

28TH ANNUAL BUSINESS & INDUSTRY'S

Sustainability & Environmental, Health and Safety

S Y M P O S I U M

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Workshop FF

**Clean Air Act Challenge ... Is Your
Facility in Compliance with the New
Refrigerant Management Rules?**

**Wednesday, March 27, 2019
8:00 a.m. to 9:15 p.m.**

Biographical Information

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Kirk Lowery is the Director of Trinity Consultants' Northeast Region as well as the company's expert on refrigerant management requirements. He leads Trinity's refrigerant compliance services through the execution of compliance audits and the development of compliance management programs driven by 40 CFR 82 regulations. Kirk has assisted with the implementation of leak rate tracking programs for refrigerant-containing appliances with full charge of 50 pounds or more and has dealt with all facets of 40 CFR 82 compliance, including classification/phase-out, import/export, transformation/destruction, motor vehicle air conditioners (MVACs), labeling, and halon requirements. Kirk is the author and primary instructor of Trinity's half day refrigerant regulatory workshop that has been provided across the nation since 2005 as well as several recent presentations and webinars on the new rules. Kirk also oversaw the implementation of the refrigerant compliance program for The Boeing Company's Wichita, Kansas facility during his five plus years managing the air quality program for the facility.

Kirk is a certified Professional Engineer in the states of Kansas and Ohio and a member of the Air & Waste Management Association. He received a Bachelor's degree in aeronautical & aerospace engineering and a Master's degree in environmental engineering, both from Purdue University.

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Sherry is Managing Counsel of the Environmental, Safety and Security group in Marathon Petroleum's Legal Department. She joined the group in 2010 as the remediation attorney. She then counseled refining on environmental compliance and served as the Legal Department's subject matter expert on the Clean Air Act. Sherry has also advised the company on fuels compliance and product quality matters before assuming her current role. Sherry has held multiple temporary assignments including Environmental Supervisor at the Catlettsburg Refinery. Prior to joining Marathon, Sherry was an associate in the Columbus office of Ulmer & Berne LLP practicing in the areas of environmental and construction law and an assistant attorney general with the Ohio Attorney General's Office Environmental Enforcement Section.

Marathon Petroleum is a member of the American Petroleum Institute (API), the American Fuel and Petrochemical Manufacturers (AFPM), the National Association of Manufacturers and other trade associations. Part of Sherry's role is to represent Marathon Petroleum on the legal committees of these associations.

Sherry holds a J.D. from The Ohio State University Moritz College of Law and a B.S. in earth, atmospheric and planetary science from the Massachusetts Institute of Technology. She is a member of the Association of Corporate Counsel and the Ohio State Bar Association. She is also a past Secretary and member of Women for Economic and Leadership Development (WELD).

28th Annual Business & Industry's Sustainability and Environmental, Health & Safety Symposium

**Workshop FF - Clean Air Act Challenge...
Is Your Facility in Compliance with the
New Refrigerant Management Rules?**

**Kirk Lowery, Trinity Consultants
Sherry Hesselbein, Marathon Petroleum Company LP**

March 27, 2019



Workshop FF Overview

- **Introduction to refrigerant rules and basic refrigerant types**
- **Revisions to appliance servicing requirements**
 - ❖ Extension to non-ozone depleting substance (ODS) containing refrigerants
 - ❖ Revised appliance disposal requirements
 - ❖ Revised leak repair provisions for appliances with full charge ≥ 50 lbs
- **Common problems areas**
- **Latest EPA proposal**
- **Key components of refrigerant compliance program**
- **Q&A**

Introduction to Environmental Requirements for Refrigerants

Montreal Protocol

Clean Air Act, Title VI

40 CFR Part 82

- **International treaty** – established in 1987 in response to hole in ozone layer that forms over Antarctica
 - ❖ Targets ozone depleting substances (ODSs)
 - ❖ Amended several times using “worst first” approach; recently amended to target non-ODSs
- **U.S. law or statute** – gives EPA authority to develop rules to implement Montreal Protocol
- **EPA rule** – what you have to comply with on day-to-day basis

