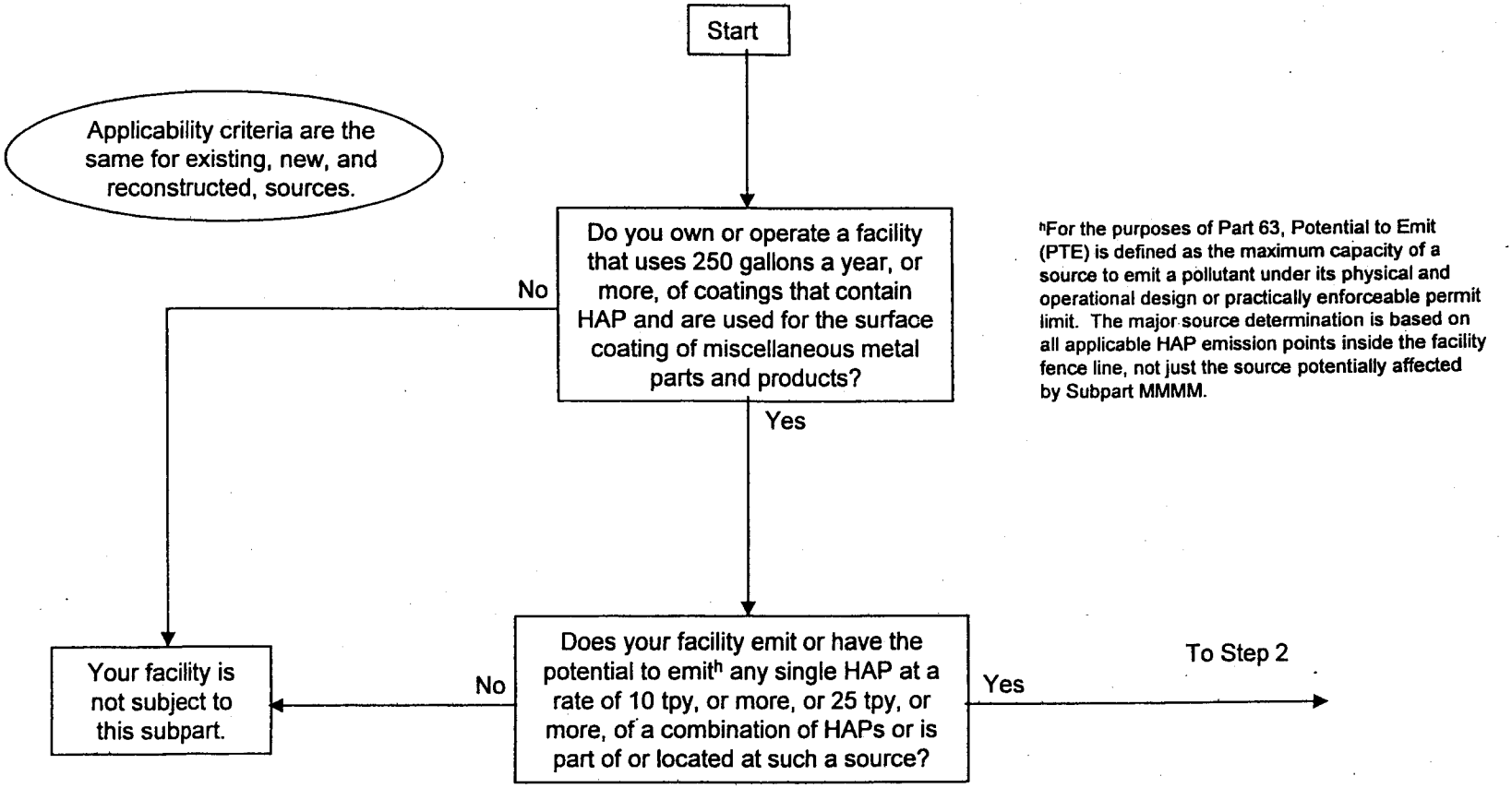
National Emission Standards for Hazardous Air Pollutants

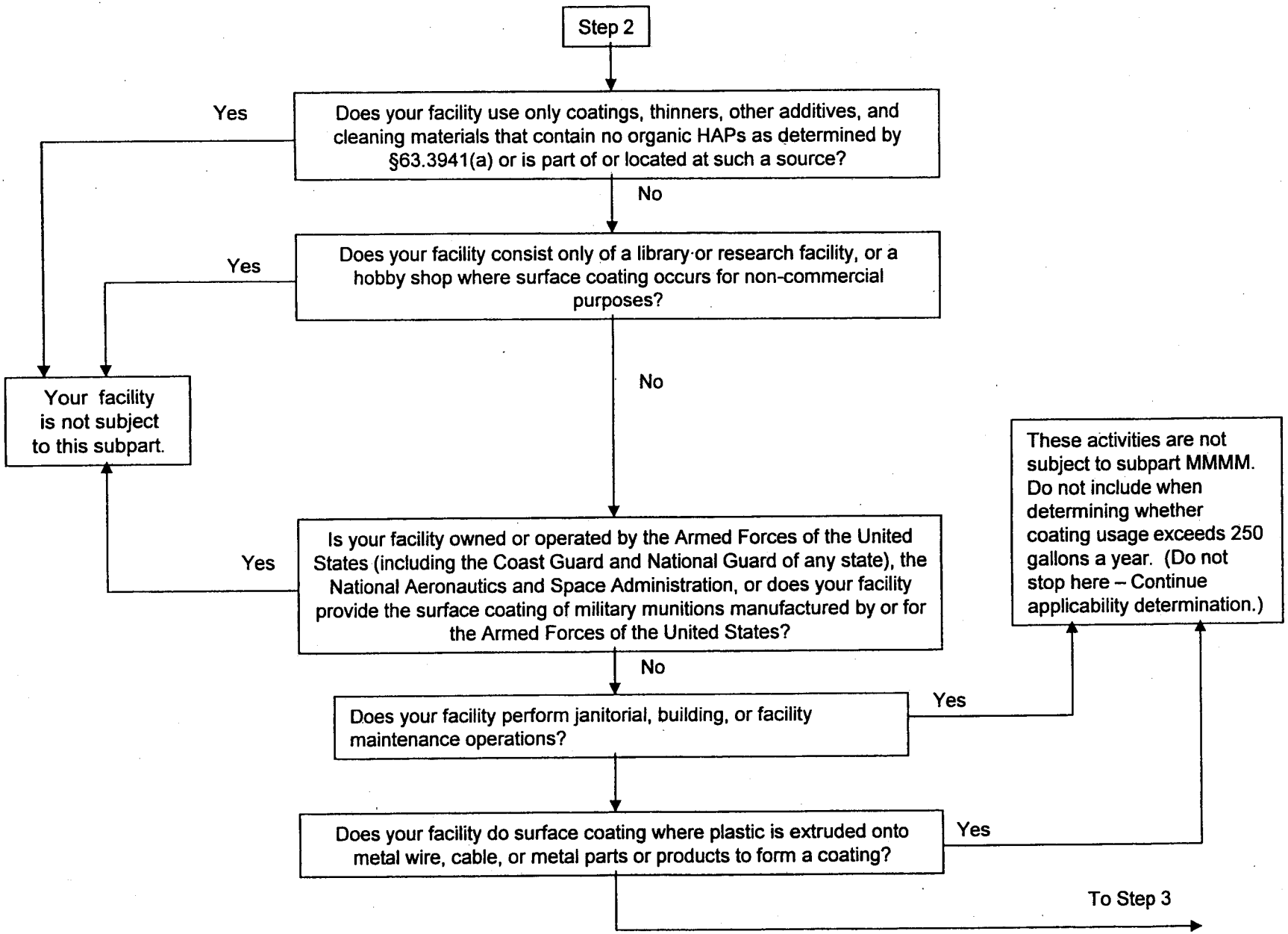
Surface Coating of Miscellaneous Metal Parts and Products

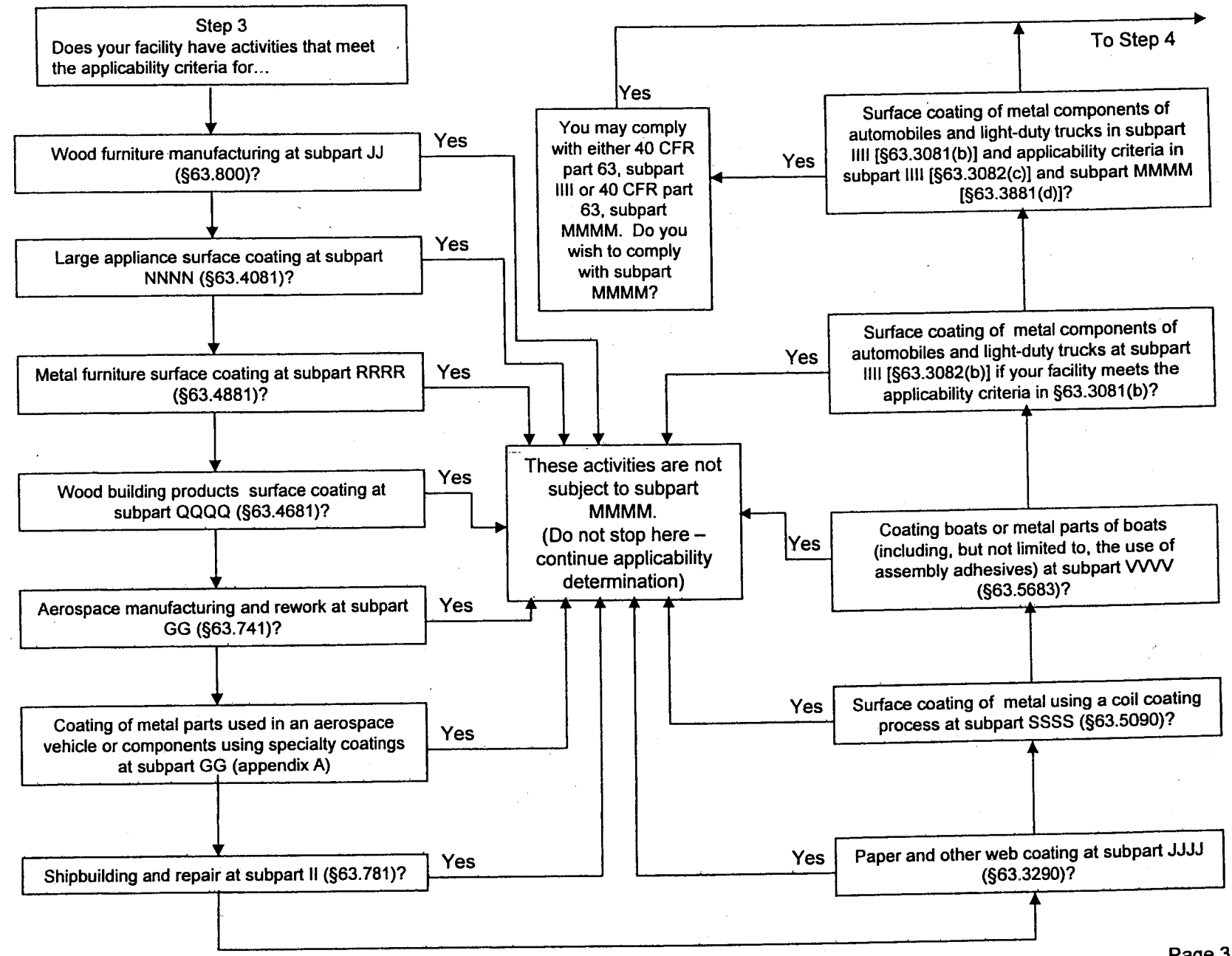
40 CFR Part 63 - Subpart MMMM

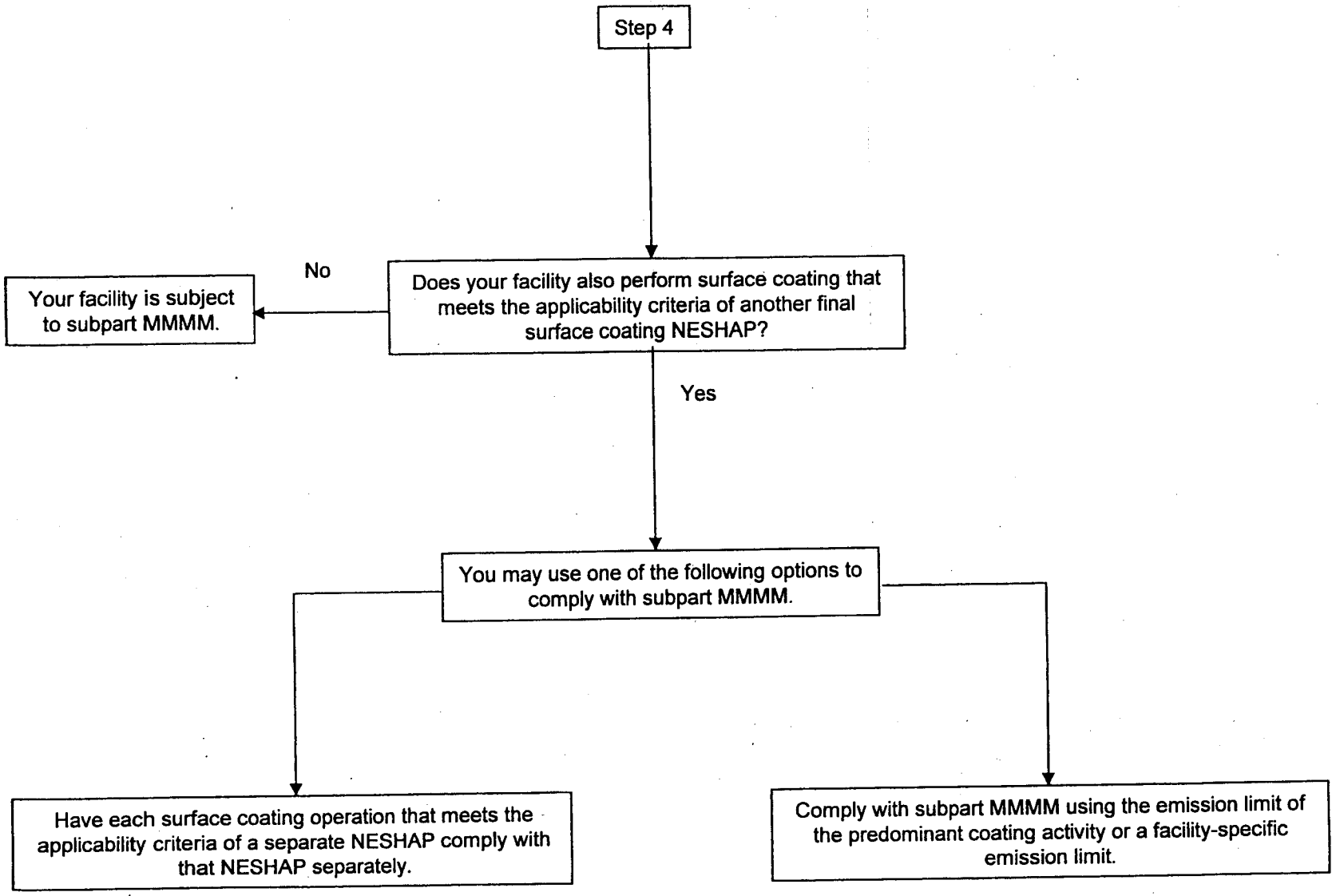
Applicability Flowchart



[h]For the purposes of Part 63, Potential to Emit (PTE) is defined as the maximum capacity of a source to emit a pollutant under its physical and operational design or practically enforceable permit limit. The major source determination is based on all applicable HAP emission points inside the facility fence line, not just the source potentially affected by Subpart MMMM.


