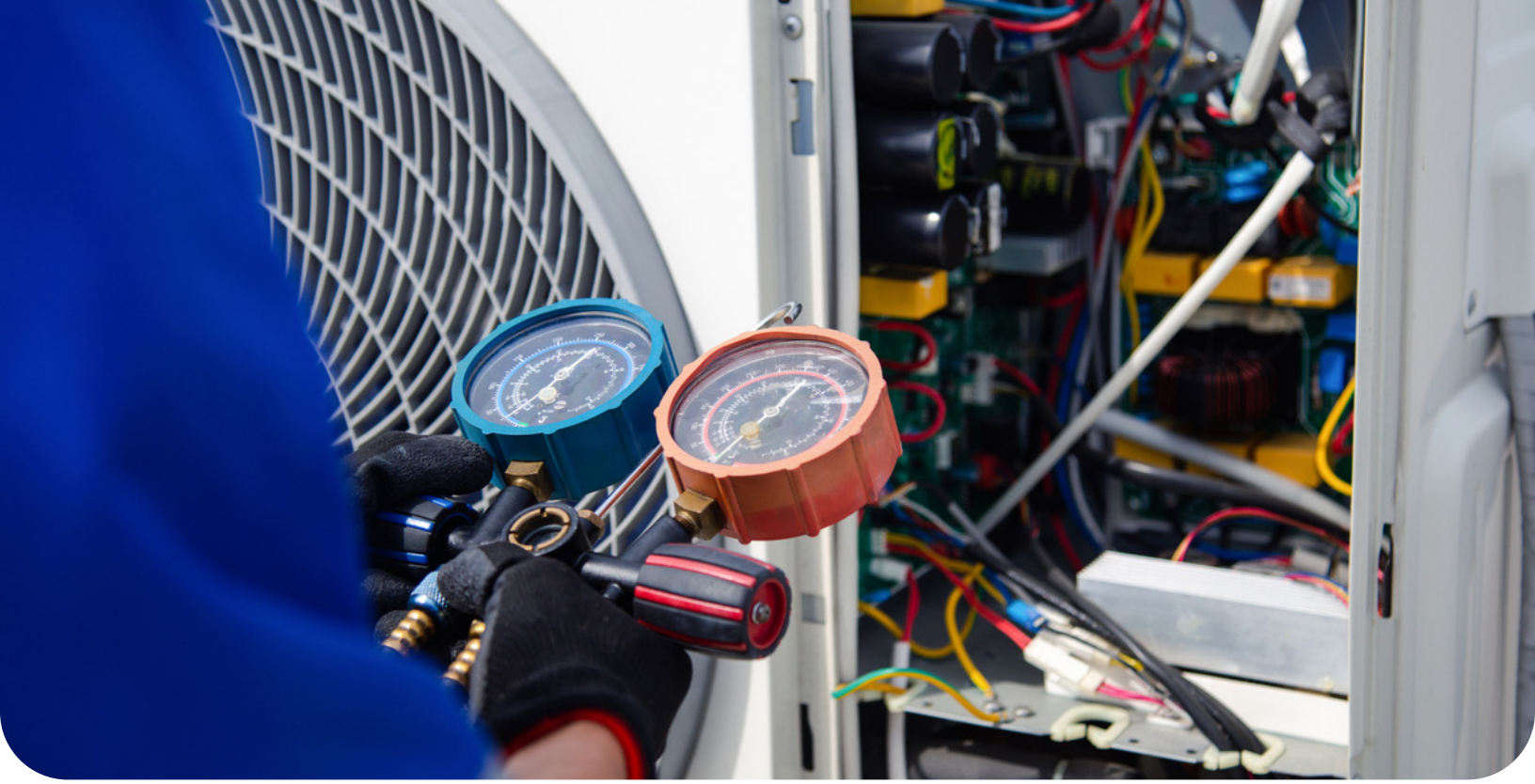
An alternative to immediate repair is **mothballing** — temporarily taking equipment out of service. Mothballing stops the repair clock but comes with specific requirements:

- The appliance or affectioned isolated section / component must be evacuated to at least atmospheric pressure
- The owner must document the date of mothballing
- The appliance cannot be returned to service until all identified leaks are repaired
- Mothballed appliances are not subject to the repair timeline while mothballed

REGULATORY BASIS: 40 CFR §84.106(f)(12), 40 CFR 82.157(f)(12)

HOW FMHERO HELPS

- Extension trigger identification
- Mothball status tracking
- Documentation readiness



STEP 9

What If Repairs Don’t Work or Can’t Be Completed In Time?