Basic Refrigerant Types (1 of 2)

- **CFCs – chlorofluorocarbons (e.g., R-11, R-12)**
 - ❖ 1st generation refrigerants
 - ❖ Class I ODSs with ozone depletion potential (ODP) > 0.2
 - ❖ Production phased out since 1996

- **HCFCs – hydrochlorofluorocarbons (e.g., R-22, R-141b, R-142b)**
 - ❖ 2nd generation refrigerants
 - ❖ Class II ODSs with ODP < 0.2
 - ❖ Production being phased out by 2020 (R-22 phase out started in 2010)

Basic Refrigerant Types (2 of 2)

- **HFCs – hydrofluorocarbons**
(e.g., R-134a, R-407C, R-410A)
 - ❖ 3rd generation refrigerants
 - ❖ non-ODS, but several have high global warming potential (GWP)
 - ❖ Production targeted for future phase down

- **Next generation refrigerants**
 - ❖ Non-ODS and low GWP
 - ❖ Hydrocarbons - e.g., R-290 (propane), R-600a (isobutane)
 - ❖ Hydrofluoroolefins (HFOs) – e.g., R-1234yf
 - ❖ HFC/HFO blends - e.g., R-448A, R-449A

How Do EPA's Refrigerant Rules Impact Facilities and HVAC/R Technicians/Contractors?

1. Phase Out of Specific Refrigerants (Subparts A, C, G, & I)

- CFCs phased out of production in 1996 (e.g., R-11, R-12)
- HCFCs being phased out of production (e.g., R-22) by 2020
- HFCs now targeted for phase down
- SNAP Program approves/disapproves substitutes
- Reduces supply and increases cost

2. Required Practices When Working on AC Units (Subparts B & F)*

- Technician certifications
- Evacuation & recovery (no venting)
- Disposal requirements
- Sales restrictions
- Leak repair provisions for units with full charge ≥ 50 lbs
- Promotes recovery, recycling, & reclamation

*Commonly referred to as Clean Air Act Section 609 (mobile) and Section 608 (stationary) provisions

Developments in Required Work Practices when Servicing Refrigerant Containing Appliances

Subpart F Matrix by Appliance & Refrigerant Type **(prior to rule revision)**

Category	Venting Prohibition	Sales Restrictions	Evacuation Req's	Technician Certs	Disposal Req's	Leak Repair Provisions
Appliances w/ Non-ODS Substitutes	Yes (unless listed as exempt)	No	No	No	No	No
Small Appliances (≤ 5 lbs ODS)	Yes	Yes	Yes (specific)	Yes	Yes (specific)	No
Medium Appliances (> 5 lbs & < 50 lbs ODS)	Yes	Yes	Yes	Yes	Yes (no explicit records)	No
Large Appliances (≥ 50 lbs ODS)	Yes	Yes	Yes	Yes	Yes	Yes

Leak Rate Provisions for Comfort Cooling Appliances - Overview (prior to rule revision)

- **Applicable to units with full charge ≥ 50 lbs ODS-containing refrigerant**
 - ❖ Applicability determined on a circuit-by-circuit basis
- **If the leak rate \geq applicable “trigger rate” (15% for comfort cooling appliances)**
 - ❖ The leak should be repaired within 30 days*, or
 - ❖ The system should be retrofitted (within 1 year), or
 - ❖ The system should be retired from service (within 1 year)
- ***One option to extend repair window – mothballing (evacuation & shutdown)**
- **Servicing records required**
 - ❖ Date & type of service
 - ❖ Amount of refrigerant added
 - ❖ Date & amount of refrigerant purchased (if add own refrigerant)

Leak Rate Calculation - It's a Projection of Amount Lost if Not Repaired for a Year

EPA Leak Rate Calculation for Appliances with Full Charge ≥ 50 lbs - Annualizing Method

Step 1. Take the pounds of refrigerant added to bring the unit to a full charge, and divide that by the number of pounds the unit holds at full charge.