Step 2
Does your facility use only coatings, thinners, other additives, and cleaning materials that contain no organic HAPs as determined by §63.3941(a) or is part of or located at such a source?
Yes
No
Does your facility consist only of a library or research facility, or a hobby shop where surface coating occurs for non-commercial purposes?
Yes
No
Your facility is not subject to this subpart.
Is your facility owned or operated by the Armed Forces of the United States (including the Coast Guard and National Guard of any state), the National Aeronautics and Space Administration, or does your facility provide the surface coating of military munitions manufactured by or for the Armed Forces of the United States?
Yes
No
These activities are not subject to subpart MMMM. Do not include when determining whether coating usage exceeds 250 gallons a year. (Do not stop here – Continue applicability determination.)
Does your facility perform janitorial, building, or facility maintenance operations?
Yes
Does your facility do surface coating where plastic is extruded onto metal wire, cable, or metal parts or products to form a coating?
Yes
To Step 3


Step 3
Does your facility have activities that meet the applicability criteria for...
Wood furniture manufacturing at subpart JJ (§63.800)?
Large appliance surface coating at subpart NNNN (§63.4081)?
Metal furniture surface coating at subpart RRRR (§63.4881)?
Wood building products surface coating at subpart QQQQ (§63.4681)?
Aerospace manufacturing and rework at subpart GG (§63.741)?
Coating of metal parts used in an aerospace vehicle or components using specialty coatings at subpart GG (appendix A)
Shipbuilding and repair at subpart II (§63.781)?
Yes
These activities are not subject to subpart MMMM. (Do not stop here – continue applicability determination)
You may comply with either 40 CFR part 63, subpart IIII or 40 CFR part 63, subpart MMMM. Do you wish to comply with subpart MMMM?
Surface coating of metal components of automobiles and light-duty trucks in subpart IIII [§63.3081(b)] and applicability criteria in subpart IIII [§63.3082(c)] and subpart MMMM [§63.3881(d)]?
Surface coating of metal components of automobiles and light-duty trucks at subpart IIII [§63.3082(b)] if your facility meets the applicability criteria in §63.3081(b)?
Coating boats or metal parts of boats (including, but not limited to, the use of assembly adhesives) at subpart VVVV (§63.5683)?
Surface coating of metal using a coil coating process at subpart SSSS (§63.5090)?
Paper and other web coating at subpart JJJJ (§63.3290)?
To Step 4


Step 4
Does your facility also perform surface coating that meets the applicability criteria of another final surface coating NESHAP?
No
Your facility is subject to subpart MMMM.
Yes
You may use one of the following options to comply with subpart MMMM.
Have each surface coating operation that meets the applicability criteria of a separate NESHAP comply with that NESHAP separately.
Comply with subpart MMMM using the emission limit of the predominant coating activity or a facility-specific emission limit.

Step-by-Step A Compliance Demonstration
Compliant Material Option
§63.3941

Overview: This approach can be used if every coating purchased meets one of the MACT limits as-purchased and no averaging across all coatings is needed to demonstrate compliance.

In this approach, a facility needs to:

1. Determine the organic HAP content of each coating.
2. Demonstrate that each coating meets one of the applicable MACT limits.
3. Maintain compliance records.

MACT limits: New Affected Sources

New General Use Coating Affected Sources: 0.23 kg organic HAP/L coating solids (1.9 lb organic HAP/gal coating solids)

New High Performance Coating Affected Sources: 3.3 kg organic HAP/L coating solids (27.5 lb organic HAP/gal coating solids)

New Magnet Wire Coating Affected Sources: 0.05 kg organic HAP/L coating solids (0.44 lb organic HAP/gal coating solids)

New Rubber-to-Metal Coating Affected Sources: 0.81 kg organic HAP/L coating solids (6.8 lb organic HAP/gal coating solids)

New Extreme Performance Fluoropolymer Coating Affected Sources: 1.5 kg organic HAP/L coating solids (12.4 lb organic HAP/gal coating solids)

MACT limits: Existing Affected Sources

Existing General Use Coating Affected Sources: 0.31 kg organic HAP/L coating solids (2.6 lb organic HAP/gal coating solids)

Existing High Performance Coating Affected Sources: 3.3 kg organic HAP/L coating solids (27.5 lb organic HAP/gal coating solids)

Existing Magnet Wire Coating Affected Sources: 0.12 kg organic HAP/L coating solids (1.0 lb organic HAP/gal coating solids)

Existing Rubber-to-Metal Coating Affected Sources: 4.5 kg organic HAP/L coating solids (37.7 lb organic HAP/gal coating solids)

Existing Extreme Performance Fluoropolymer Coating Affected Sources: 1.5 kg organic HAP/L coating solids (12.4 lb organic HAP/gal coating solids)

Step-by-Step A Compliance Demonstration
Compliant Material Option
§63.3941

Detailed Approach	
1. Determine the mass fraction of organic HAP for each material used in the coating operation controlled by the solvent recovery system, using one of the following methods:	
Method 311 • Include organic HAPs that are OSHA defined carcinogens present at ≥ 0.1% percent by weight. • Include all other organic HAPs that are present at concentrations ≥ 1.0% by weight. • Truncate mass fraction of organic HAPs to four places after the decimal point. • Calculate total mass fraction of organic HAPs by summing the individual mass fractions and truncate to three places after the decimal point.	§63.3941(a)(1) and App. A of Part 63
OR Method 24 • Determine the mass fraction of non-aqueous volatile matter as a substitute for mass fraction of organic HAP. • If you have reactive adhesives in which some of the HAP react to form solids and are not emitted, you may use the alternative in Appendix A to Part 63, subpart PPPP in place of Method 24 to determine the volatile fraction emitted. This can be used as a substitute for the mass fraction of organic HAP.	§63.3941(a)(2) and App. A of Part 60
OR Alternative Method • An alternative method for determining the mass fraction of organic HAP after approval by the Administrator. • Follow the procedures of §63.7(f).	§63.3941(a)(3) and§63.7(f)
OR Formulation data • Provided by the manufacturer of the material. • Test data takes precedence when available, unless enforcement agency agrees formulation data are correct. • Formulation data must represent each organic HAP present ≥ 0.1% for OSHA defined carcinogens and ≥ 1.0% for other organic HAP compounds. NOTE: For reactive adhesives, in which some HAP react to form solids and are not emitted, you may rely on manufacturer's data that expressly states the organic HAP or volatile matter mass fraction emitted.	§63.3941(a)(4)
OR	

Step-by-Step A Compliance Demonstration
Compliant Material Option
§63.3941

Detailed Approach	
Tables 3 or 4 of subpart MMMM for solvent blends • If test data and manufacturer's data are not available for solvent blends, the default values of Table 3 may be used for all blends that match Table 3 entries and Table 4 values may be used for those not listed in Table 3. NOTE: Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	§63.3941(a)(5)
2. Determine the volume fraction of coating solids for each coating, using one of the following methods: • ASTM Method D2697 or ASTM Method D2697. • An alternative method approved by the Administrator. • Information from the supplier or manufacturer of the material. • Use the calculation provided in Equation 1 of §63.3941(b)(4) NOTE: Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	§63.3941(b)(1) §63.3941(b)(2) §63.3941(b)(3) §63.3941(b)(4)
3. Determine the density of each coating, using one of the following methods: • ASTM Method D1475. • Information from the supplier or manufacturer of the material. • Specific gravity data for pure chemicals. NOTE: If you purchase or monitor consumption by weight instead of volume, you do not need to determine density, and you may use material weight in place of volume and density in equations 1A, 1B, 1C, and 2. Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	§63.3941(c)
4. Determine the organic HAP content of each coating, using Equation 2 of §63.3941(d).	§63.3941(d)
5. Demonstrate initial compliance with the applicable MACT limit. • You are in compliance if the organic HAP content of each coating used during the month is less than or equal to the applicable MACT limits and any thinner, additive, and cleaning material contains no organic HAP. • Identify coating operation(s) for which you used this compliance option (compliant material) in the notification of compliance status. Also submit a statement as part of this notification that the coating operation(s) was in compliance with the emission limits during the initial compliance period.	§63.3941(e) §63.3941(e)

Step-by-Step A Compliance Demonstration
Compliant Material Option
§63.3941

Detailed Approach	
6. Demonstrate continuous compliance with the applicable MACT limit.	§63.3942
• You are in compliance if the organic HAP content of each coating used during the previous 12 months of operation, determined each month, is less than or equal to the applicable MACT limits or facility-specific emission limit and any thinner, additive, and cleaning material used contained no organic HAP.	§63.3942(a)
• Deviations from the emission limitation for the compliance period (i.e., use of any thinner, additive, or cleaning material with organic HAP content or coating with HAP content above MACT limits) are properly reported in the notification of compliance status and semi-annual compliance report with the appropriate accompanying data.	§63.3942(b)
• Identify coating operation(s) for which you used this compliance option (compliant material) in the semiannual compliance report.	§63.3942(c)
• Submit a statement as part of the semiannual compliance report that the coating operation(s) was in compliance with the emission limits during the compliance period if there were no deviations.	§63.3942(c)
• Properly maintain records (as specified below in #7 of this table).	§63.3942(d)
7. Maintain compliance records.	
• Keep copies of each notification and report submitted for compliance.	§63.3930(a)
• Maintain records of data and calculations used to determine predominant activity or facility-specific emission limit, if applicable.	§63.3930(a)
• Keep copies of information used in the determination of mass fraction of organic HAP, coating density, and volume fraction of solids for each coating.	§63.3930(b)
• Maintain records of coating operations and time periods for which the compliant material compliance option was used.	§63.3930(c)(1)
• Maintain a record of the calculation of the organic HAP content for each coating.	§63.3930(c)(2)
• Maintain records of the name and either the volume or purchase records for each coating, thinner, additive, and cleaning material used.	§63.3930(d)
• Maintain records of mass and volume fractions of organic HAP for each coating.	§63.3930(e)&(f)
• Keep records readily available for expeditious review for 5 years, with records for events within at least the last 2 years on-site.	§63.3931(a)-(c)

Step-by-Step B Compliance Demonstration
Emission Rate Without Add-On Controls Option
§63.3951

Overview: This approach can be used when some individual coatings exceed MACT limits as-purchased or as-applied and some are below the limits, but when all are averaged over a month, the result is below the MACT limits.

In this approach, a facility needs to:

1. Calculate the average organic HAP emission rate monthly, as a 12-month rolling average.
2. Demonstrate compliance with the applicable MACT limits monthly for the 12 month compliance period.
3. Maintain compliance records.

MACT limits:
New Affected Sources

New General Use Coating Affected Sources: 0.23 kg organic HAP/L coating solids (1.9 lb organic HAP/gal coating solids)

New High Performance Coating Affected Sources:
3.3 kg organic HAP/L coating solids (27.5 lb organic HAP/gal coating solids)

New Magnet Wire Coating Affected Sources: 0.05 kg organic HAP/L coating solids (0.44 lb organic HAP/gal coating solids)

New Rubber-to-Metal Coating Affected Sources: 0.81 kg organic HAP/L coating solids (6.8 lb organic HAP/gal coating solids)

New Extreme Performance Fluoropolymer Coating Affected Sources:
1.5 kg organic HAP/L coating solids (12.4 lb organic HAP/gal coating solids)

MACT limits:
Existing Affected Sources

Existing General Use Coating Affected Sources: 0.31 kg organic HAP/L coating solids (2.6 lb organic HAP/gal coating solids)

Existing High Performance Coating Affected Sources:
3.3 kg organic HAP/L coating solids (27.5 lb organic HAP/gal coating solids)

Existing Magnet Wire Coating Affected Sources: 0.12 kg organic HAP/L coating solids (1.0 lb organic HAP/gal coating solids)

Existing Rubber-to-Metal Coating Affected Sources: 4.5 kg organic HAP/L coating solids (37.7 lb organic HAP/gal coating solids)

Existing Extreme Performance Fluoropolymer Coating Affected Sources:
1.5 kg organic HAP/L coating solids (12.4 lb organic HAP/gal coating solids)

Step-by-Step B Compliance Demonstration
Emission Rate Without Add-On Controls Option
§63.3951

Detailed Approach	Citation
1. Determine the mass fraction of organic HAP for each material used in the coating operation controlled by the solvent recovery system, using one of the following methods:	§63.3951(a)
Method 311 • Include organic HAPs that are OSHA defined carcinogens present at ≥ 0.1% percent by weight. • Include all other organic HAPs that are present at concentrations ≥ 1.0% by weight. • Truncate mass fraction of organic HAPs to four places after the decimal point. • Calculate total mass fraction of organic HAPs by summing the individual mass fractions and truncate to three places after the decimal point.	(§63.3941(a)(1) and App. A of Part 63)
OR Method 24 • Determine the mass fraction of non-aqueous volatile matter as a substitute for mass fraction of organic HAP. • If you have reactive adhesives in which some of the HAP react to form solids and are not emitted, you may use the alternative in Appendix A to Part 63, subpart PPPP in place of Method 24 to determine the volatile fraction emitted. This can be used as a substitute for the mass fraction of organic HAP.	(§63.3941(a)(2) and App. A of Part 60)
OR Alternative Method • An alternative method for determining the mass fraction of organic HAP after approval by the Administrator. • Follow the procedures of §63.7(f).	(§63.3941(a)(3) and§63.7(f)
OR Formulation data • Provided by the manufacturer of the material. • Test data takes precedence when available, unless enforcement agency agrees formulation data are correct. • Formulation data must represent each organic HAP present ≥ 0.1% for OSHA defined carcinogens and ≥ 1.0% for other organic HAP compounds. NOTE: For reactive adhesives, in which some HAP react to form solids and are not emitted, you may rely on manufacturer's data that expressly states the organic HAP or volatile matter mass fraction emitted.	(§63.3941(a)(4))
OR Tables 3 or 4 of subpart MMMM for solvent blends • If test data and manufacturer's data are not available for solvent blends,	(§63.3941(a)(5))

