



Management of Ozone Depleting Substances (Refrigerants)

40 CFR 82
Subpart F

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Scope of Regulatory Requirements

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Regulatory Scope

- Purpose is to reduce emissions of Class I and Class II refrigerants (chemicals that can cause the destruction of stratospheric ozone) by maximizing the recycling and recapture of refrigerants
- Covers service/maintenance, repair, and disposal of ODS containing equipment, and restricts the sale of refrigerants in accordance with Title VI of the Clean Air Act

Regulatory Scope

- Included in Title V Permits under Part 70 General Condition T
- LDEQ Air Permit Application form Section 22 requests information regarding refrigeration equipment

Regulatory Scope

- Rules apply to any/all equipment containing Class I or Class II ODSs of any amount
- Equipment refers to “appliances”, “commercial refrigeration” and “industrial process refrigeration” units

Regulatory Scope

- *Appliance* means any device which contains and uses a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer
- *Industrial process refrigeration* means complex customized appliances used in the chemical, pharmaceutical, petrochemical, and manufacturing industries and directly linked to the industrial process

Regulatory Scope

- Common Class I ODS
 - Chlorofluorocarbons (CFCs)
 - Halons (e.g. 1211, 1301 or 2402)
 - Carbon tetrachloride
 - 1,1,1-Trichloroethane
 - Refrigerants containing a % of CFC (e.g. R-500 or R-502)

Regulatory Scope

- Common Class II ODS
 - Hydrochlorofluorocarbons (HCFCs)
(e.g. R-22 or HCFC-22)

Regulatory Scope

- Common ODS substitutes
 - Ammonia
 - R-134a (HFC-134a)
 - R-410a
 - R-407c (Blend of HFC-32, HFC-125, HFC-134a)

ODS Substitutes (excluding ammonia) are currently not regulated under Subpart F, except for the venting prohibition.



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Procedures for Servicing ODS Containing Equipment

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Procedures

- If you are an owner or operator:
 - Ensure only certified technicians service the equipment
 - Ensure only certified recovery and recycling machines are used
 - Ensure leaks are repaired within 30 days for units containing ≥ 50 lbs of ODS

Procedures

- If you are an owner or operator:
 - Ensure service records for units with ≥ 50 lbs of ODS include:
 1. The dates of service
 2. Type of service
 3. Quantities and types of refrigerants added

Procedures

- Subpart F “Venting Prohibition” – ensure individuals do not knowingly vent ODSs to the atmosphere while servicing equipment

Per Subpart F, it is unlawful to knowingly vent Class I, Class II, or ODS substitutes (excluding ammonia) to the atmosphere.

Procedures

- If using a contractor:
 - Request that the contractor provide records of service personnel who will be doing the work
 - Request records showing the recovery/recycling equipment to be used is also certified

Procedures

- If using company employees (technicians):
 - Technicians must have proof of certification posted/present on-site
 - Ensure the recovery or recycling equipment used by technicians meets EPA standards
 - Confirm that the notification indicating the facility would service its own equipment was sent to EPA

Procedures

- If using company employees (technicians):
 - Ensure the certified recovery and recycling equipment is labeled with the date of manufacture and the category of ODS containing equipment for which it is certified
 - Ensure the technicians keep operating instructions/manuals for the recovery/recycling equipment



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Leak Repair Requirements

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Leak Repair

- EPA is aware many owners/operators repair ODS containing equipment as soon as a leak is discovered
- EPA's intent is to require owners/operators to take action on chronic leakers, thus the requirement to calculate leak rates on a 365-day rolling basis.
- Chronic leakers are those units that repeatedly require repairs, indicating a potential reliability issue

Leak Repair

- To determine compliance with regulations, need to determine the leak rate.
- Equation 1:

$$\text{Leak rate (\% per year)} = \frac{\text{pounds of refrigerant added}}{\text{pounds of refrigerant in full charge}} \times \frac{365 \text{ days/year}}{\text{shorter of: \# days since refrigerant last added or 365 days}} \times 100\%$$

Leak Repair

- Equation 2:

$$\text{Leak rate} \begin{array}{l} \text{(\% per year)} \end{array} = \frac{\begin{array}{l} \text{pounds of refrigerant added over past 365 days} \\ \text{(or since leaks were last repaired,} \\ \text{if that period is less than one year)} \end{array}}{\text{pounds of refrigerant in full charge}} \times 100\%$$

- Note: the same equation must be used for all equipment at an operating facility



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Recordkeeping & Reporting Requirements

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Recordkeeping

- If using company employees (technicians)
Maintain records of the purchases of Class I and Class II ODS as well as substitute refrigerants
 1. Record the date
 2. Record the type of refrigerant
 3. Record the quantity purchased

Recordkeeping

For equipment with ≥ 50 pounds ODS,
keep on file

1. The date of service
2. Type of service
3. Quantity and type of refrigerant added
4. The calculated leak rate (use equation 1 or 2 provided in the regulation)