Step 2. Take the shorter of:
A) the number of days that have passed since the last day refrigerant was added OR
B) 365 days
and divide that number into 365 days/year

$$\text{Leak Rate (\% per year)} = \frac{\text{Refrigerant Added (lbs)}}{\text{Full Charge (lbs)}} \times \frac{365 \left(\frac{\text{days}}{\text{year}}\right)}{\text{A or B (days)}} \times 100$$

Step 3. Multiply the result from Step 1 by the result from Step 2.

Step 4. Multiply the number calculated in Step 3 by 100 to calculate a percentage.

Rule also allows for use of the rolling average method, but the annualizing method is, by far, the most commonly used method. Note also that only one leak rate calculation method can be used per facility.

Leak Rate Calculation Example

- Determines the amount of refrigerant that **would** leak out in a year if nothing done
- Example (using “Annualizing Method”):
Day 1 - Unit fully charged with 250 lbs of R-22
Day 8 - Unit found to have lost 2 lbs of R-22

Leak Rate = **41.7%** =

$$\left(\frac{2 \text{ lbs refrigerant added}}{250 \text{ lbs refrigerant in full charge}} \right) \times \left(\frac{365 \text{ day/yr}}{7 \text{ days since refrigerant last added}} \right) \times 100$$

Refrigerant Servicing Rule Revisions

- Rule represents overhaul of 40 CFR 82, Subpart F
- Finalized on 11/18/2016 (81 FR 82272)
- Includes 3 primary categories of changes
 - ❖ Extension to non-ODS containing substitutes
 - ❖ Revised appliance disposal requirements
 - ❖ Revised leak repair provisions for appliances with full charge \geq 50 lbs
- **Staggered compliance dates of 1/1/2017, 1/1/2018, & 1/1/2019**

Extension to Non-ODS Substitutes, 1/1/2017

- **Substitutes are defined as refrigerants, with the following subcategories:**
 - ❖ Non-exempt substitutes - subject to all provisions of rule, including sales restrictions, evacuation, recovery/recycling equipment, technician certification, leak repair, and reclamation provisions
 - ❖ Exempt substitutes - exempt from all provisions of rule when used in approved applications

82.154(a) Venting Prohibition.

82.154(a)(1)

No person maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration may knowingly vent or otherwise release into the environment any refrigerant from such appliances.

Notwithstanding any other provision of this subpart, the following substitutes in the following end-uses are exempt from this prohibition and from the requirements of this subpart:

82.154(a)(1)(i)

Carbon dioxide in any application;

82.154(a)(1)(ii)

Nitrogen in any application;

82.154(a)(1)(iii)

Water in any application;

82.154(a)(1)(iv)

Ammonia in commercial or industrial process refrigeration or in absorption units;

82.154(a)(1)(v)

Chlorine in industrial process refrigeration (processing of chlorine and chlorine compounds);

82.154(a)(1)(vi)

Hydrocarbons in industrial process refrigeration (processing of hydrocarbons);

82.154(a)(1)(vii)

Ethane (R-170) in very low temperature refrigeration equipment and equipment for non-mechanical heat transfer;

82.154(a)(1)(viii)

Propane (R-290) in retail food refrigerators and freezers (stand-alone units only); household refrigerators, freezers, and combination refrigerators and freezers; self-contained room air conditioners for residential and light commercial air-conditioning and heat pumps; vending machines; and effective January 3, 2017, self-contained commercial ice machines, very low temperature refrigeration equipment, and water coolers;

82.154(a)(1)(ix)

Isobutane (R-600a) in retail food refrigerators and freezers (stand-alone units only); household refrigerators, freezers, and combination refrigerators and freezers; and vending machines;