Step-by-Step B Compliance Demonstration
Emission Rate Without Add-On Controls Option
§63.3951

Detailed Approach	Citation
the default values of Table 3 may be used for all blends that match Table 3 entries and Table 4 values may be used for those not listed in Table 3. NOTE: Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	
2. Determine the volume fraction of coating solids for each coating, using one of the following methods: • ASTM Method D2697 or ASTM Method D2697. • An alternative method approved by the Administrator. • Information from the supplier or manufacturer of the material. • Use the calculation provided in Equation 1 of §63.3941(b)(4) NOTE: Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	§63.3951(b) (§63.3941(b)(1)) (§63.3941(b)(2)) (§63.3941(b)(3)) (§63.3941(b)(4))
3. Determine the density of each coating, using one of the following methods: • ASTM Method D1475, or ASTM Method 5965 for powder coatings. • Information from the supplier or manufacturer of the material. • Specific gravity data for pure chemicals. NOTE: If you purchase or monitor consumption by weight instead of volume, you do not need to determine density, and you may use material weight in place of volume and density in equations 1A, 1B, 1C, and 2. Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	§63.3951(c)
4. Determine the volume of each material used by measurement or usage records. NOTE: If you purchase or monitor consumption by weight instead of volume, you do not need to determine density, and you may use material weight in place of volume and density in equations 1A, 1B, 1C, and 2.	§63.3951(d)
5. Calculate the mass of organic HAP emissions. • Use Equations 1, 1A, 1B, and 1C of §63.3951(e) to calculate the mass of organic HAP contained in all coatings, thinners, additives, and cleaning materials used during the month. • You may elect to determine the mass of organic HAP in waste materials sent or designated for shipment to a hazardous waste TSDF and use that information in Equation 1. Include only waste materials generated by coating operations (not including organic HAP in wastewater) for which you use Equation 1 and that will be treated or	§63.3951(e) (§63.3951(e)(4))

Step-by-Step B Compliance Demonstration
Emission Rate Without Add-On Controls Option
§63.3951

Detailed Approach	Citation
disposed of by an on-site or off-site facility regulated as a TSDF under 40 CFR 262, 264, 265 or 266. • Determine amount of waste sent or collected, stored, and designated for future transport to a TSDF during the month, unless already accounted for during a previous month's calculation. • Document the methodology used to determine the amount of waste materials and mass of organic HAP they contain.	
6. **Calculate the total volume of coating solids used.** • Use Equation 2 of §63.3951(f) to determine the combined volume of coating solids for all coatings used during the month that were controlled using the solvent recovery system.	§63.3951(f)
7. **Calculate the organic HAP emission rate.** • Use Equation 3 of §63.3951(g) to determine the HAP emission rate for the 12-month compliance period.	§63.3951(g)
8. **Demonstrate initial compliance with the applicable MACT limit.** • You are in compliance if the organic HAP emission rate is less than or equal to the applicable MACT limits or the predominant activity or facility-specific emission limit. • Identify coating operation(s) for which you used this compliance option (emission rate without add-on controls) in the notification of compliance status. • Submit a statement as part of this notification that the coating operation(s) was in compliance with the emission limits during the initial compliance period.	§63.3951(h)
9. **Demonstrate continuous compliance with the applicable MACT limit.**	§63.3952
• You are in compliance with the emission limits if the organic HAP emission rate for the previous 12 months of operation, determined each month, is less than or equal to the applicable MACT limits or facility-specific emission limit.	§63.3952(a)
• Deviations from the emission limitation for the compliance period are properly reported in the notification of compliance status and semi-annual compliance report with the appropriate accompanying data.	§63.3952(b)
• Identify coating operation(s) for which you used this compliance option (emission rate without add-on controls) in the semiannual compliance report.	§63.3952(c)
• Submit a statement as part of the semiannual compliance report that the coating operation(s) was in compliance with the emission limits during the compliance period if there were no deviations.	§63.3952(c)
• Properly maintain records (as specified below in #10 of this table).	§63.3952(d)

Step-by-Step B Compliance Demonstration
Emission Rate Without Add-On Controls Option
§63.3951

Detailed Approach	Citation
10. Maintain compliance records.	
• Keep copies of each notification and report submitted for compliance.	§63.3930(a)
• Maintain records of data and calculations used to determine predominant activity or facility-specific emission limit, if applicable.	§63.3930(a)
• Keep copies of information used in the determination of mass fraction of organic HAP, coating density, and volume fraction of solids for each coating.	§63.3930(b)
• Maintain records of coating operations and time periods for which the emission rate without add-on controls option was used.	§63.3930(c)(1)

• Maintain a record of the following calculations:
  • Total mass of organic HAP emissions for each coating, thinner, additive, and cleaning material used.
  • If applicable, records of the calculation for mass of organic HAP in waste materials.
  • Total volume of coating solids used each month.
  • 12-month organic HAP emission rate.
	§63.3930(c)(3)
	
	§63.3930(d)

• Maintain records of the name and volume for each coating, thinner, additive, and cleaning material used.	§63.3930(e),(f), &(g)
• Maintain records of mass fraction of organic HAP (unless material is tracked by weight) and density of each material used and the volume of coating solids for each coating used.	§63.3930(h)

• Maintain the following records for organic HAP in waste materials sent to a TSDF if waste data was used in Equation 1:
  • Name and address of each TSDF the waste was sent to.
  • A statement of which subparts under 40 CFR parts 262, 264, 265, and 266 apply to these TSDF facilities.
  • Date of each shipment to a TSDF.
  • Identification of the coating operations producing the waste included in each shipment to a TSDF.
  • The months the waste allowance was used in Equation 1.
  • The methodologies, data, supporting calculations, and testing or monitoring records used to determine the amount of waste sent to a TSDF and the organic HAP content of the waste.
	§63.3930(j)

• Maintain records of the date, time and duration of each deviation.	§63.3931(a)-(c)
• Keep records readily available for expeditious review for 5 years, with records for events within at least the last 2 years on-site.	

Step-by-Step C Compliance Demonstration For the Emission Rate With Add-On Controls Option §63.3961

Overview: This approach is valid when using add-on control devices to demonstrate compliance with the MACT emission rate limits determined on a monthly basis.

In this approach, a facility needs to:

1. Establish and demonstrate continuous compliance with operating limits.
2. Develop a work practice plan and continuously implement its provisions.
3. Calculate the mass of organic HAP emissions before add-on controls, the mass of organic HAP emission reduction for each controlled coating operation., and the resulting mass of organic HAP emissions after control.
4. Calculate the average organic HAP emission rate monthly, as a 12-month rolling average.
5. Demonstrate compliance with the applicable MACT limits monthly for the 12 month compliance period.
6. Maintain compliance records.

MACT limits: New Affected Sources

New General Use Coating Affected Sources: 0.23 kg organic HAP/L coating solids (1.9 lb organic HAP/gal coating solids)

New High Performance Coating Affected Sources: 3.3 kg organic HAP/L coating solids (27.5 lb organic HAP/gal coating solids)

New Magnet Wire Coating Affected Sources: 0.05 kg organic HAP/L coating solids (0.44 lb organic HAP/gal coating solids)

New Rubber-to-Metal Coating Affected Sources: 0.81 kg organic HAP/L coating solids (6.8 lb organic HAP/gal coating solids)

New Extreme Performance Fluoropolymer Coating Affected Sources: 1.5 kg organic HAP/L coating solids (12.4 lb organic HAP/gal coating solids)

MACT limits: Existing Affected Sources

Existing General Use Coating Affected Sources: 0.31 kg organic HAP/L coating solids (2.6 lb organic HAP/gal coating solids)

Existing High Performance Coating Affected Sources: 3.3 kg organic HAP/L coating solids (27.5 lb organic HAP/gal coating solids)

Existing Magnet Wire Coating Affected Sources: 0.12 kg organic HAP/L coating solids (1.0 lb organic HAP/gal coating solids)

Existing Rubber-to-Metal Coating Affected Sources: 4.5 kg organic HAP/L coating solids (37.7 lb organic HAP/gal coating solids)

Existing Extreme Performance Fluoropolymer Coating Affected Sources: 1.5 kg organic HAP/L coating solids (12.4 lb organic HAP/gal coating solids)

Step-by-Step C Compliance Demonstration For the Emission Rate With Add-On Controls Option §63.3961

Detailed Approach	Citation
1. **Develop a written startup, shutdown and malfunction plan in accordance with the provisions of §63.6(e)(3).** • The plan must address startup, shutdown, and corrective actions for malfunction of the solvent recovery system. It must also address any coating operation equipment that may cause increased emissions or affect capture efficiency if process equipment malfunctions.	§63.3900(c)

2. **Establish and demonstrate continuous compliance with operating limits unless you use solvent recovery systems for which you conduct liquid-liquid material balances.**
 	
• Follow the procedures of §63.3937 to establish operating limits during the performance test for the control devices you use.
• Follow the requirements of §63.3938 for installation, operation and maintenance of each CPMS required for the control devices you use.
• Demonstrate continuous compliance in the following ways for the appropriate control device(s):
  • For a thermal oxidizer, collect combustion temperature data, reduce data to 3-hour block averages, and maintain the 3-hour average combustion temperature at or above the established temperature limit.
  • For a catalytic oxidizer, collect combustion temperature data, reduce data to 3-hour block averages, maintain the 3-hour average temperature before the catalyst bed at or above the established temperature limit, and maintain the 3-hour average temperature difference across the catalyst bed at or above the established temperature difference limit. Also, maintain records of annual catalyst activity checks, monthly oxidizer system inspections, annual internal inspections of the catalyst bed, and an up-to-date inspection and maintenance plan.
  • For a regenerative carbon adsorber, measure the total regeneration desorbing gas mass flow for each regeneration cycle and maintain total regeneration desorbing gas mass at or above the established mass flow limit. Also, measure the temperature of the carbon bed after completing each regeneration and any cooling cycle, and operate the carbon beds so that each bed is not returned to service until the temperature after each regeneration and any cooling cycle is at or below the temperature limit.
  • For a condenser, collect the condenser outlet gas temperature, reduce data to 3-hour block averages, and maintain the 3-hour average gas temperature at or below the established temperature limit.
  • For concentrators, collect temperature and pressure drop data, reduce data to 3-hour block averages, and maintain the 3-hour average temperature and pressure drop at or above the established limits.
  • For an emission capture system that is a PTE, collect data on the direction of air flow, and either the facial velocity of air through all
	§63.3961(b)
	
	Table 1 of subpart MMMM

Step-by-Step C Compliance Demonstration For the Emission Rate With Add-On Controls Option §63.3961

Detailed Approach	Citation
natural draft openings or the pressure drop across the enclosure. Maintain the facial velocity of air flow through the natural draft openings or the pressure drop at or above the applicable established limits. Maintain the direction of air flow into the enclosure at all times. • For an emission capture system that is not a PTE, collect gas volumetric flow rate or duct static pressure data for each capture device, reduce the data to 3-hour block averages, and maintain the 3-hour average gas volumetric flow rate or duct static pressure for each capture device at or above the established limit.	

3. **Develop, implement, and document implementation of your work practice plan.**
 	
• The plan must include the following minimum elements:
  • Store coatings, thinners, additive, cleaning materials and waste materials in closed containers.
  • Minimize spills of materials containing organic HAP.
  • Convey materials containing organic HAP from one location to another in closed containers or pipes.
  • Keep mixing vessels containing organic HAP closed except when adding to, removing or mixing the contents.
  • Minimize organic HAP emissions during cleaning of mixing, conveying, and storage equipment.
	§63.3961(c)
	
	(§63.3893(b))

4. ***Monitor or secure the valve or closure mechanism controlling bypass lines in a nondiverting position.***
 	
• A record must be created if the valve or closure mechanism is opened and the method used to secure the valve or closure mechanism must meet one of the following requirements:
  • Use a flow position indicator installed at the entrance of the bypass line, take a reading once every 15 minutes and record whether emissions are directed to or diverted from the control device, the time of the reading, flow control position, and each time flow direction changes.
  • Use car-seal or lock-an-key valve closures to secure the bypass line in the closed position and inspect at least monthly to ensure the valve is in the closed position and emissions are directed to the control device.
  • Use valve closure monitoring to ensure the bypass line valve is in the closed position, monitoring once every 15 minutes and inspecting monthly to verify that the monitor will indicate valve position.
  • Use an automatic shutdown system which will stop the coating operation when flow is diverted from the control device and inspect the system monthly to verify it will detect diversions and stop the coating operation.
  • Install, calibrate, maintain and operate in each bypass or air makeup
	§63.3968(b)

Step-by-Step C Compliance Demonstration For the Emission Rate With Add-On Controls Option §63.3961

Detailed Approach	Citation
supply line a flow direction indicator that takes a reading and records once every 15 minutes the direction of flow and each time flow direction changes.	
5. Determine the mass fraction of organic HAP for each material used in the coating operation controlled by the solvent recovery system, using one of the following methods:	§63.3961(e)
Method 311 • Include organic HAPs that are OSHA defined carcinogens present at ≥ 0.1% percent by weight. • Include all other organic HAPs that are present at concentrations ≥ 1.0% by weight. • Truncate mass fraction of organic HAPs to four places after the decimal point. • Calculate total mass fraction of organic HAPs by summing the individual mass fractions and truncate to three places after the decimal point.	(§63.3941(a)(1) and App. A of Part 63)
OR Method 24 • Determine the mass fraction of non-aqueous volatile matter as a substitute for mass fraction of organic HAP. • If you have reactive adhesives in which some of the HAP react to form solids and are not emitted, you may use the alternative in Appendix A to Part 63, subpart PPPP in place of Method 24 to determine the volatile fraction emitted. This can be used as a substitute for the mass fraction of organic HAP.	(§63.3941(a)(2) and App. of Part 60)
OR Alternative Method • An alternative method for determining the mass fraction of organic HAP after approval by the Administrator. • Follow the procedures of §63.7(f).	(§63.3941(a)(3) and§63.7(f))
OR Formulation data • Provided by the manufacturer of the material. • Test data takes precedence when available, unless enforcement agency agrees formulation data are correct. • Formulation data must represent each organic HAP present ≥ 0.1% for OSHA defined carcinogens and ≥ 1.0% for other organic HAP compounds. NOTE: For reactive adhesives, in which some HAP react to form solids and are not emitted, you may rely on manufacturer's data that expressly states the organic HAP or volatile matter mass fraction emitted.	(§63.3941(a)(4))
OR	

