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Refrigerant Rule Revisions: Is Your Facility Prepared?

AWMA NFS Annual Enrichment Seminar Buffalo, NY - January 24, 2019

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Agenda

- > Summary of refrigerant rules and basic refrigerant types
- > Refrigerant phase out or phase down
 - EPA's Significant New Alternatives Policy (SNAP) Program
 - Montreal Protocol
- > Appliance servicing requirements
 - EPA's 11/18/2016 rule revisions
 - EPA's 10/01/2018 proposal
- > Tips for facilities and HVAC/R contractors
- > Refrigerant Management Tools
- > Q&A



Introduction to Environmental Requirements for Refrigerants



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Basic Refrigerant Types (1 of 2)

(Ozone Depleting Substances)

- > CFCs chlorofluorocarbons (e.g., R-11, R-12)
 - 1st generation refrigerants
 - Class I ozone depleting substances (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</p>
 - Production being phased out by 2020 (R-22 phase out started in 2010)



Basic Refrigerant Types (2 of 2)

(Non-exempt Substitutes)

- > 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?

 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

 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



1. Developments in Refrigerant Phase Out Schedules



HCFC (R-22) Phase Out is Here

- > HCFC production phase out schedule
 - ✤ 2015 = 90%
 - 2020 = 99.5% overall and 100% for R-22 & R-142b
 - ✤ 2030 = 100%

> R-22 quandary

- EPA production allocations:
 - 13 million lbs (2017)
 - 9 million lbs (2018)
 - 4 million lbs (2019)
 - 0 million lbs (2020)
- Recycle/reclamation:
 < 10 million lbs/year
 (2016 EPA estimate)
- ~200 million lb/year service need in the U.S.
- Costs for R-22 have already risen 10x since 2006





HFCs are the New Target - Kigali Amendment

- > HFC phase down within Kigali Amendment to Montreal Protocol, 10/15/2016
 - *** 2019 10**%
 - 2024 40%
 - 2029 70%
 - 2034 80%
 - *** 2036 85**%
 - Relative to 2011-2013 HFC baseline + 15% of HCFC/CFC baseline
- > Trump Administration quiet on ratification



HFCs are the New Target

- > HFCs (e.g., R-134a, R410A), which are the most common replacement for HCFCs, are the new target since they are potent GHGs
- > HFC targeting mechanisms
 - EPA's SNAP Program
 - Kigali Amendment to Montreal Protocol
 - Expansion of 40 CFR 82, Subpart F (i.e., CAA Section 608) provisions to non-ODS substitutes
 Will be covered in next section



Significant New Alternatives Policy (SNAP)

- > The SNAP program is intended to:
 - Identify and evaluate substitutes in end-uses that have historically used ozone-depleting substances (ODS)
 - Look at overall risk to human health and the environment of both existing and new substitutes
 - Publish lists of acceptable and unacceptable substitutes by end-use.
- > EPA authorizes alternatives by industry sectors and end uses
 - Industry Sectors: <u>Refrigeration/air conditioning</u>, fire suppression, & others.
 - End Uses: Chillers (centrifugal, reciprocating, ...) Cold Storage Warehouse, Retail Food Refrigeration, etc.



HFCs are the New Target - SNAP Program

- Stems from former President Obama's Climate Action Plan, 6/2013
 - Obtained significant private sector commitments to reduce reliance on HFCs from HFC producers, appliance manufacturers, and other end-users
 - Avoids >700MM metric tons of CO₂e emissions
- > EPA removed SNAP approval of several HFCs in specific end-uses
 - SNAP Rules 20 (2015) and 21 (2016)
 - Court vacated Rule 20 on 8/8/2017
 - DC Circuit denied Chemours/Honeywell appeal on 1/27/2018



NYSDEC Plans to Adopt SNAP Rules

- Federal SNAP Rules 20 & 21 (2015-2016) focus on refrigerants that are GHGs rather than ODS's
- > Governor Cuomo announced intent for New York to adopt regulations similar to Rules 20 & 21
- > NYSDEC undergoing stakeholder input process and held pre-proposal webinar in November 2018
- > Early plans are to adopt Rules 20 & 21 directly, with implementation as soon as 2020
- > Impacts to Regulated Community
 - No changes to Part 82 Leak Repair Requirements
 - No requirement to replace existing units covered by Rules 20 & 21
 - Restriction on use of HFCs in specific new / retrofit applications

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How Should Facilities Prepare for Impending Refrigerant Phase Outs?

- > Facility managers should develop inventory of appliances (age, size, refrigerant type) to quantify exposure to expected rise in refrigerant costs
- > Watch for availability of next generation refrigerants (e.g., HCs, HFOs, HFO/HFC blends)
 - Obtain input from appliance manufacturers and HVAC/R contractors
- > Analyze new AC/R unit installations and retrofits based on available cost data and unit lifetimes
 - If R-410A is facing an impending phase down, does it make sense to switch your R-22 unit to R-410A?