82.154(a)(1)(x)

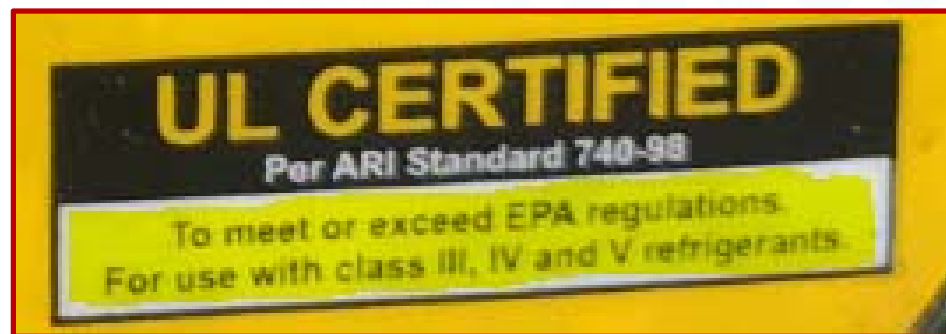
R-441A in retail food refrigerators and freezers (stand-alone units only); household refrigerators, freezers, and combination refrigerators and freezers; self-contained room air conditioners for residential and light commercial air-conditioning; heat pumps; and vending machines.

Extension to Non-ODS Substitutes - Highlights

- Newly manufactured recovery/recycling equipment must be certified, **1/1/2017** (82.158)
- Restriction on sale of refrigerant, **1/1/2017 & 1/1/2018** [82.154(c)-(d)]
- Technicians must be certified, **1/1/2018** [82.161(a)]
- Evacuation requirements for disposal or opening of appliances, **1/1/2018** [82.155 & 82.156(a)-(d)]
- Leak repair provisions as they apply to appliances with full charge \geq 50 lbs refrigerant, **1/1/2019** (82.157)

Extension to Non-ODS Substitutes - Common Problems Areas

- **Evacuation level issues**
 - ❖ Technicians not meeting proper evacuation level, which varies by refrigerant and size of appliance
 - ❖ Lack of documentation when using alternative evacuation levels
- **Using recovery equipment that has not been certified for a particular refrigerant**
 - ❖ Pay attention to certification labels!



Required Evacuation Levels

Refrigerant Type	Appliance Capacity	Required Evacuation Level ^{a,b,c}	Recovery Eqpt. Cert. Class per AHRI 740
All types of refrigerant	Small appliances (≤ 5 lbs)	4 inches mercury (inHg), 90% (if compressor operating), or 80% (if compressor not operating)	Varies by refrigerant type (see below)
Very high-pressure refrigerants (e.g., R-13, R-23, R-503, R-508A, R-508B)	> 5 lbs	0 inHg	VI
High-pressure refrigerants (e.g., R-22, R-407A, R-407C, R-410A, R-502)	> 5 lbs & < 200 lbs	0 inHg	IV (e.g., R-22) OR
	≥ 200 lbs	10 inHg	V (e.g., R-410A)
Medium-pressure refrigerants (e.g., R-12, R-114, R-124, R-134a, R-500)	> 5 lbs & < 200 lbs	10 inHg	II (e.g., R-114) OR
	≥ 200 lbs	15 inHg	III (e.g., R-134a)
Low pressure refrigerants (e.g., R-11, R-113, R-123, R-245fa)	> 5 lbs	25 millimeters mercury (mmHg) absolute (25,000 microns absolute)	I

^a Per **Table 1** of 40 CFR 82.156(a) for > 5 lb appliances & 40 CFR 82.156(b) for small (≤ 5 lb) appliances. Assumes recovery/recycling equipment used is manufactured on or after 11/15/1993. When using recovery/recycling equipment manufactured prior to 11/15/1993, less stringent evacuation requirements apply to medium-pressure appliances > 5 lbs (4 inHg) and high-pressure appliances ≥ 200 lbs (4 inHg).