Step-by-Step C Compliance Demonstration For the Emission Rate With Add-On Controls Option §63.3961

Detailed Approach	Citation
Tables 3 or 4 of subpart MMMM for solvent blends • If test data and manufacturer's data are not available for solvent blends, the default values of Table 3 may be used for all blends that match Table 3 entries and Table 4 values may be used for those not listed in Table 3. NOTE: Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	(§63.3941(a)(5))
6. Determine the volume fraction of coating solids for each coating, using one of the following methods: • ASTM Method D2697 or ASTM Method D2697. • An alternative method approved by the Administrator. • Information from the supplier or manufacturer of the material. • Use the calculation provided in Equation 1 of §63.3941(b)(4) NOTE: Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	§63.3961(e) (§63.3941(b)(1)) (§63.3941(b)(2)) (§63.3941(b)(3)) (§63.3941(b)(4))
7. Determine the density of each coating, using one of the following methods: • ASTM Method D1475 or ASTM Method 5965 for powder coatings. • Information from the supplier or manufacturer of the material. • Specific gravity data for pure chemicals. NOTE: If you purchase or monitor consumption by weight instead of volume, you do not need to determine density, and you may use material weight in place of volume and density in equations 1A, 1B, 1C, and 2. Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	§63.3961(e) (§63.3951(c))
8. Determine the volume of each material used by measurement or usage records. NOTE: If you purchase or monitor consumption by weight instead of volume, you do not need to determine density, and you may use material weight in place of volume and density in equations 1A, 1B, 1C, and 2.	§63.3961(e) (§63.3951(d))
9. Calculate the mass of organic HAP emissions before add-on controls. • Use Equations 1, 1A, 1B, and 1C of §63.3951(e) to calculate the mass of organic HAP contained in all coatings, thinners, additives, and cleaning materials used during the month. • You may elect to determine the mass of organic HAP in waste materials sent or designated for shipment to a hazardous waste TSDF and use that information in Equation 1. • Include only waste materials generated by coating operations (not	§63.3961(f) (§63.3951(e)) (§63.3951(e)(4))

Step-by-Step C Compliance Demonstration For the Emission Rate With Add-On Controls Option §63.3961

Detailed Approach	Citation
including organic HAP in wastewater) for which you use Equation 1 and that will be treated or disposed of by an on-site or off-site facility regulated as a TSDF under 40 CFR 262, 264, 265 or 266. • Determine amount of waste sent or collected, stored, and designated for future transport to a TSDF during the month, unless already accounted for during a previous month's calculation. • Document the methodology used to determine the amount of waste materials and mass of organic HAP they contain.	
10. Calculate the mass of organic HAP emission reduction for each controlled coating operation. • Use Equations 1, 1A, 1B, 1C, and 1D of §63.3961(h) to calculate the mass of organic HAP emission reduction for each controlled coating operation using an emission capture system and add-on control device other than a solvent recovery system for which you conduct liquid-liquid material balances.	§63.3961(h)
11. Calculate the total volume of coating solids used. • Use Equation 2 of §63.3951(f) to determine the combined volume of coating solids for all coatings used during the month that were controlled using the solvent recovery system.	§63.3961(k) (§63.3951(f))
12. Calculate the mass of organic HAP emissions. • Use Equation 4 §63.3961(l) to calculate the mass of organic HAP emissions during each month.	§63.3961(l)
13. Calculate the organic HAP emission rate. • Use Equation 5 of §63.3961(m) to determine the HAP emission rate for the 12-month compliance period.	§63.3961(m)
14. Demonstrate initial compliance with the applicable MACT limit. • You are in compliance if the organic HAP emission rate is less than or equal to the applicable MACT limits or the predominant activity or facility-specific emission limit. • Identify coating operation(s) for which you used this compliance option (emission rate with add-on controls) in the notification of compliance status. • Submit a statement as part of this notification that the coating operation(s) was in compliance with the emission limits, operating limits and work practices during the initial compliance period.	§63.3961(n)

Step-by-Step C Compliance Demonstration For the Emission Rate With Add-On Controls Option §63.3961

Detailed Approach	Citation
15. Demonstrate continuous compliance with the applicable MACT limit.	
• You are in compliance with the emission limits if the organic HAP emission rate for the previous 12 months of operation, determined each month, is less than or equal to the applicable MACT limits or facility-specific emission limit.	§63.3963(a)
• Deviations from the emission limitation for the compliance period are properly reported in the notification of compliance status and semi-annual compliance report with the appropriate accompanying data.	§63.3963(b)
• Deviations from the operating limits for the compliance period are properly reported in the notification of compliance status and semi-annual compliance report with the appropriate accompanying data.	§63.3963(c)(1)
• You assume emission capture system and add-on control devices achieved zero efficiency during the operating limit deviations unless you have data indicating the actual efficiency and the use of that data is approved by the Administrator.	§63.3963(c)(2)
• You meet bypass line requirements and report as a deviation any time a bypass line is opened and emissions are diverted to the atmosphere.	§63.3963(d)
• Bypass line deviations are properly reported in the notification of compliance status and semi-annual compliance report with a description of why the line was opened and the amount of time it was open and you treat the materials used during a deviation as if they were on an uncontrolled coating operation for completing compliance calculations.	§63.3963(d)
• Develop and implement the work practice plan and keep the requisite records. Report any deviations in the notification of compliance status and semi-annual compliance report with the appropriate accompanying data.	§63.3963(e)
• Identify coating operation(s) for which you used this compliance option (emission rate with add-on controls) in the semiannual compliance report.	§63.3963(f)
• Submit a statement as part of the semiannual compliance report that the coating operation(s) was in compliance with the emission limits, operating limits and work practices during the compliance period if there were no deviations.	§63.3963(f)
• Operate according to the startup, shutdown, and malfunction plan during such times.	§63.3963(g)
• Properly maintain records (as specified below in #15 of this table).	§63.3963(j)
16. Maintain compliance records.	
• Keep copies of each notification and report submitted for compliance.	§63.3930(a)
• Maintain records of data and calculations used to determine predominant activity or facility-specific emission limit, if applicable.	§63.3930(a)
• Keep copies of information used in the determination of mass fraction of organic HAP, coating density, and volume fraction of solids for each coating.	§63.3930(b)

Step-by-Step C Compliance Demonstration For the Emission Rate With Add-On Controls Option §63.3961

Detailed Approach	Citation
• Maintain records of coating operations and time periods for which the emission rate with add-on controls option was used.	§63.3930(c)(1)
• Maintain a record of the following calculations:	§63.3930(c)(4)
• Total mass of organic HAP emissions for each coating, thinner, additive, and cleaning material used.	
• If applicable, records of the calculation for mass of organic HAP in waste materials.	
• Total volume of coating solids used each month.	
• Mass of organic HAP emission reduction by control devices.	
• Each month's organic HAP emission rate.	
• 12-month organic HAP emission rate.	
• Maintain records of the name and volume for each coating, thinner, additive, and cleaning material used.	§63.3930(d)
• Maintain records of mass fraction of organic HAP (unless material is tracked by weight) and density of each material used and the volume of coating solids for each coating used.	§63.3930(e),(f), &(g)
• Maintain the following records for organic HAP in waste materials sent to a TSDF if waste data was used in Equation 1 of §63.3951:	§63.3930(h)
• Name and address of each TSDF the waste was sent to.	
• A statement of which subparts under 40 CFR parts 262, 264, 265, and 266 apply to these TSDF facilities.	
• Date of each shipment to a TSDF.	
• Identification of the coating operations producing the waste included in each shipment to a TSDF.	
• The months the waste allowance was used in Equation 1.	
• The methodologies, data, supporting calculations, and testing or monitoring records used to determine the amount of waste sent to a TSDF and the organic HAP content of the waste.	
• Maintain records of the date, time and duration of each deviation.	§63.3930(j)
• Maintain records of whether deviations occurred during startup, shutdown, or malfunction periods.	§63.3930(k)(1)
• Maintain records related to startup, shutdown, and malfunction as described in §63.6(e)(3)(iii)-(v)	§63.3930(k)(2)
• Maintain records to show continuous compliance with operating limits.	§63.3930(k)(3)
• Maintain records of data and documentation used to support determination that any capture system that is a PTE meets the criteria in Method 204 of appendix M to 40 DFR part 51 and has a capture efficiency of 100%.	§63.3930(k)(4)
• Maintain records of data and documentation used to support the capture efficiency determination for any capture system that is not a PTE, including the following:	§63.3930(k)(5)
• Records for a liquid-to-uncaptured gas protocol using a temporary total enclosure or building enclosure.	
• Records for a gas-to-gas protocol using a temporary total enclosure or building enclosure.	
• Records for an alternative protocol.	

Step-by-Step C Compliance Demonstration For the Emission Rate With Add-On Controls Option §63.3961

Detailed Approach	Citation

• Records of HAP destruction or removal efficiency determinations for each control device, including the following:
  • Records for each control device performance test.
  • Records of the coating operation conditions during the performance test, showing conditions were representative.
	§63.3930(k)(6)

• Records of data and calculations used to establish and document compliance with the operating limits for each capture and control device system.	§63.3930(k)(7)
• A copy of the work practice plan and documentation that the plan is being implemented on a continuous basis.	§63.3930(k)(8)
• Keep records readily available for expeditious review for 5 years, with records for events within at least the last 2 years on-site.	§63.3931(a)-(c)

Step-by-Step D Compliance Demonstration
For the Emission Rate With Add-On Controls Option
With Solvent Recovery Systems for which Liquid-Liquid Material Balances are Conducted
§63.3961

Overview: This approach is valid when using add-on control devices to demonstrate compliance with the MACT emission rate limits determined on a monthly basis.

In this approach, a facility needs to:

1. Develop a work practice plan and continuously implement its provisions.
2. Calculate the mass of organic HAP emissions before add-on controls, the mass of organic HAP emission reduction for each coating operation controlled with a solvent recovery system and liquid-liquid balancing, and the resulting mass of organic HAP emissions after control.
3. Calculate the average organic HAP emission rate monthly, as a 12-month rolling average.
4. Demonstrate compliance with the applicable MACT limits monthly for the 12 month compliance period.
5. Maintain compliance records.

MACT limits:
New Affected Sources

New General Use Coating Affected Sources: 0.23 kg organic HAP/L coating solids (1.9 lb organic HAP/gal coating solids)

New High Performance Coating Affected Sources:
3.3 kg organic HAP/L coating solids (27.5 lb organic HAP/gal coating solids)

New Magnet Wire Coating Affected Sources: 0.05 kg organic HAP/L coating solids (0.44 lb organic HAP/gal coating solids)

New Rubber-to-Metal Coating Affected Sources: 0.81 kg organic HAP/L coating solids (6.8 lb organic HAP/gal coating solids)

New Extreme Performance Fluoropolymer Coating Affected Sources:
1.5 kg organic HAP/L coating solids (12.4 lb organic HAP/gal coating solids)

MACT limits:
Existing Affected Sources

Existing General Use Coating Affected Sources: 0.31 kg organic HAP/L coating solids (2.6 lb organic HAP/gal coating solids)

Existing High Performance Coating Affected Sources:
3.3 kg organic HAP/L coating solids (27.5 lb organic HAP/gal coating solids)

Existing Magnet Wire Coating Affected Sources: 0.12 kg organic HAP/L coating solids (1.0 lb organic HAP/gal coating solids)

Existing Rubber-to-Metal Coating Affected Sources: 4.5 kg organic HAP/L coating solids (37.7 lb organic HAP/gal coating solids)

Existing Extreme Performance Fluoropolymer Coating Affected Sources:
1.5 kg organic HAP/L coating solids (12.4 lb organic HAP/gal coating solids)

Step-by-Step D Compliance Demonstration
For the Emission Rate With Add-On Controls Option
With Solvent Recovery Systems for which Liquid-Liquid Material Balances are Conducted
§63.3961

Detailed Approach	Citation
1. Develop a written startup, shutdown and malfunction plan in accordance with the provisions of §63.6(e)(3). • The plan must address startup, shutdown, and corrective actions for malfunction of the solvent recovery system. It must also address any coating operation equipment that may cause increased emissions or affect capture efficiency if process equipment malfunctions.	§63.3900(c)

2. Develop, implement, and document implementation of your work practice plan.
 	
• The plan must include the following minimum elements:
  • Store coatings, thinners, additive, cleaning materials and waste materials in closed containers.
  • Minimize spills of materials containing organic HAP.
  • Convey materials containing organic HAP from one location to another in closed containers or pipes.
  • Keep mixing vessels containing organic HAP closed except when adding to, removing, or mixing the contents.
  • Minimize organic HAP emissions during cleaning of mixing, conveying, and storage equipment.
	§63.3961(c)
	
	(§63.3893(b))

3. Determine the mass fraction of organic HAP for each material used in the coating operation controlled by the solvent recovery system, using one of the following methods: <u>Method 311</u> • Include organic HAPs that are OSHA defined carcinogens present at ≥ 0.1% percent by weight. • Include all other organic HAPs that are present at concentrations ≥ 1.0% by weight. • Truncate mass fraction of organic HAPs to four places after the decimal point. • Calculate total mass fraction of organic HAPs by summing the individual mass fractions and truncate to three places after the decimal point. OR <u>Method 24</u> • Determine the mass fraction of non-aqueous volatile matter as a substitute for mass fraction of organic HAP. • If you have reactive adhesives in which some of the HAP react to form solids and are not emitted, you may use the alternative in Appendix A to Part 63, subpart PPPP in place of Method 24 to determine the volatile fraction emitted. This can be used as a substitute for the mass fraction of organic HAP.	§63.3961(e) (§63.3941(a)(1) and App. A of Part 63) (§63.3941(a)(2) and App. A of Part 60)

Step-by-Step D Compliance Demonstration
For the Emission Rate With Add-On Controls Option
With Solvent Recovery Systems for which Liquid-Liquid Material Balances are Conducted
§63.3961