Recordkeeping

- If the calculated leak rate is $\geq 15\%$ for appliances (35% for industrial process refrigeration equipment), keep records of the date the leak was discovered, the leak rate, and the repair efforts
- In addition, for industrial process refrigeration equipment, maintain records of the dates and results of all verification test(s) that show the leak was repaired successfully

Reporting

If the calculated leak rate is above 15% for appliances (35 % for industrial process refrigeration equipment), ***and the leak cannot be repaired within 30 days****, ***notify the EPA within 30 days of discovering the leak!***

*120 days for industrial process equipment if a shutdown is needed to make repairs

A list of the contents of this notification can be found in 82.166(n) [delay of repair]

Reporting

During the delay of repair timeframe:

Maintain records of the dates, types, and results of all initial (after start-up) and follow-up (30 days after) verification tests that are performed. Submit this information to EPA within 30 days after conducting each test

Reporting

Note: No leak reports are required to be submitted if the repairs are completed within the regulatory timeframe



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Common Areas of Non-Compliance

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Pitfalls to Avoid

- If using a contractor:
 - Don't be hands-off and assume the contractor is doing the work in a compliant manner
 - Know what ODS containing equipment you have and periodically check to ensure the contractor is doing the job accurately
 - Review servicing records and ensure all required information is being recorded

Pitfalls to Avoid

- If using company employees (Technicians)
 - Technicians may not be aware of regulatory changes or updates
 - Example: After the 2005 promulgated changes, facilities did not check that technicians were aware of the new regulations. Thus, many service records in 2005 did not include leak rate calculations

Pitfalls to Avoid

- If using company employees (Technicians)
 - Environmental personnel need to make the technicians aware of any new regulations and ensure the technicians understand any new requirements

Future New Regulatory Requirements – On the Agenda

- For equipment having ≥ 50 pounds of ODS, proposed changes would require facilities to verify all repairs and document repair efforts
- Proposing to update the rule to reflect new equipment, focusing on equipment used for new substitute refrigerants

Pitfalls to Avoid

- If using company employees (Technicians)
 - Technicians unable to locate recycling equipment operating manuals. Many have not read the manuals
 - Example: May not be aware that filters need to be replaced periodically

Pitfalls to Avoid

- If using company employees (Technicians)
 - The EPA can request the technicians to demonstrate their ability to perform proper servicing procedures (82.161(f))

Pitfalls to Avoid

- Missing inventory of regulated equipment (containing ≥ 50 lbs Class I or II ODS)
- Leak rates not being calculated
- Leak rates calculated incorrectly
- Recycling/Recovery equipment not labeled; label is missing; or label does not have all required information

Pitfalls to Avoid

- Erroneous records provided by ODS contractors
- For facilities that use their own technicians, missing copy of EPA notification that the facility technicians are servicing their own equipment
- Missing records of proper evacuation of ODS from decommissioned equipment

Pitfalls to Avoid

- Service records that indicate a particular unit is a “chronic leaker”
- Missed TRI reporting from leak rate calculations showing 10,000 pounds or more ODS released in a year

Note: Some ODSs are also Greenhouse Gases

Outcome if Pitfalls not Avoided

- EPA considers this regulation to be important enough to issue violations/fines
 - Facility A – \$2.3 MM in penalties (failure to perform the required testing, reporting, recordkeeping and repairs; estimated 9,000 pounds of R-22 released)
 - Facility B – \$3.65 MM in penalties under a Consent Decree (required to retire or retrofit 17 industrial process refrigeration units)

Outcome if Pitfalls not Avoided

- Facility C – \$5.25 MM penalty (failure to make prompt, proper repairs to equipment that exceeded the 35% leak threshold; involved more than 300 large appliances)
- University A – \$118 K penalty (failure to adequately repair leaks within 30 days; failure to keep proper service records; failure to properly remove refrigerants)

Staying Compliant

Make a list of the ODS containing equipment that are serviced by the contractors and which are serviced by site-personnel

Allows verification that a technician that is certified for a particular type of equipment is only servicing that particular type of equipment

Staying Compliant

Make a list of equipment that contain ODSs with special emphasis on units that have an ODS capacity of 50 pounds or greater

Record the type of ODS contained in each type of equipment. This allows identification of Class I and Class II ODS and how to manage

Staying Compliant

If you have any motor vehicles with a/c units (MVACs) that are serviced on-site:

Service of MVACs must be conducted using equipment certified in accordance with Subpart B (82.34 and 36).

Equipment certified according to Subpart F may not necessarily qualify as being certified under Subpart B; therefore, a facility may not be able to use the same equipment to service MVACs and ODS containing equipment

Conclusion

- Maintaining accurate records is the key to compliance
- Perform regular internal audits of personnel and equipment to ensure certifications are proper for the type of service the technicians are providing
- Use of a third-party audit as a check to ensure compliance of the ODS program



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Questions ?

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