^b All vacuum levels measured relative to atmospheric pressure of 29.9 inHg (i.e., gauge pressure), unless otherwise specified.

^c Alternative evacuation levels apply to > 5 lb appliances in limited circumstances, including A) if, due to leaks, the above evacuation levels are not attainable or would substantially contaminant the refrigerant being recovered, B) if **dehydration evacuation** to the environment is not to be performed when **non-major repairs** are complete, and C) for oil changes.

Major repairs - Repairs that involve removal of the compressor, condenser, evaporator, or auxiliary heat exchange coil of an appliance; or any repair that involves uncovering an opening of more than 4 square inches of “flow area” for more than 15 minutes.

Dehydration evacuation - After repair complete, typically must evacuate to atmosphere beyond these levels (e.g., down to 5,000 to 400 microns absolute) using vacuum pump to ensure moisture and non-condensable gases are removed; not regulated by 40 CFR 82.

No significant change other than extension to non-ODS refrigerants.

Revised Small Appliance Disposal Requirements

- **Two options for final processors (e.g., scrap recyclers, landfills) when disposing of small (≤ 5 lb) appliances***
 - ❖ Option 1 – evacuate and recover refrigerant
 - ❖ Option 2 – verify that refrigerant has been evacuated previously via A) signed statements or B) contract
- **2016 rule**
 - ❖ Relocates these provisions from 82.156(f) & 82.166(i) to 82.155
 - ❖ Under Option 2, adds requirement to obtain signed statement when all refrigerant in an appliance has “leaked out” prior to delivery due to unavoidable occurrences
 - ❖ **Effective date = 1/1/2017 for ODS-containing refrigerants and 1/1/2018 for non-exempt substitutes**

*Also applies to disposal of MVACs and MVAC-like appliances

New Medium Appliance Disposal Requirements, 1/1/2018

- **2016 rule adds explicit technician recordkeeping requirements for disposal of appliances with full charge > 5 lbs and < 50 lbs [82.156(a)(3)]**
 - ❖ Company name
 - ❖ Location of the appliance
 - ❖ Date of recovery
 - ❖ Type of refrigerant recovered for each appliance
 - ❖ The quantity of refrigerant, by type, recovered from all disposed appliances in each calendar month
 - ❖ The quantity of refrigerant, by type, transferred for reclamation and/or destruction
 - ❖ The person to whom it was transferred
 - ❖ The date of transfer
- **Owners/operators only required to maintain these records if directly employ technicians**

Appliance Disposal Requirements - Common Problems Areas

- **Not having records associated with appliance disposal events**
- **Not providing signed statements or having required contract language in place with scrap recycler**
- **Not differentiating between appliances that “leaked out” versus those that required evacuation**

Revisions to Leak Repair Provisions for ≥ 50 lb Units - **Highlights, 1/1/2019**

- Extends applicability to appliances that contain non-exempt substitutes (e.g., HFCs)
 - ❖ Proposed rule revisited this portion of the new rule (more on this later)
- **Lowers allowable leak (or repair “trigger”) rates [82.157(c)(2)]**
 - ❖ Comfort cooling & other units - 15% to 10%
 - ❖ Commercial refrigeration – 35% to 20%
 - ❖ Industrial process refrigeration - 35% to 30%

Revisions to Leak Repair Provisions for ≥ 50 lb Units - **Highlights, 1/1/2019**

- **Initial and follow-up verification testing**
 - ❖ Now required for **all appliance types**, including comfort cooling and commercial refrigeration (was only req'd for industrial units previously)
 - ❖ **Shortens window** for performing follow-up verification test from 30 days to 10 days of initial verification test or of the appliance achieving normal operating characteristics and conditions
- **Standard list of extensions to 30-day repair window for all appliance types**
 - ❖ Mothballing, industrial process shutdown (IPS) required, necessary parts unavailable, radiological contamination issues, & other rules make repair within window impossible