Detailed Approach	Citation
OR Alternative Method • An alternative method for determining the mass fraction of organic HAP after approval by the Administrator. • Follow the procedures of §63.7(f).	(§63.3941(a)(3) and§63.7(f))
OR Formulation data • Provided by the manufacturer of the material. • Test data takes precedence when available, unless enforcement agency agrees formulation data are correct. • Formulation data must represent each organic HAP present ≥ 0.1% for OSHA defined carcinogens and ≥ 1.0% for other organic HAP compounds. NOTE: For reactive adhesives, in which some HAP react to form solids and are not emitted, you may rely on manufacturer's data that expressly states the organic HAP or volatile matter mass fraction emitted.	(§63.3941(a)(4))
OR Tables 3 or 4 of subpart MMMM for solvent blends • If test data and manufacturer's data are not available for solvent blends, the default values of Table 3 may be used for all blends that match Table 3 entries and Table 4 values may be used for those not listed in Table 3. NOTE: Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	(§63.3941(a)(5))
4. Determine the volume fraction of coating solids of each coating controlled by the solvent recovery system, using one of the following methods: • ASTM Method D2697 or ASTM Method D6093. • An alternative method approved by the Administrator. • Information from the supplier or manufacturer of the material. • Use the calculation provided in Equation 1 of §63.3941(b)(4) NOTE: Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	§63.3961(e) (§63.3941(b)(1)) (§63.3941(b)(2)) (§63.3941(b)(3)) (§63.3941(b)(4))
5. Determine the density of each coating controlled by the solvent recovery system, using one of the following methods: • ASTM Method D1475 or ASTM Method 5965 for powder coatings. • Information from the supplier or manufacturer of the material. • Specific gravity data for pure chemicals.	§63.3961(e) and §63.3961(j)(4) (§63.3951(c))

Step-by-Step D Compliance Demonstration
For the Emission Rate With Add-On Controls Option
With Solvent Recovery Systems for which Liquid-Liquid Material Balances are Conducted
§63.3961

Detailed Approach	Citation
NOTE: If you purchase or monitor consumption by weight instead of volume, you do not need to determine density, and you may use material weight in place of volume and density in equations 1A, 1B, 1C, and 2. Test data takes precedence when available, unless enforcement agency agrees formulation data are correct.	
6. Determine the volume of each material used by measurement or usage records. NOTE: If you purchase or monitor consumption by weight instead of volume, you do not need to determine density, and you may use material weight in place of volume and density in equations 1A, 1B, 1C, and 2.	§63.3961(e) (§63.3951(d))
7. Calculate the mass of organic HAP emissions before add-on controls. • Use Equations 1, 1A, 1B, and 1C of §63.3951(e) to calculate the mass of organic HAP contained in all coatings, thinners, additives, and cleaning materials used during the month. • You may elect to determine the mass of organic HAP in waste materials sent or designated for shipment to a hazardous waste TSDF and use that information in Equation 1. Include only waste materials generated by coating operations (not including organic HAP in wastewater) for which you use Equation 1 and that will be treated or disposed of by an on-site or off-site facility regulated as a TSDF under 40 CFR 262, 264, 265 or 266. • Determine amount of waste sent or collected, stored, and designated for future transport to a TSDF during the month, unless already accounted for during a previous month's calculation. • Document the methodology used to determine the amount of waste materials and mass of organic HAP they contain.	§63.3961(f) (§63.3951(e)) (§63.3951(e)(4))
8. Calculate the mass of organic HAP emission reduction for each controlled coating operation. • Perform a liquid-liquid material balance each month. • Install, calibrate, maintain, and operate a device to determine cumulative volatile organic matter recovered each month. Device must be certified to be accurate to within +/- 2% of the mass of volatile matter recovered. • Determine the mass of volatile organic matter recovered for the month based on measurements with the device described above. • Determine the mass fraction of volatile organic matter for each coating, thinner, additive, and cleaning material using Method 24, an approved alternative, or formulation data, as described above in #3 of this table. • Determine the density of each coating, thinner, additive, and cleaning material. • Determine the volume of each coating, thinner, additive, and cleaning	§63.3961(g) §63.3961(j) §63.3961(j)(1) §63.3961(j)(2) §63.3961(j)(3) §63.3961(j)(4) §63.3961(j)(5)

Step-by-Step D Compliance Demonstration
For the Emission Rate With Add-On Controls Option
With Solvent Recovery Systems for which Liquid-Liquid Material Balances are Conducted
§63.3961

Detailed Approach	Citation
material controlled by the solvent recovery system by measurement or usage records. • Use Equation 2 of §63.3961(j) to calculate the solvent recovery system's volatile organic matter collection and recovery efficiency during the month. • Use Equations 3A, 3B, and 3C of §63.3961(j) to calculate the mass of organic HAP contained in all coatings, thinners, additives, and cleaning materials used during the month and controlled by the solvent recovery system. • Use Equations 3 of §63.3961(j) to calculate the mass of organic HAP emissions reduction for the coating operation controlled by the solvent recovery system.	§63.3961(j)(6) §63.3961(j)(7) §63.3961(j)(7)
9. Calculate the total volume of coating solids used. • Use Equation 2 of §63.3951(f) to determine the combined volume of coating solids for all coatings used during the month that were controlled using the solvent recovery system.	§63.3961(k) (§63.3951(f))
10. Calculate the mass of organic HAP emissions. • Use Equation 4 §63.3961(l) to calculate the mass of organic HAP emissions during each month.	§63.3961(l)
11. Calculate the organic HAP emission rate. • Use Equation 5 of §63.3961(m) to calculate the HAP emission rate for the 12-month compliance period.	§63.3961(m)
12. Demonstrate initial compliance with the applicable MACT limit. • You are in compliance if the organic HAP emission rate is less than or equal to the applicable MACT limits or the predominant activity or facility-specific emission limit. • Identify coating operation(s) for which you used this compliance option (emission rate with add-on controls) in the notification of compliance status. • Submit a statement as part of this notification that the coating operation(s) was in compliance with the emission limits, operating limits and work practices during the initial compliance period.	§63.3961(n)
13. Demonstrate continuous compliance with the applicable MACT limit. • You are in compliance with the emission limits if the organic HAP emission rate for the previous 12 months of operation, determined each month, is less than or equal to the applicable MACT limits or facility-specific emission limit.	§63.3963(a)

Step-by-Step D Compliance Demonstration
For the Emission Rate With Add-On Controls Option
With Solvent Recovery Systems for which Liquid-Liquid Material Balances are Conducted
§63.3961

Detailed Approach	Citation
• Deviations from the emission limitation for the compliance period are properly reported in the notification of compliance status and semi-annual compliance report with the appropriate accompanying data.	§63.3963(b)
• Develop and implement the work practice plan and keep the requisite records. Report any deviations in the notification of compliance status and semi-annual compliance report with the appropriate accompanying data.	§63.3963(e)
• Identify coating operation(s) for which you used this compliance option (emission rate with add-on controls) in the semiannual compliance report.	§63.3963(f)
• Submit a statement as part of the semiannual compliance report that the coating operation(s) was in compliance with the emission limits, operating limits and work practices during the compliance period if there were no deviations.	§63.3963(f)
• Properly maintain records (as specified below in #14 of this table).	§63.3963(j)
14. Maintain compliance records.	
• Keep copies of each notification and report submitted for compliance.	§63.3930(a)
• Maintain records of data and calculations used to determine predominant activity or facility-specific emission limit, if applicable.	§63.3930(a)
• Keep current copies of information used in the determination of mass fraction of organic HAP, coating density, and volume fraction of solids for each coating.	§63.3930(b)
• Maintain records of coating operations and time periods for which the emission rate with add-on controls option was used.	§63.3930(c)(1)

• Maintain a record of the following calculations:
  • Total mass of organic HAP emissions for each coating, thinner, additive, and cleaning material used.
  • If applicable, records of the calculation for mass of organic HAP in waste materials.
  • Total volume of coating solids used each month.
  • Mass of organic HAP emission reduction by control devices.
  • Each month's organic HAP emission rate.
  • 12-month organic HAP emission rate.
	§63.3930(c)(4)

• Maintain records of the name and volume for each coating, thinner, additive, and cleaning material used.	§63.3930(d)
• Maintain records of mass fraction of organic HAP (unless material is tracked by weight) and density of each material used and the volume fraction of coating solids for each coating used.	§63.3930(e),(f), &(g)

• Maintain the following records for organic HAP in waste materials sent to a TSDF if waste data was used in Equation 1 of §63.3951:
  • Name and address of each TSDF the waste was sent to.
  • A statement of which subparts under 40 CFR parts 262, 264, 265, and 266 apply to these TSDF facilities.
  • Date of each shipment to a TSDF.
	§63.3930(h)

Step-by-Step D Compliance Demonstration
For the Emission Rate With Add-On Controls Option
With Solvent Recovery Systems for which Liquid-Liquid Material Balances are Conducted
§63.3961

Detailed Approach	Citation
• Identification of the coating operations producing the waste included in each shipment to a TSDF. • The months the waste allowance was used in Equation 1. • The methodologies, data, supporting calculations, and testing or monitoring records used to determine the amount of waste sent to a TSDF (or amount collected, stored, and designated for transport to a TSDF) and the organic HAP content of the waste.	
• Maintain records of the date, time and duration of each deviation.	§63.3930(j)
• Maintain records of whether deviations occurred during startup, shutdown, or malfunction periods.	§63.3930(k)(1)
• Maintain records related to startup, shutdown, and malfunction as described in §63.6(e)(3)(iii)-(v).	§63.3930(k)(2)
• Maintain records to show continuous compliance with operating limits.	§63.3930(k)(3)
• Maintain records of data and documentation used to support determination that any capture system that is a PTE meets the criteria in Method 204 of appendix M to 40 DFR part 51 and has a capture efficiency of 100%.	§63.3930(k)(4)
• Maintain records of data and documentation used to support the capture efficiency determination for any capture system that is not a PTE, including the following: • Records for a liquid-to-uncaptured gas protocol using a temporary total enclosure or building enclosure. • Records for a gas-to-gas protocol using a temporary total enclosure or building enclosure. • Records for an alternative protocol.	§63.3930(k)(5)
• Records of HAP destruction or removal efficiency determinations for each control device, including the following: • Records for each control device performance test. • Records of the coating operation conditions during the performance test, showing conditions were representative.	§63.3930(k)(6)
• Records of data and calculations used to establish and document compliance with the operating limits for each capture and control device system.	§63.3930(k)(7)
• A copy of the work practice plan and documentation that the plan is being implemented on a continuous basis.	§63.3930(k)(8)
• Keep records readily available for expeditious review for 5 years, with records for events within at least the last 2 years on-site.	§63.3931(a)-(c)

Compliance Options Diagrams[1]

The Miscellaneous Metal Parts and Products Coating NESHAP offers three compliance options:

1) Compliant materials
2) Emission rate without add-on controls
3) Emission rate with add-on controls

Continuous monitoring, performance tests, operating limits, and work practice standards are required for the emission rate with add-on controls option, but are not required for the other two options. Calculations, reporting, and recordkeeping requirements differ for the three options.

Figure 1 – Compliance Options under Subpart MMMM

Figure 2 – Demonstrating Compliance When Using Compliant Materials Option (Initial Compliance Demonstration)

Figure 3 – Demonstrating Compliance When Using Compliant Materials Option (Continuous Compliance)

Figure 4 – Demonstrating Compliance When Using Emission Rate Without Add-On Controls Option (Initial Compliance Demonstration)

Figure 5 – Demonstrating Compliance When Using Emission Rate without Add-On Controls Option (Continuous Compliance)

Figure 6 – Demonstrating Compliance When Using the Emission Rate with Add-On Controls Option (Initial Compliance Demonstration)

Figure 7 – Calculation of Organic HAP Emission Reduction for Each Controlled Coating Operation

Figure 8 – Calculation of Organic HAP Emission Reduction for Each Controlled Coating Operation Using Liquid-Liquid Material Balance

Figure 9 – Demonstrating Compliance When Using the Emission Rate with Add-On Controls Option (Continuous Compliance)

Figure 10 – Reporting Requirements for Compliance with the Emission Rate with Add-on Controls Option (Emission Limits)

Figure 11 – Reporting Requirements for Compliance with the Emission Rate with Add-On Controls Option (Continued)

Figure 12 – Recordkeeping Requirements for Compliance with the Emission Rate with Add-On Controls Option

Figure 13 – Compliance with Emission Limitation Using Additional Alternatives

Figure 14 – Determining Emission Capture System Efficiency

Figure 15 – Measure Capture Efficiency via the Liquid-to-Uncaptured-Gas Protocol

[1] The Office of Enforcement and Compliance Assistance (OECA) of the U.S. Environmental Protection Agency (EPA) has reviewed this document and approved it for publication. When using this document, remember that it is not legally binding and does not replace the final rule -"National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products" (published in the Federal Register, 1/2/04, 69 FR 130 and amended 4/26/04) or any State, local or tribal rules that may apply to your facility. This document is not intended, nor can you rely on it, to create any rights enforceable by any party in litigation with the United States. The EPA may change this document at any time without public notice.