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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 ≥ 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



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% =

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

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Revisions to Refrigerant Rule



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 ≥ 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 <u>when used in approved</u> <u>applications</u>



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 ≥ 50 lbs refrigerant, 1/1/2019 (82.157)



Extension to Non-ODS Substitutes October 2018 Proposed Changes

> Proposed to be rescinded

- Leak repair provisions as they apply to appliances with full charge ≥ 50 lbs refrigerant, 1/1/2019 requirements
- No change to 2017 or 2018 requirements
- > Alternative proposal
 - EPA requesting comment to rescind Subpart F extension to non-exempt substitutes in its entirety

> As of right now... Full 2016 Rule is in Effect

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

- > Extends applicability to appliances that contain non-exempt substitutes (e.g., HFCs)
 - Proposed rule revisited this portion of the new rule
- > Lowers allowable leak (or repair "trigger") rates [82.157(c)(2)]
 - Comfort cooling & other units 15% to 10%
 - Commercial refrigeration

- 15% to 10% 35% to 20%
- Industrial process refrigeration 35% to 30%



Revisions to Leak Repair Provisions for ≥ 50 lb Units - Testing & Repair, 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, necessary parts unavailable, radiological contamination issues, & other rules make repair within window impossible
 - 120-day repair window if industrial process shutdown (IPS) required to make repair still reserved for IPRAs



Revisions to Leak Repair Provisions for ≥ 50 lb Units - Leak Inspections, 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 - Chronic Leaker, 1/1/2019

- - Calculation = amount added / full charge (do not use standard leak rate calculation methods for this purpose)
 - Due 3/1 of following year
 First report due 3/1/2020



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 Servicing 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 <u>608reports@epa.gov</u> [82.157(m)] (effective date = 1/1/2019)
 - E.g., repair window extension requests, chronic leaker reports



Disposal Requirements



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



Summary and Tips for Compliance



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-</u> <u>Exempt Subs on:</u> 1/1/17 – Used Ref 1/1/17 – Appliances 1/1/18 – New Ref	Yes (specific) Applies to Non- Exempt Subs on: 1/1/18	Yes Applies to Non- Exempt Subs on: 1/1/18	Yes (specific) <u>"Leaked out" Records</u> <u>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 Applies to Non- Exempt Subs on: 1/1/18	Yes Applies to Non- Exempt Subs on: 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 Applies to Non- Exempt Subs on: 1/1/17 – Used Ref 1/1/17 – Appliances 1/1/18 – New Ref	Yes Applies to Non- Exempt Subs on: 1/1/18	Yes Applies to Non- Exempt Subs on: 1/1/18	Yes Applies to Non- Exempt Subs on: 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

How Should Facilities Comply with Subpart F Revisions?

- > Use EPA required work practices previously reserved for ODS-containing refrigerants (e.g., R-12, R-22) on non-ODS substitutes (e.g., R-134a, R-410A)
 - Certified technicians
 - Certified recovery/recycling equipment
 - Required refrigerant evacuation levels
- > Implement changes to appliance disposal recordkeeping system
- > Prepare for new leak repair provisions on \ge 50 lb units
 - Conduct initial and follow-up verification testing for all leaks
 - Implement system to maintain new records
- Coordinate with Refrigerant Contractors/Vendors to confirm compliance



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/inspection tracking tool
 - Retrofit/retirement tracking
 - Chronic leaker tracking
- > Refrigerant transfer tracking tool



Refrigerant Tracking Tools



- > Off-the-shelf software options
 - TrakRef v2 (TrakRef)

Only proven option for mobile access

- Refrigerant Compliance Manager (Sphera)
- Verisae vx Sustain (Accruent)
- ODS Sentinel (GenSuite)
- Refrigerant Management Module (Intelex)