Revisions to Leak Repair Provisions for ≥ 50 lb Units - **Highlights, 1/1/2019**

- **Establishes leak inspection requirements if exceed allowable leak rates [82.157(g)]**
 - ❖ Commercial/industrial process refrigeration ≥ 500 lbs – quarterly, until 4 consecutive quarters w/ no leaks above allowable leak rate
 - ❖ All other units ≥ 50 lbs – once per calendar year, until 1 year w/ no leaks above allowable leak rate
 - ❖ Must be performed by certified technicians
 - ❖ Not required if equipped with automatic leak detection system

Revisions to Leak Repair Provisions for ≥ 50 lb Units - **Highlights, 1/1/2019**

- Reporting required for appliances ≥ 50 lbs that leak more than 125% of their full charge in calendar year [82.157(j)]
 - ❖ “Chronic leaker” provision
 - ❖ Calculation = amount added / full charge (do not use standard leak rate calculation methods for this purpose)
 - ❖ Due 3/1 of following year

Revisions to Leak Repair Provisions for ≥ 50 lb Units - Recordkeeping [82.157(l)], 1/1/2019

- Expanded servicing records (**ID/location of appliance**, date of service, **parts of appliance serviced** and type of service **made to each part**, **name of person performing the service**, amount and type of refrigerant added to or removed, **full charge**, **leak rate**, **leak rate method used**)
- Expanded full charge records (full charge, method used, revisions, and date of revisions) **for all full charge methods**
- Expanded verification test records (**location of repairs tested**, date, type, and results)
- **Adds explicit records for mothballing (date and return to service)**
- **Adds explicit records for seasonal variance (dates of removal and corresponding addition)**
- **Adds records of leak inspections (date, method used, leak locations, and certification that all visible parts inspected)**
- **Adds records for automatic leak detection systems (installation, annual audit and calibration, and date/location of leaks detected)**
- Purged refrigerant records (when exempting from leak rate calculations)
- Copies of reports and requests submitted to EPA
- Copies of retrofit/retirement plans

Red = New

Revisions to Leak Repair Provisions for ≥ 50 lb Units - Clarifies Who is Responsible for Records [82.157(l)(2)], 1/1/2019

(2) Owners or operators must maintain a record including the following information for each time an appliance with a full charge of 50 or more pounds is maintained, serviced, repaired, or disposed of, when applicable. If the maintenance, service, repair, or disposal is done by someone other than the owner or operator, that person must provide a record containing the following information, with the exception of (l)(2)(vii) and (viii) of this section, to the owner or operator:

- Similar language in leak inspection (l)(3) and verification testing (l)(5) recordkeeping provisions

Revisions to Leak Repair Provisions - Notifications & Reporting

- Eliminates one-time notification of acquisition of certified recovery/recycling equipment (**effective date = 1/1/2017**)
- Requires notifications/reports to be submitted electronically to 608reports@epa.gov [82.157(m)] (**effective date = 1/1/2019**)
 - ❖ E.g., repair window extension requests, chronic leaker reports
 - ❖ Can use now per EPA

Revisions to Leak Repair Provisions - Common Problems Areas

- Improper categorization of appliances as IPRAs
- No documentation of full charge method
- Assuming HVAC/R contractor knows what records are required
 - ❖ Do not blindly rely on contractor service forms!
- Lack of specific leak location documentation
- Incomplete leak repair verification testing records
- Not calculating leak rates (under approach that all leaks fixed within 30 days)

Subpart F Matrix by Appliance & Refrigerant Type (after rule revision)