Figure 16 – Measuring Capture Efficiency via Gas-to-Gas Protocol Using a Temporary Total Enclosure or Building Enclosure

Figure 17 – Determining the Add-On Control Device Emission Destruction or Removal Efficiency

Figure 18 – Establishing the Emission Capture System and Operating Limits During the Performance Test

Figure 19 – Establishing the Emission Capture System and Operating Limits During the Performance Test (Continued)

Figure 20 – General Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance

Figure 21 – General Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Continued)

Figure 22 – Specific Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Capture System Bypass Line)

Figure 23 – Specific Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Thermal and Catalytic Oxidizers)

Figure 24 – Specific Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Regenerative Carbon Adsorbers, Condensers, and Concentrators)

Figure 25 – Specific Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Emission Capture System)

Figure 26 – List of Equations

Figure 1
Compliance Options under Subpart MMMM

[Back to Top]

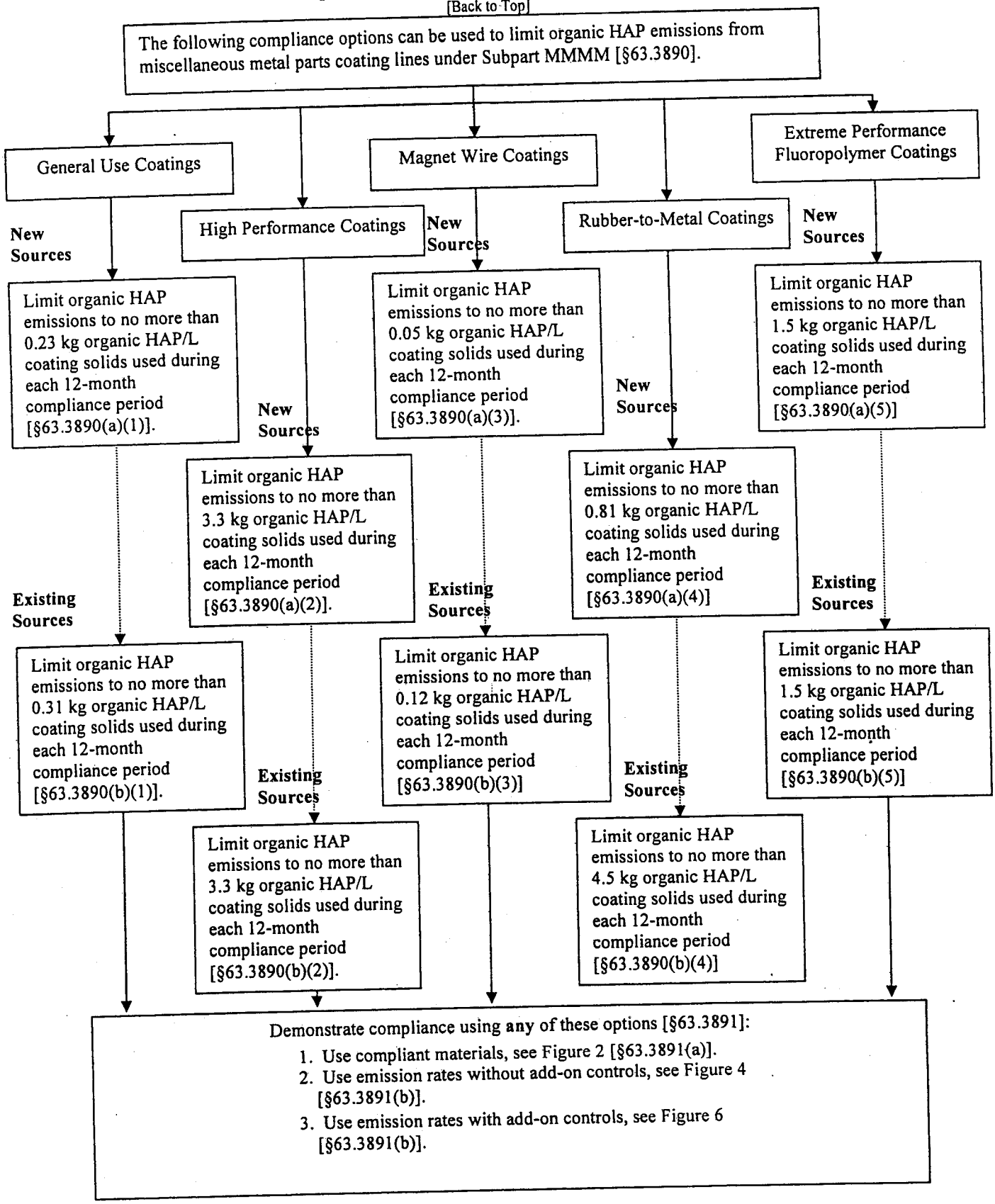
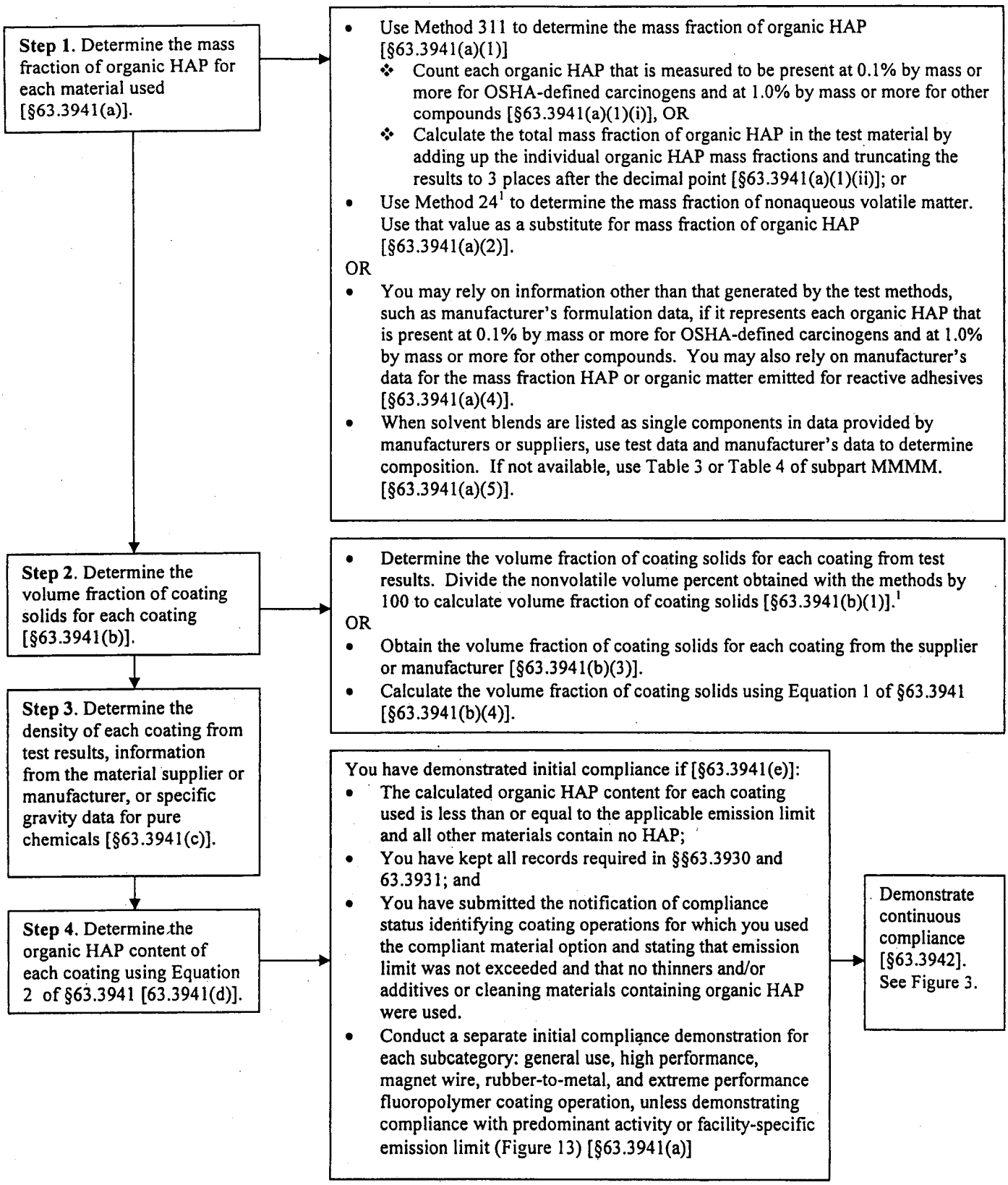


Figure 2
Demonstrating Compliance When Using Compliant Materials Option (Initial Compliance Demonstration)

[Back to Top]



[1] You may use an alternative test method once EPA has approved it [§63.3941(a)(3) and (b)(2)]. Follow the procedure in §63.7 to submit an alternative test method for approval.

Figure 3
Demonstrating Compliance When Using Compliant Materials Option (Continuous Compliance)

[Back to Top]

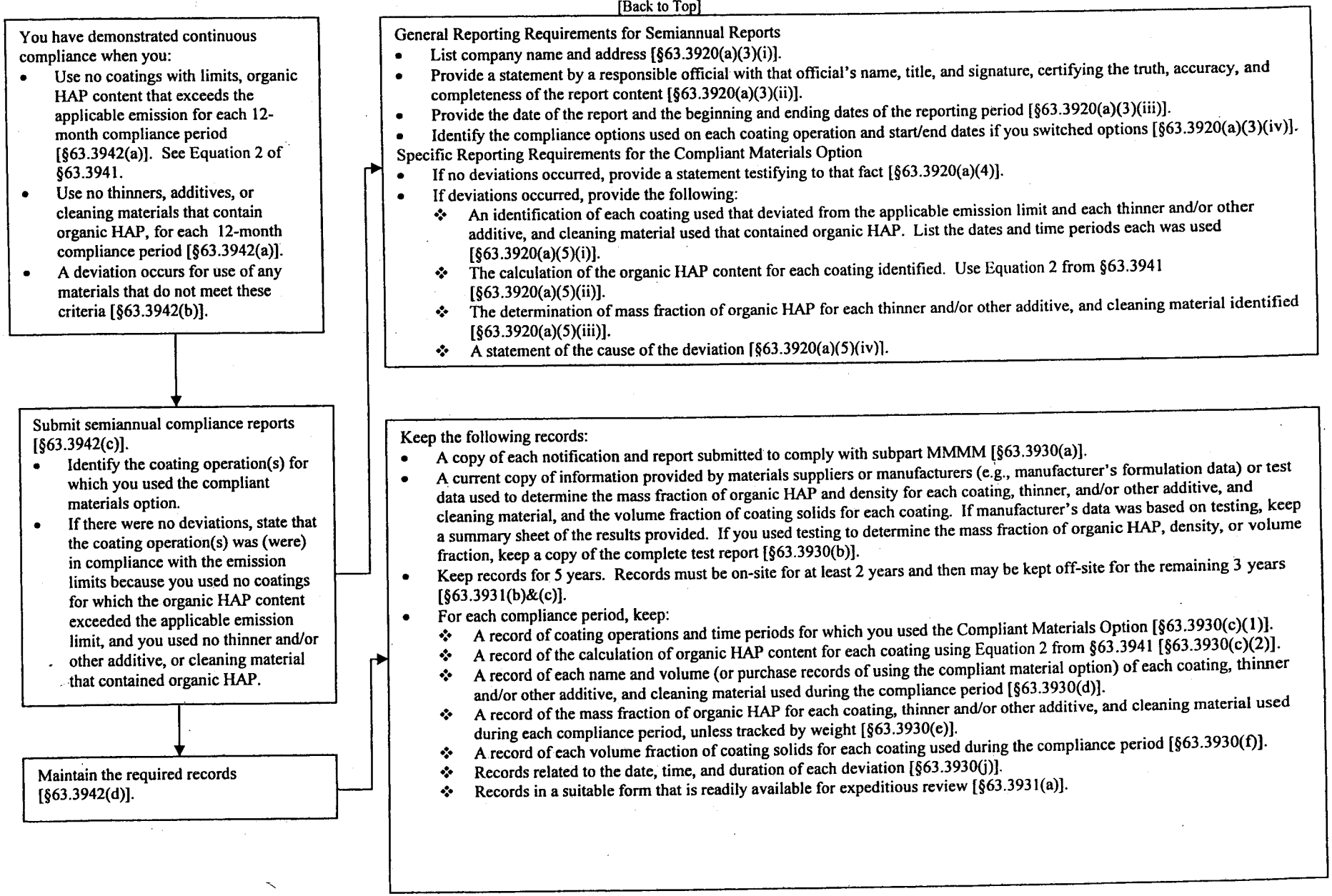
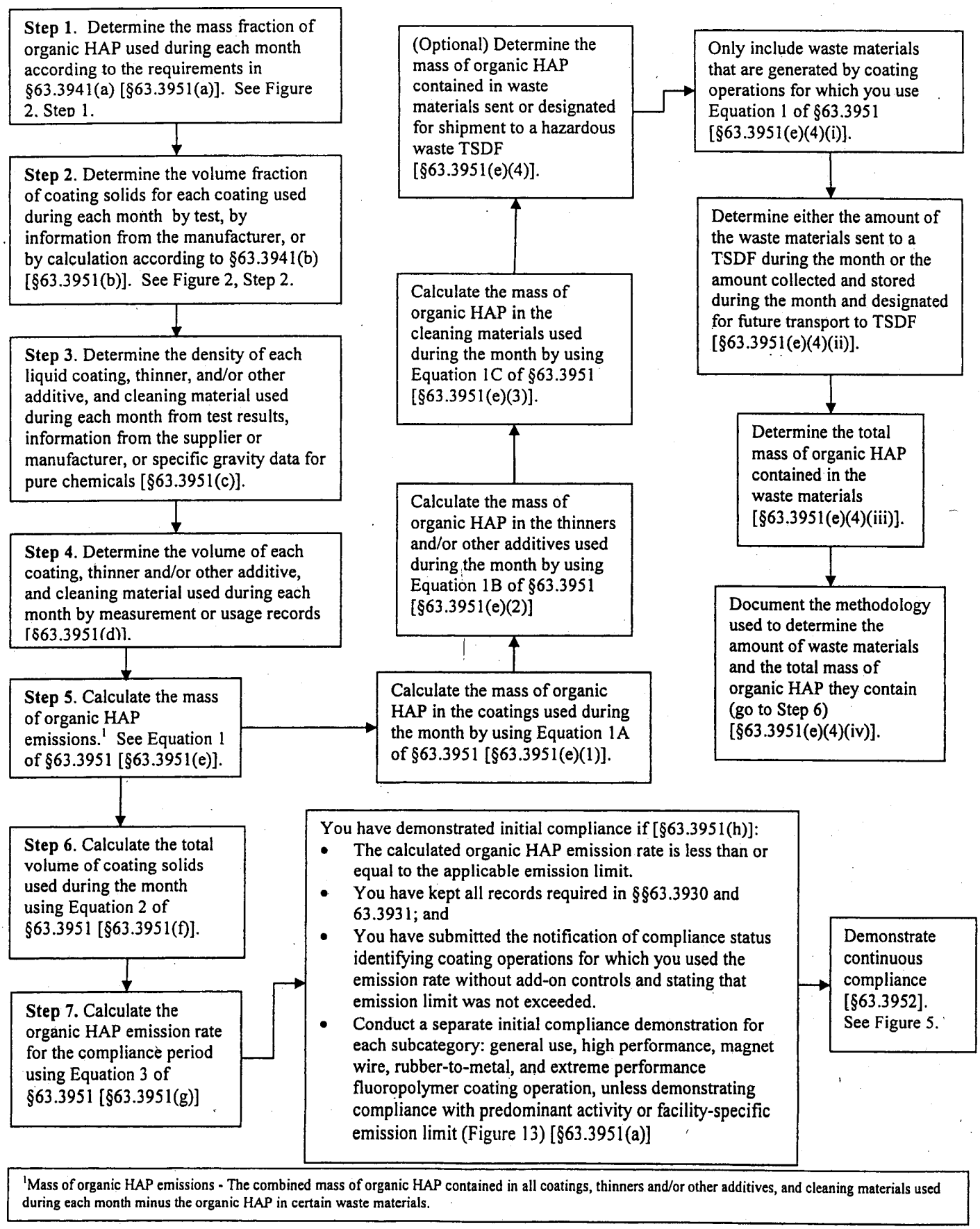


Figure 4
Demonstrating Compliance When Using Emission Rate Without Add-On Controls Option (Initial Compliance Demonstration)

[Back to Top]



[1]Mass of organic HAP emissions - The combined mass of organic HAP contained in all coatings, thinners and/or other additives, and cleaning materials used during each month minus the organic HAP in certain waste materials.