If repairs don’t work or are unable to be completed in the required timeline (without mothballing or extension), the owner must:

- Develop a retrofit or retirement plan within 30 days
- Implement the plan within one year (qualified extensions can be requested)
- Retrofit refrigerants must be SNAP approved at the time of retrofit

REGULATORY BASIS: 40 CFR 84.106(h-i), 40 CFR 82.157(h-i)

HOW FMHERO HELPS

- Failed repair escalation alerts
- Retrofit workflow
- Timeline tracking

STEP 10

What Are My Options — Retrofit or Retirement?

A retrofit or retirement plan must include:

- Appliance identification and location
- Refrigerant full charge details (current and future, if retrofitting)
- Itemized procedure for retrofit (if applicable)
- Refrigerant and appliance (if applicable) disposition plan
- Completion schedule (≤1 year)
- Signature and date by authorized company official

The plan must also be accessible at the site and available for EPA inspection. All identified leaks must be repaired during the retrofit.

REGULATORY BASIS: 40 CFR §84.106(h)(2-4), 40 CFR 82.157(h)(2-4)

HOW FMHERO HELPS

- Retrofit/retirement plan documentation
- Implementation timeline tracking
- Site-accessible compliance records

STEP 11

What Happens If I Don't Comply?

Consequences may include:

- Civil penalties per day per violation ($59,114 as of Jan 8, 2025)
- Mandatory corrective actions (systems improvements, upgrades, retrofits, retirements)
- Increased equipment inspection frequency
- Increased and ongoing scrutiny

REGULATORY BASIS:

Clean Air Act enforcement authority; venting prohibition at 40 CFR §82.154(a)(1), 42 U.S.C. 7413(d)(1) and 40 CFR § 19.4

STEP 12

Proving Compliance (THE PART OWNERS MISS)

Owners must retain records for at least three years, including:

- Equipment data (Step 1)
- Refrigerant additions and removals (Step 2)
- Leak rate applicability and calculations (Step 3–5)
- Repair and verification documentation (Step 6–7)
- Extension requests and approvals (Step 8–10)

REGULATORY BASIS:

- AIM recordkeeping (40 CFR §84.106(l))
- Section 608 recordkeeping (40 CFR §82.157(l))

HOW FMHERO HELPS

- Single source of truth
- Audit-ready compliance history

Quick Reference

Leak Rate Tracking Applicability

REFRIGERANT TYPE	LEAK REPAIR RULES APPLY	RECORDKEEPING REQUIRED
HFCs / Substitutes	≥15 lb (AIM Act)	≥15 lb
ODS (HCFCs, CFCs)	≥50 lb (Section 608)	≥50 lb

Leak Rate Thresholds

EQUIPMENT TYPE	THRESHOLD
Comfort Cooling / Other	10%
Refrigeration	20%
Industrial Process	30%

Key Timelines

ACTION	DEADLINE
Repair after exceedance	30 days (120 for industrial shutdown)
Initial verification	30 days (concurrent with repair)
Follow-up verification	10 days after initial verification (concurrent with repair)
Retrofit/retirement plan creation	30 days from leak exceedance OR after failed repair
Plan implementation	1 year
Chronic leak reporting	March 1 (for prior calendar year)

Inspection Frequency (After Repair)

EQUIPMENT SIZE	FREQUENCY
500+ lbs (Refrigeration/Industrial)	Quarterly
15–500 lbs HFC / 50–500 lbs ODS	Yearly
1,500+ lbs (GWP >53)	ALDS required

Final Takeaway for FMHero Prospects

Compliance under AIM and Section 608 is not about memorizing regulations.

It is about:

- Knowing your equipment
- Understanding what each service event triggers
- Acting on exceedances
- Proving what you did, when, and why

FMHero exists to make that process **automatic, defensible, and scalable** — so owners can operate with confidence instead of compliance anxiety.

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