Category	Venting Prohibition	Sales Restrictions	Evacuation Req's	Technician Certs	Disposal Req's	Leak Repair Provisions
Appliances w/ Exempt Substitutes	No	No	No	No	No	No
Small Appliances (≤ 5 lbs ODS or Non-Exempt Substitute)	Yes	Yes <u>Applies to Non-Exempt Subs on:</u> 1/1/17 – Used Ref 1/1/17 – Appliances 1/1/18 – New Ref	Yes (specific) <u>Applies to Non-Exempt Subs on:</u> 1/1/18	Yes <u>Applies to Non-Exempt Subs on:</u> 1/1/18	Yes (specific) <u>“Leaked out” Records Req'd on:</u> 1/1/17 – ODS 1/1/18 – Non-Exempt Subs	No
Medium Appliances (> 5 lbs & < 50 lbs ODS or Non-Exempt Substitute)	Yes	Yes <u>Applies to Non-Exempt Subs on:</u> 1/1/17 – Used Ref 1/1/17 – Appliances 1/1/18 – New Ref	Yes <u>Applies to Non-Exempt Subs on:</u> 1/1/18	Yes <u>Applies to Non-Exempt Subs on:</u> 1/1/18	Yes <u>Explicit Records Req'd on:</u> 1/1/18 – ODS 1/1/18 – Non-Exempt Subs	No
Large Appliances (≥ 50 lbs ODS or Non-Exempt Substitute)	Yes	Yes <u>Applies to Non-Exempt Subs on:</u> 1/1/17 – Used Ref 1/1/17 – Appliances 1/1/18 – New Ref	Yes <u>Applies to Non-Exempt Subs on:</u> 1/1/18	Yes <u>Applies to Non-Exempt Subs on:</u> 1/1/18	Yes <u>Applies to Non-Exempt Subs on:</u> 1/1/18	Yes <u>82.156(i) Applies thru:</u> 12/31/18 – ODS <u>82.157 Applies starting:</u> 1/1/19 – ODS 1/1/19 – Non-Exempt Subs

Late Breaking News - New EPA Proposal

- Stems from 8/10/2017 letter from EPA to two industry groups
- Proposed rule issued on 10/01/2018
 - ❖ Proposed to limit leak repair provisions to ODS refrigerants
 - ❖ Requested comment on:
 - ◆ Full roll back for non-ODS refrigerants (all but the venting prohibition)
 - ◆ 6-12 month extension to 1/1/2019 compliance date for non-ODS refrigerants if rule not finalized in reasonable time prior to 1/1/2019

Does NOT impact rule as it relates to ODS refrigerants!

Late Breaking News - New EPA Proposal

- **EPA decided not to issue compliance extension to 1/1/2019 compliance date for non-ODS refrigerants**
 - ❖ Site's must comply with rule as written until rule is officially revised
- **EPA reviewing comments and focused on revising rule in some fashion**
 - ❖ Unlikely that final rule will be issued prior to mid-2019

Does NOT impact rule as it relates to ODS refrigerants!

Key Components of Refrigerant Compliance Program

- **High-level procedure/policy**
- **Accurate appliance inventory**
 - ❖ Focus on large (≥ 50 lb) appliances
- **Comprehensive service/repair form**
- **Comprehensive appliance disposal form**
- **Leak repair tracking tool**
- **Refrigerant transfer tracking tool**

Refrigerant Tracking Tools



- **Primary considerations when evaluating spreadsheet vs. off-the-shelf software**
 - ❖ Number of appliances that have to be managed
 - ❖ Need for technicians to have mobile access (which eliminates need to manually enter data from forms into tracking tool)
 - ❖ Cost

Refrigerant Tracking Tools



- **Trinity Refrigerant Tracking Tool (macro-enabled spreadsheet)**
- **Off-the-shelf software options**
 - ❖ TrakRef v2 (TrakRef)
 - ❖ Refrigerant Compliance Manager (Sphera)
 - ❖ Verisae vx Sustain (Accruent)
 - ❖ ODS Sentinel (GenSuite)
 - ❖ Refrigerant Management Module (Intelex)

Questions?