Figure 5
Demonstrating Compliance When Using Emission Rate Without Add-On Controls Option (Continuous Compliance)

[Back to Top]

The organic HAP emission rate for any 12-month compliance period must not exceed the applicable emission limit [§63.3952(a)].
If the organic HAP emission rate for any 12-month compliance period exceeds the applicable emission limit in §63.3890, then a deviation from the emission limit occurs [§63.3952(b)].

Submit semiannual compliance reports [§63.3952(c)].
- Identify the coating operation(s) for which you used the emission rate without add-on controls option.
- If there were no deviations, submit a statement that the coating operation(s) was (were) in compliance with the emission limitations during the reporting period because the organic HAP emission rate was less than or equal to the applicable emission limit.

Maintain the required records [§63.3952(d)].

General Reporting Requirements for Semiannual Reports
- List company name and address [§63.3920(a)(3)(i)].
- Provide a statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the report content [§63.3920(a)(3)(ii)].
- Provide the date of the report and the beginning and ending dates of the reporting period [§63.3920(a)(3)(iii)].
- Identify the compliance options used for each coating operation and start/end dates if you switched options [§63.3920(a)(3)(iv)].

Specific Reporting Requirements for the Emission Rate Without Add-On Controls Option
- Provide the calculation results for each rolling 12-month organic HAP emission rate during the 6-month reporting period [§63.3920(a)(3)(v)].
- If no deviations occurred, provide a statement testifying to that fact [§63.3920(a)(4)].
- If deviations occurred, provide the following:
  - ❖ The beginning and ending dates of each compliance period during which the 12-month organic HAP emission rate exceeded the applicable emission limit in §63.3890 [§63.3920(a)(6)(i)].
  - ❖ The calculations used to determine the 12-month organic HAP emission rate for the compliance period in which the deviation occurred (see Equation 1, 1A, 1B, 1C, 2, and 3 of §63.3951) and if applicable, the calculation used to determine the mass of organic HAP in waste materials [§63.3920(a)(6)(ii)].
  - ❖ A statement of cause of each deviation [§63.3920(a)(6)(iii)].

Keep the following records:
- A copy of each notification and report submitted to comply with this subpart [§63.3930(a)].
- A current copy of information provided by materials suppliers or manufacturers (e.g., manufacturer's formulation data), or test data used to determine the mass fraction of organic HAP and density for each coating, thinner, and/or other additive, and cleaning material, and the volume fraction of coating solids for each coating. If manufacture's data was based on testing, keep a summary sheet of the results provided. If you used testing to determine the mass fraction of organic HAP, density, or volume fraction, keep a copy of the complete test report [§63.3930(b)].
- Keep records for 5 years. Records must be on-site for at least 2 years and then may be kept off-site for the remaining 3 years [§63.3931(b)&(c)].
- For each compliance period keep:
  - ❖ Records of coating operations and time periods for which you used the Emission Rate Without Add-On Controls Option §63.3930(c)(1)].
  - ❖ Records of the calculation of the total mass of organic HAP emissions for the coatings, thinners and/or other additives, and cleaning materials used each month using Equations 1, 1A, 1B, 1C, 2, and 3 of §63.3951, mass of organic HAP in waste materials (if applicable); the calculation of total volume of coating solids used each month (Equation 2 of §63.3951); and the calculation of each 12-month organic HAP emission rate using Equation 3) [§63.3930(c)(3)].
  - ❖ Records of the name and volume of each coating, thinner and/or other additive, and cleaning material used during each compliance period [§63.3930(d)].
  - ❖ Records of the mass fraction of organic HAP for each coating, thinner and/or other additive, and cleaning material used during each compliance period, unless tracked by weight [§63.3930(e)].
  - ❖ Records for waste materials sent to or designated for shipment to a treatment, storage, or disposal (TSDF) facility (see Figure 12, bullet 10) [§63.3930(h)].
  - ❖ Records of the volume fraction of coating solids for each coating used during each compliance period [§63.3930(f)].
  - ❖ Records of the date, time, and duration of each deviation [§63.3930(j)].

Figure 6
Demonstrating Compliance When Using the Emission Rate With Add-On Controls Option (Initial Compliance Demonstration)

[Back to Top]

After you have completed the performance test, and except for solvent recovery with liquid-liquid material balance, establish and demonstrate continuous compliance during the initial compliance period with the operating limits required by §63.3892. [§63.3961(b)].

Develop, implement, and document your implementation of the work practice plan required by §63.3893 during the initial compliance period [§63.3961(c)].

Demonstrate compliance with the applicable emission limit for each affected source in each subcategory by doing the following [§§63.3882(b) and 63.3961(d)]:

Step 1. Determine the mass fraction of organic HAP, density, volume used, and volume fraction of coating by following the procedures specified in §63.3951(a) through (d) [§63.3961(e)].

See Figure 4 (Steps 1-4).

Step 2. Calculate the total mass of organic HAP emissions before add-on controls using Equation 1 of §63.3951 [§63.3961(f)].

Step 3. Calculate the organic HAP emission reduction for each controlled coating operation not using a liquid-liquid material balance. [§63.3961(g)].

See Figure 7

Step 4. Calculate the organic HAP emission reduction for each controlled coating operation using liquid-liquid material balance [§63.3961(j)].

See Figure 8

Step 5. Calculate the total volume of coating solids used, which is the combined volume of coating solids for all the coatings used during each month in the coating operation or group of coating operations for which you use this option, using Equation 2 of §63.3951 [§63.3961(k)].

Step 6. Calculate the mass of organic HAP emissions during each month by using Equation 4 of §63.3961 [§63.3961(l)].

Step 7. Calculate the organic HAP emission rate for the compliance period using Equation 5 of §63.3961 [§63.3961(m)].

You have demonstrated initial compliance if [§63.3961(n)]:

- The organic HAP emission rate is less than or equal to the applicable emission limit
- You achieved the operating limits required by §63.3890 and the work practice standards required by §63.3893.
- You have kept all records required in §§63.3930 and 63.3931;
- You have submitted the notification of compliance status identifying coating operations for which you used the emission rate with add-on controls and stating that emission limit was not exceeded.
- Conduct a separate initial compliance demonstration for each subcategory: general use, high performance, magnet wire, rubber-to-metal, and extreme performance fluoropolymer coating operation, unless demonstrating compliance with predominant activity or facility-specific emission limit (Figure 13) [§63.3951(a)]

Demonstrate continuous compliance [§63.3963].

See Figure 9.

Figure 7

Calculation of Organic HAP Emission Reduction for Each Controlled Coating Operation

[Back to Top] [See Figure 6]

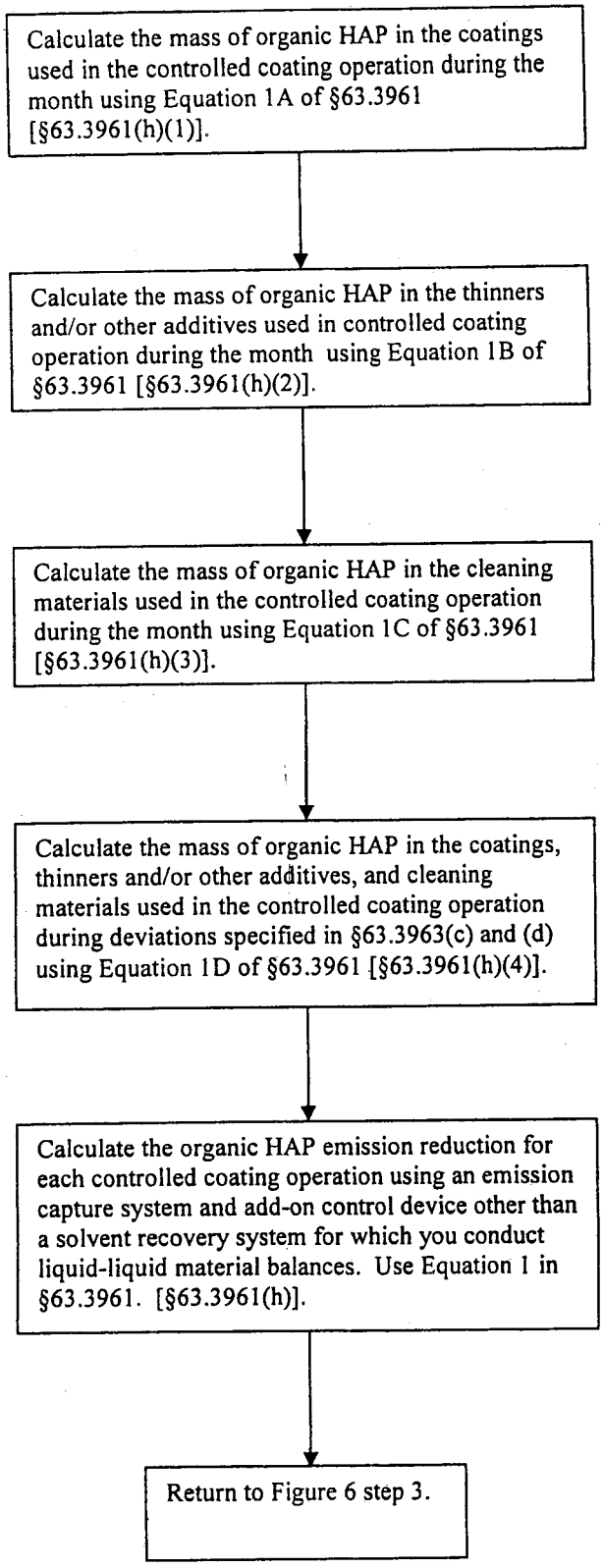


Figure 8
Calculation of Organic HAP Emission Reduction for Each Controlled Coating Operation Using Liquid-Liquid Material Balance

[Back to Top] [See Figure 6]

For each solvent recovery system, install, calibrate, maintain, and operate according to the manufacturer's specifications a device that indicates the cumulative amount of volatile organic matter recovered by the solvent recovery system each month. The device must be initially certified by the manufacturer to be accurate to within ±2% of the mass of volatile organic matter recovered [§63.3961(j)(1)].

↓

For each solvent recovery system, determine the mass of volatile organic matter recovered for the month [§63.3961(j)(2)].

↓

Determine the mass fraction of volatile organic matter for each coating, thinner and/or other additive, and cleaning material used in the coating operation controlled by the solvent recovery system during the month. Use either Method 24 of 40 CFR part 60, appendix A or an EPA-approved alternative method, or you may use information provided by the manufacturer or supplier of the coating [§63.3961(j)(3)].

↓

Determine the density of each coating, thinner and/or other additive, and cleaning material used in the coating operation controlled by the solvent recovery system during the month according to §63.3951(c) [§63.3961(j)(4)].

See Figure 4.

↓

Measure the volume of each coating, thinner and/or other additive, and cleaning material used in the coating operation controlled by the solvent recovery system during the month [§63.3961(j)(5)].

↓

For each month, calculate the solvent recovery system's volatile organic matter collection and recovery efficiency using Equation 2 of §63.3961 [§63.3961(j)(6)].

→ Calculate the mass of organic HAP in the coatings used in the coating operation controlled by the solvent recovery system using Equation 3A of §63.3961 [§63.3961(j)(7)(i)].

↓

Calculate the mass of organic HAP in the thinners and/or other additives used in the coating operation controlled by the solvent recovery system during the month using Equation 3B of §63.3961 [§63.3961(j)(7)(ii)].

↓

Calculate the mass of organic HAP in the cleaning materials used in the coating operation controlled by the solvent recovery system during the month by using Equation 3C of §63.3961 [§63.3961(j)(7)(iii)]

→ Calculate the mass of organic HAP emission reduction for the coating operation controlled by the solvent recovery system during the month. Use Equation 3 of §63.3961 [§63.3961(j)(7)].

↓

Return to Figure 6 step 4.

Figure 9
Demonstrating Compliance When Using the Emission Rate With Add-On Controls Option (Continuous Compliance)

[Back to Top]

Demonstrate continuous compliance with the applicable emission limit by maintaining the organic HAP emission rate, as calculated in §63.3961 at less than or equal to the applicable emission limit in §63.3890 [§63.3963(a)]

A deviation from the emission limit occurs if the organic HAP emission rate for any 12-month compliance period exceeds the applicable emission limit in §63.3890 [§63.3963(b)].

→ See Figure 10 for reporting requirements.

Keep a record of the work practice plan and documentation that you are implementing it on a continuous basis [§63.3930(k)(8)].

Demonstrate continuous compliance with each operating limit required by §63.3892 that applies when the coating line is operating. A deviation occurs if the operating parameter is out of the allowed range. The operating limits and requirements for demonstrating continuous compliance are found in Table 1of subpart MMMM [§63.3863(c)].

Develop and implement a work practice plan and to minimize organic HAP emissions from the storage, mixing, and conveying of coatings, thinners and/or other additives, and cleaning materials used in, and waste materials generated by the controlled coating operations [§63.3893(b)]. The work practice plan must contain the following elements:

- All organic-HAP-containing coatings, thinners and/or other additives, cleaning materials, and waste materials must be stored in closed containers [§63.3893(b)(1)].
- Spills of organic-HAP-containing coatings, thinners and/or other additives, cleaning materials, and waste materials must be minimized [§63.3893(b)(2)].
- Organic-HAP-containing coatings, thinners, and/or other additives, cleaning materials, and waste materials must be conveyed from one location to another in closed containers or pipes [§63.3893(b)(3)].
- Mixing vessels which contain organic-HAP-containing coatings and other materials must be closed except when adding to, removing, or mixing the contents [§63.3893(b)(4)].
- Emissions of organic HAP must be minimized during cleaning of storage, mixing, and conveying equipment [§63.3893(b)(5)].

- Meet the requirements for bypass lines in §63.3968(b) for controlled coating operations for which you do not conduct liquid-liquid material balances.
- If any bypass line is opened and emissions are diverted to the atmosphere when the coating operation is running, a deviation occurs and must be reported [§63.3963(d)].