Trinity Service/Repair Form

B1. PM or service call PM check Periodic leak inspection B2. Technician name: B2a. Technician employer: B2b. Technician certification type: B3. Pariodic Leak inspection Results (required if appliance w/ full refrigerant charge 2.50 /lbs has leak above applicable leak threshold): B3a. Date of inspection. B3b. All visible/accessible parts inspected (YIN)? B3c. Method(s) used: B4. General Description of Service or Maintenance Performed (include leak location & repair info for appliances with full charge < 50 /lbs of refrigerant): B5. Leak identified (YIN)? B4. General Description of Service or Maintenance Performed (include leak location & repair info for appliances with full charge < 50 /lbs of refrigerant): B5. Leak identified (YIN)? B6. Major or minor service/repair Major service/repair - involves removal of compressor, condenser, evaporator, or auxiliary heat exchange coil of an appliance; or any repair that involves uncovering an opening of > 4 square incles of 'tow area'' for > 15 minutes B7. EPA technician certification required for appliance type/refrigerant type: B7. EPA technician used EPA certified for refrigerant type: B7. EPA technician certification required for appliance type/refrigerant type: B8. Bandard EPA required evacuation required bor refrigerant type: B8. Bandard EPA required evacuation pion required for refrigerant type (YIN)? More Amount entered in B11 should exclude. B9. Atternative evacuation level B9. Atternative evacuation option required for to pipair/	art B. General Preventive Maintenance or	Service Call	Information (o	omplete for	all appliance ty	/pes)			
B2. Technician name: B2a. Technician employer: B2b. Technician certification type: B3. Periodic Leak Inspection Results (required if appliance w/ full refrigerant charge ≥ 50 lbs has leak above applicable leak threshold): B3a. Method(s) used: B3. Date of inspecton: B3b. All visible/accessible parts inspected (V/N)? B3c. Method(s): B4. General Description of Service or Maintenance Performed (include leak tocation & repair info for appliances with full charge < 50 lbs of refrigerant):	B1. PM or service call>		Service call			PM check			Periodic leak inspection
B3. Periodic Leak Inspection Results (required If appliance w/ full refrigerant charge 2 50 lbs has leak above applicable leak threshold): B3b. A1 visible/accessible parts inspected (YN)? B3c. Method(s) used: B4. General Description of Service or Maintenance Performed (include leak location & repair info for appliances with full charge < 50 lbs of refrigerant):	B2. Technician name:		B2a. Technici	an employer:				B2b. Techni	cian certification type:
B4. General Description of Service or Maintenance Performed (include leak location & repair info for appliances with full charge < 60 lbs of refrigerant):	B3. Periodic Leak Inspection Results (re B3a. Date of inspection:	quired if app B3I	bliance w/ full r b. All visible/acc	e <i>frigerant ch</i> essible parts ir	narge ≥ 50 lbs / hspected (Y/N)?	nas leak ab	ove applicab B3c. I	le leak thres Method(s) use	<i>hold):</i> d:
If Leak Identified, Complete the Following: Major service/repair major servic	B4. General Description of Service or Ma	intenance Pe	erformed (inclu	ide leak loca	tion & repair in	nfo for appi	liances with	full charge < B5. L	50 lbs of refrigerant): .eak identified (Y/N)?
B6. Major or minor service/repair Major service/repair involves removal of compressor, condenser, evaporator, or auxiliary heat exchange coil of an appliance; or any repair that involves uncovering an opening of > 4 square inches of "flow area" for > 15 minutes B7. EPA technician certification required for appliance type/refrigerant type: Minor service/repair Image: Standard EPA required evacuation required for appliance type/refrigerant type: Image: Standard EPA required evacuation required for refrigerant type: Image: Standard EPA required evacuation option required (Y/N): Image: Standard EPA required evacuation level: Image: Standard EPA required evacuation option required (Y/N): Image: Standard EPA required evacuation level: Image: Standard EPA required evacuat	If Leak Identified, Complete the Followin	g:							
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B7. EPA technician certification required for appliance type/refrigerant type: Image: Constraint of the second			Minor service/re	pair					
B7a. Was technician used EPA certified for appliance type/refrigerant type: Image: Constraint of the	B7. EPA technician certification required for a	opliance type/r	refrigerant type:						
B8. EPA recovery/recycle (R/R) equipment certification required for refrigerant type:	B7a. Was technician u	sed EPA certif	fied for appliance	e type/refriger	ant type (Y/N)?				
B8a. Was recovery/recycle (R/R) equipment used EPA certified for refrigerant type (Y/N)? Image: Control of the image: Control of t	B8. EPA recovery/recycle (R/R) equipment of	ertification req	uired for refrige	rant type:					
B9. Standard EPA required evacuation level:	B8a. Was recovery/recycle (R/	R) equipment	used EPA certif	ed for refriger	ant type (Y/N)?				
B9a. Alternative evacuation option required (Y/N):	B9. Standard EPA required evacuation level:			50.85					
B9b. Alternative evacuation option used: B9c. Was required evacuation level achieved prior to repair/service (Y/N)? Note: Amount entered in B11 should exclude. refrigerant from B10 that is returned to appliance. Also, an initial verification test (IVT) must be performed after repair and prior to adding refrigerant to appliance (refer B11. Amount of additional refrigerant added during service/repair: Ibs oz an initial verification test (IVT) must be performed after repair and prior to adding refrigerant to appliance (refer to C6). B12. Date refrigerant added after repair: (indicates when repair complete) oz an initial verification test (IVT) must be performed after repair and prior to adding refrigerant to appliance (refer to C6). B13. Leak Rate Calculation (Only Applicable if New Refrigerant Added During Service): Mode: (days/yr) 100 = Annualized Leak Rate (% per yr): 0.0 (lbs refrigerant added) 365 (days since last charge1) =	B9a. Alternative evacuation option re	quired (Y/N):							
B9c. Was required evacuation level achieved prior to repair/service (Y/N)? Note: Amount entered in B11 should exclude B10. Amount of refrigerant recovered during service/repair: Ibs oz refrigerant from B10 that is returned to appliance. Also, an initial verification test (IVT) must be performed after B11. Amount of additional refrigerant added during service/repair: Ibs oz an initial verification test (IVT) must be performed after B12. Date refrigerant added after repair: (indicates when repair complete) oz to C6). B13. Leak Rate Calculation (Only Applicable if New Refrigerant Added During Service): 0.0 (Ibs refrigerant added) 365 (days/yr) 100 = Manualized Leak Rate (% per yr): 0.0 (Ibs refrigerant in full charge) 365 (days since last charge ¹) =	B9b. Alternative evacuation option used								
B10. Amount of refrigerant recovered during service/repair: Ibs oz an initial verification test (IVT) must be performed after B11. Amount of additional refrigerant added during service/repair: Ibs oz an initial verification test (IVT) must be performed after B12. Date refrigerant added after repair: (indicates when repair complete) oz refrigerant for C6). B13. Leak Rate Calculation (Only Applicable if New Refrigerant Added During Service): to C6). to C6). Annualized Leak Rate (% per yr): 0.0 (Ibs refrigerant added) 365 (days/yr) 100 = (Ibs refrigerant in full charge) 365 (days since last charge ¹) = =	B9c. Was required evacuation le	vel achieved	prior to repair/se	ervice (Y/N)?				Note: Amount	entered in B11 should exclude
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Annualized Leak Rate (% per yr): 0.0 (lbs refrigerant added) 365 (days/yr) 100 (lbs refrigerant in full charge) 365 (days since last charge ¹)	B13. Leak Rate Calculation (Only Applica	able if New R	Refrigerant Add	ded During S	ervice):				
(lbs refrigerant in full charge) 365 (days since last charge ¹)	Annualized Leak Rate (% per yr):	0.0	(lbs refrigerant	added)	365	(days/yr)		100	- <u>-</u>
			(lbs refrigerant	in full charge)	365	(days since	last charge ¹)		