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EQ article provided at:

<https://www.trinityconsultants.com/news/federal/refrigerant-rule-revisions--is-your-facility-prepared>

Complete summary table in PDF format provided at:

<http://www.trinityconsultants.com/Documents/Summary-of-Key-Revisions-to-Refrigerant-Management->



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Changes to Subpart F Sections

Old Rule

- 82.152 - Definitions
- 82.154 - Prohibitions
- 82.156 - Required practices; (i) includes leak repair provisions
- 82.158 - Standards for recycling & recovery equipment
- 82.160 - Approved equipment testing organizations
- 82.161 - Technician certification
- 82.162 - Certification by owners of recovery & recycling equipment
- 82.164 - Reclaimer certification
- 82.166 - Reporting & recordkeeping requirements

Blue = new

Red = revised

Green = deleted

New Rule

- **82.152 - same**
- **82.154 - same**
- **82.155 - Safe disposal of appliances**
- **82.156 - Proper evacuation of refrigerant from appliances; (i) applies until 1/1/2019**
- **82.157 - Appliance maintenance & leak repair (applies starting 1/1/2019)**
- **82.158 - Standards for recovery and/or recycling equipment**
- **82.160 - same**
- **82.161 - same**
- **82.162 - deleted**
- **82.164 - same**
- **82.166 - Reporting & recordkeeping requirements for leak repair (until 1/1/2019)**

Summary of Changes by Effective Date (1 of 3)

Effective Date	Rule Provision/Citation
01/01/2017	Sales restriction on used non-exempt substitutes, 82.154(d)
01/01/2017	Sales restriction on appliances with non-exempt substitutes (servicing aperture/process stub), 82.154(e)
01/01/2017	Certification of new manufactured/imported recovery/recycling equipment for use with non-exempt substitutes, 82.158
01/01/2017	Non-exempt substitute reclaimer certification, 82.164
01/01/2017	Elimination of one-time notification of acquisition of certified recovery/recycling equipment, 82.162 of old rule
01/01/2017	New definition of <i>comfort cooling</i> , 82.152
01/01/2017	Modified definition of <i>disposal</i> to cover vandalism and intentional cutting of refrigerant lines, 82.152
01/01/2017	Approved equipment testing organizations must publish online list of certified recovery/recycling equipment, 82.160(e)(1)

Summary of Changes by Effective Date (2 of 3)

Effective Date	Rule Provision/Citation
01/01/2017	Signed statement requirement in event all ODS-containing refrigerant leaked out prior to delivery of small appliances, MVACs, and MVAC-like appliances for disposal, 82.155
01/01/2018	Signed statement requirement in event all non-exempt substitutes leaked out prior to delivery of small appliances, MVACs, and MVAC-like appliances for disposal, 82.155
01/01/2018	Sales restriction on new non-exempt substitutes, 82.154(c)(1)
01/01/2018	Small (≤ 2 lb) cans of non-exempt substitutes for MVACs must be equipped with self-sealing valves, 82.154(c)(2)
01/01/2018	Technicians must be certified to maintain, service, repair, or dispose* of appliances containing non-exempt substitutes, 82.161(a)
01/01/2018	Approved technician certification programs must publish online list of technicians they have certified on or after 01/01/2017, 82.161(b)(6)

*Consistent with previous rule, technicians do not have to be certified to dispose of small appliances, MVACs, and MVAC-like appliances.

Summary of Changes by Effective Date (3 of 3)

Effective Date	Rule Provision/Citation
01/01/2018	Evacuation requirements for disposal and/or opening of appliances containing non-exempt substitutes, 82.155 & 82.156(a)-(d)
01/01/2018	Recordkeeping requirements for disposal of appliances with full charge > 5 lbs and < 50 lbs, 82.156(a)(3)
01/01/2019	Revised leak rate provisions for appliances with full charge \geq 50 lbs refrigerant, 82.157