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Refrigerant Tracking Tools



- > Primary considerations when evaluating spreadsheet vs. off-the-shelf software
 - Number of appliances and/or sites 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
 - Implementation



Questions



PDH Credit Questions

- > What is driving the price increase for common refrigerants like R-22?
- > What are some of the significant changes to the Refrigerant Management rules that have already gone into effect?
- > What are some of the significant changes to Refrigerant Management rules that will go into effect in 2019?
- > What are some Key components of a Refrigerant Management Program?
- > What requirements may be affected if the 10/1/18 Proposal is finalized
- > Do Technician Certifications expire?



Questions?

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EQ article provided at: Web Search: "Trinity EQ Refrigerants Ready or Not", or <u>https://www.trinityconsultants.com/news/federal/refrigerant-management-</u> <u>rule---ready-or-not</u>

ODS / Refrigerant Training Opportunities (Webinar and In-person): Web Search: "Compliance Workshop for Refrigerants", or <u>https://www.trinityconsultants.com/training/1130/compliance-workshop-for-</u> <u>refrigerants-ozone-depleting-substances</u>



Summary of 2016 Changes



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 staring 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)

01/01/2017Sales restriction on used non-exempt substitutes, 82.154(d)01/01/2017Sales restriction on appliances with non-exempt substitutes (servicing aperture/process stub), 82.154(e)01/01/2017Certification of new manufactured/imported recovery/recycling equipment for use with non-exempt substitutes, 82.15801/01/2017Non-exempt substitute reclaimer certification, 82.16401/01/2017Elimination of one-time notification of acquisition of certified recovery/recycling equipment, 82.162 of old rule01/01/2017New definition of comfort cooling, 82.15201/01/2017Modified definition of disposal to cover vandalism and intentional cutting of refrigerant lines, 82.15201/01/2017Approved equipment testing organizations must publich online	Effective Date	Rule Provision/Citation
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01/01/2017 Modified definition of <i>disposal</i> to cover vandalism and intentional cutting of refrigerant lines, 82.152	01/01/2017	New definition of comfort cooling, 82.152
01/01/2017 Approved equipment testing organizations must publish online	01/01/2017	Modified definition of <i>disposal</i> to cover vandalism and intentional cutting of refrigerant lines, 82.152
list of certified recovery/recycling equipment, 82.160(e)(1)	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 (\leq 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 \ge 50 lbs refrigerant, 82.157