EPA may grant permission to use an alternative to the work practice standards [§63.3893(c)].

- Demonstrate continuous compliance with the work practice standards in §63.3893.
- A deviation occurs when you do not develop a work practice plan, do not implement the plan, or do not keep the required records in §63.3980 [§63.3963(e)].
- Report all deviations as specified in §63.3920(a)(7).

→ See Figure 10.

Maintain records as specified in §63.3930 and §63.3931 [§63.3963(j)].

→ See Figure 12.

Figure 10
Reporting Requirements for Compliance with the Emission Rate with Add-On Controls Option (Emission Limits)

[Back to Top] [See Figure 9]

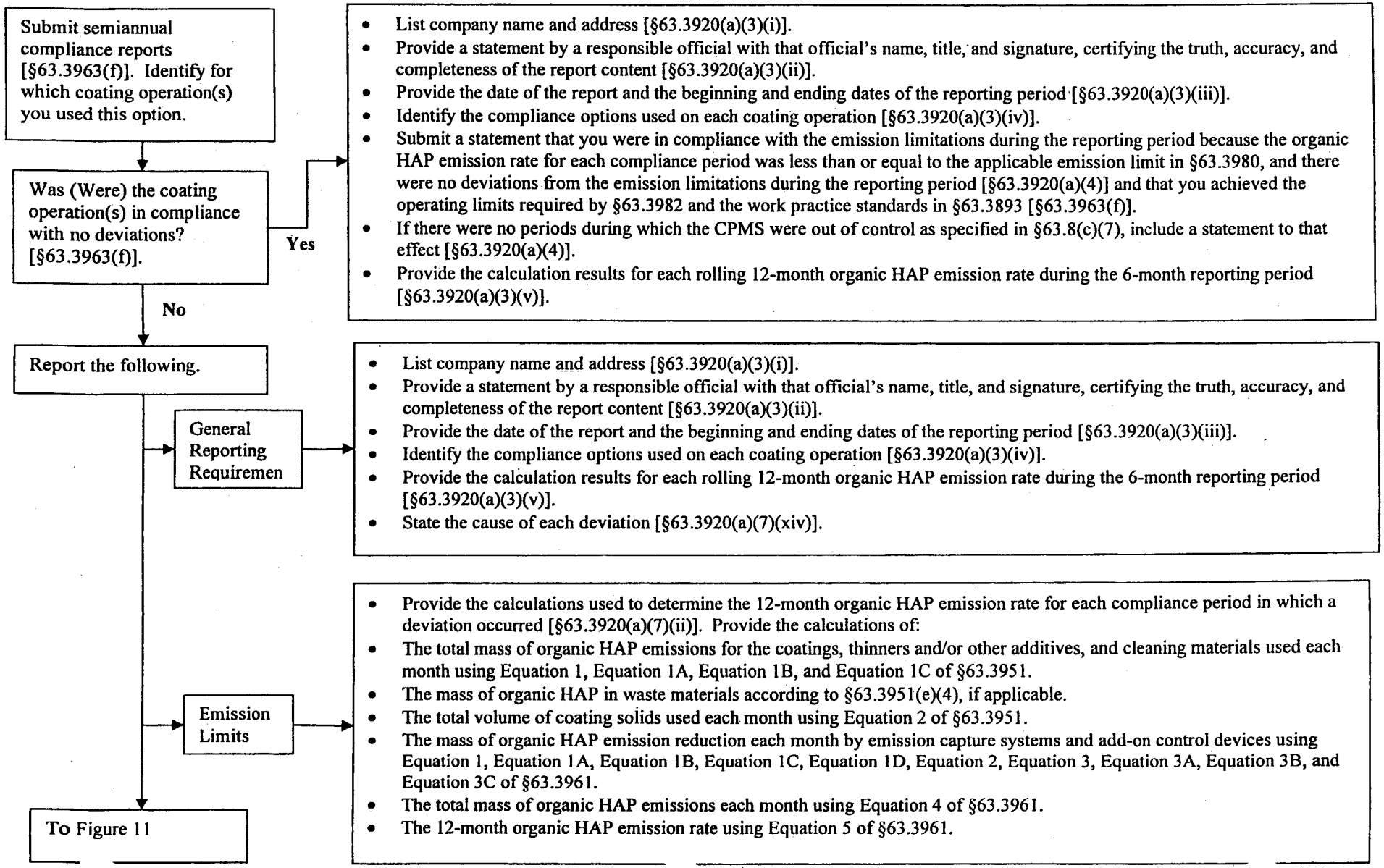


Figure 11
Reporting Requirements for Compliance with the Emission Rate with Add-On Controls Option (Continued)

[Back to Top] [To Figure 9] [See Figure 10]

From Figure 10

Operating Limits/CPMS

Report:
- The date and time that each malfunction started and stopped [§63.3920(a)(7)(iii)].
- A brief description of the CPMS [§63.3920(a)(7)(iv)].
- The date of the latest CPMS certification or audit [§63.3920(a)(7)(v)].
- The date and time that each CPMS was inoperative, except for zero (low-level) and high-level checks [§63.3920(a)(7)(vi)].
- The date, time, and duration that each CPMS was out-of-control, including information in 63.10(c)(8) [§63.3920(a)(7)(vii)].
- The date and time period of each deviation from an operating limit and whether each deviation occurred during a period of startup, shutdown, or malfunction, or during another period [§63.3920(a)(7)(viii)].
- A summary of the total duration of each deviation from an operating limit and the total duration as a percent of the total source operating time during that semiannual reporting period [§63.3920(a)(7)(ix)].
- A breakdown of the total duration of the deviations from the operating limits during the reporting period into those that were due to startup, shutdown, control equipment problems, process problems, other known causes, and unknown causes [§63.3920(a)(7)(x)]
- A summary of the total duration of CPMS downtime during the semiannual reporting period and the total duration of CPMS downtime as a percent of the total source operating time during that semiannual reporting period [§63.3920(a)(7)(xi)].
- A description of any changes in the CPMS, coating operation, emission capture system, or add-on control device since the last semiannual reporting period [§63.3920(a)(7)(xii)].

Bypass Lines

- Date and time period of any bypass of the add-on control device [§63.3920(a)(7)(viii)]
- A summary of the total duration of each bypass of the add-on control device during the semiannual reporting period and the total duration as a percent of the total source operating time during that semiannual reporting period [§63.3920(a)(7)(ix)].
- A breakdown of the total duration of bypasses of the add-on control device during the semiannual reporting period into those that were due to startup, shutdown, control equipment problems, process problems, other known causes, and unknown causes [§63.3920(a)(7)(x)].

Work Practice Standards

- Describe the deviation, the date and time period of the deviation, and the actions you took to correct the deviation [§63.3920(a)(7)(xiii)].

Figure 12
Recordkeeping Requirements for Compliance with the Emission Rate with Add-On Controls Option

[Back to Top] [See Figure 9] [See Figure 10]

From Figure 10.

Keep the following records:

- A copy of each notification and report submitted to comply with this subpart [§63.3930(a)].
- A current copy of information provided by materials suppliers or manufacturers (e.g., manufacturer's formulation data) or test data used to determine the mass fraction of organic HAP and density for each coating, thinner and/or other additive, and cleaning material, and the volume fraction of coating solids for each coating. If you used testing to determine the mass fraction of organic HAP, density, or volume fraction, keep a copy of the complete test report [§63.3930(b)].
- Keep records for 5 years. Records must be on-site for at least 2 years and then may be kept off-site for the remaining 3 years [§63.3931(b)&(c)].

For each compliance period keep:

- A record of coating operations and time periods for which you used the Emission Rate with Add-On Controls Option [§63.3930(c)(1)].
- Records of the following calculations:
  - The total mass of organic HAP emissions for the coatings, thinners and/or other additives, and cleaning materials used each month using Equation 1, Equation 1A, Equation 1B, Equation 1C of §63.3951, and, if applicable, the calculation used to determine the mass of organic HAP in waste materials according to §63.3951(e)(4) [§63.3930(c)(4)(i)].
  - The calculation of the total volume of coating solids used each month using Equation 2 of §63.3951 [§63.3930(c)(4)(ii)].
  - The calculation of the mass of organic HAP emission reduction by emission capture systems and add-on control devices using Equation 1, Equation 1A, Equation 1B, Equation 1C, Equation 1D, Equation 2, Equation 3, Equation 3A, Equation 3B, and Equation 3C of §63.3961 [§63.3930(c)(4)(iii)].
  - The calculation of each month's organic HAP emission rate using Equation 4 of §63.3961 [§63.3930(c)(4)(iii)].
  - The calculation of each 12-month organic HAP emission rate using Equation 5 of §63.3961 [§63.3930(c)(4)(iv)].
- A record of the name and volume of each coating, thinner and/or other additive, and cleaning material used during each compliance period [§63.3930(d)].
- A record of the mass fraction of organic HAP for each coating, thinner and/or other additive, and cleaning material used during each compliance period, unless tracked by weight [§63.3930(e)].
- A record of the volume fraction of coating solids for each coating used during each compliance period [§63.3930(f)].
- A record of the density for each coating, thinner and/or other additive, and cleaning material used during each compliance period [§63.3930(g)].
- For waste materials sent to or designated for shipment to a treatment, storage, and disposal (TSDF) facility:
  - The name and address of each TSDF to which you sent waste materials for which you use an allowance in Equation 1 of §63.3951; a statement of which subparts under 40 CFR parts 262 , 264, 265, and 266 apply to the facility; and the date of each shipment [§63.3930(h)(1)].
  - Identification of the coating operations producing waste materials included in each shipment and the month or months in which you used the allowance for these materials in Equation 1 of §63.3951 [§63.3930(h)(2)].
  - The methodology used in accordance with §63.3951(e)(4) to determine the total amount of waste materials sent to or the amount collected, stored, and designated for transport to TSDF each month and the methodology to determine the mass of organic HAP contained in these waste materials [§63.3930(h)(3)].
- A record of the date, time, and duration of each deviation [§63.3930(j)] and whether the duration occurred during a period of startup, shutdown, or malfunction [§63.3930(k)(1).
- The records in §63.6(e)(3)(iii) through (v) related to startup, shutdown, and malfunction [§63.3930(k)(2)].
- The records required to show continuous compliance with each operating limit [§63.3930(k)(3)].

Additional records for data and documentation related to capture systems are required. See Figure 14, Figure 15 and Figure 16.

Additional records for add-on control device destruction or removal efficiency are required. See Figure 17.

Figure 13
Compliance with Emission Limitations Using Additional Alternatives

[Back to Top] [See Figure 2] [See Figure 4] [See Figure 6]

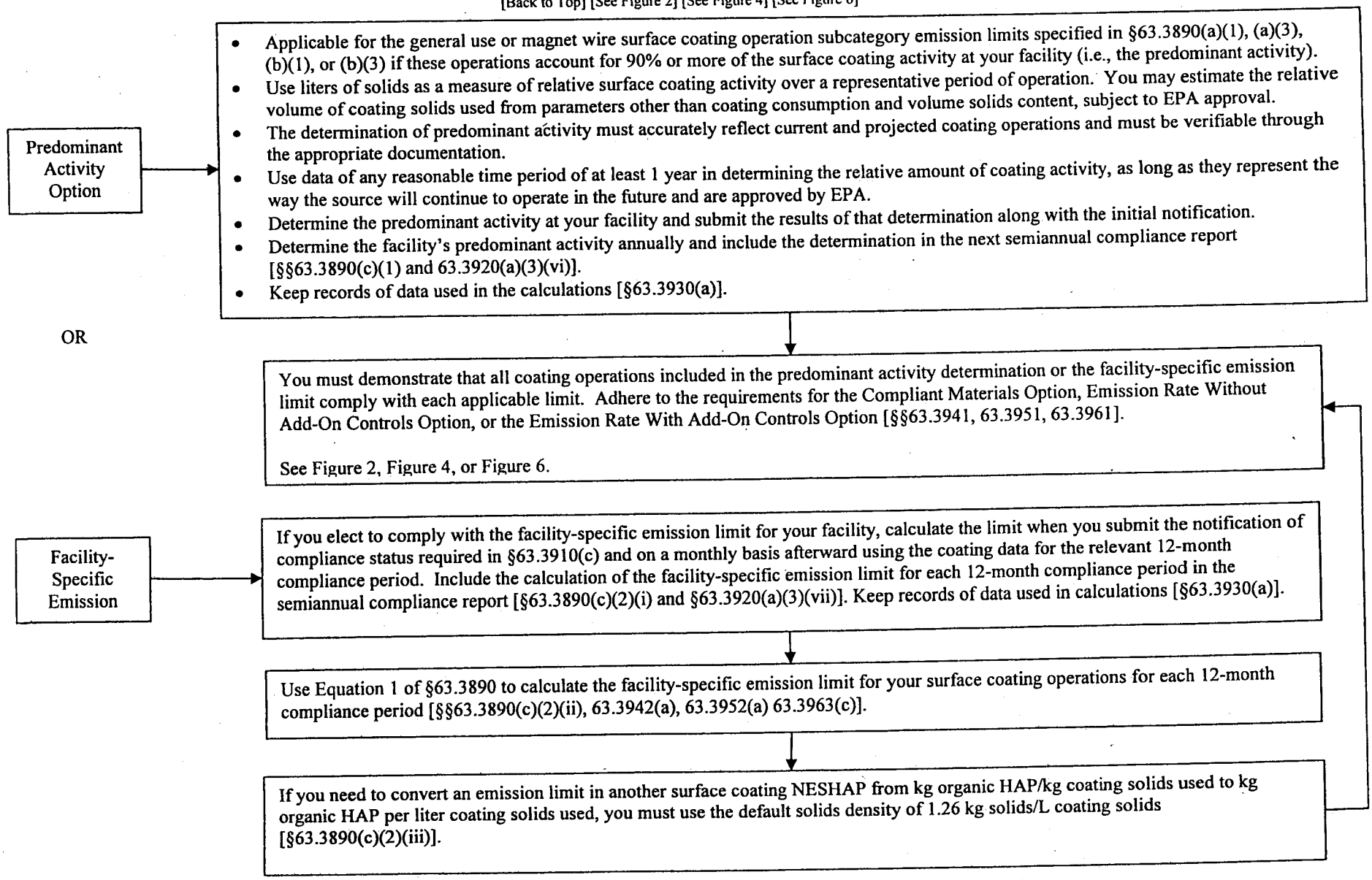


Figure 14
Determining Emission Capture System Efficiency

[Back to Top] [See Figure 15] [See Figure 16]

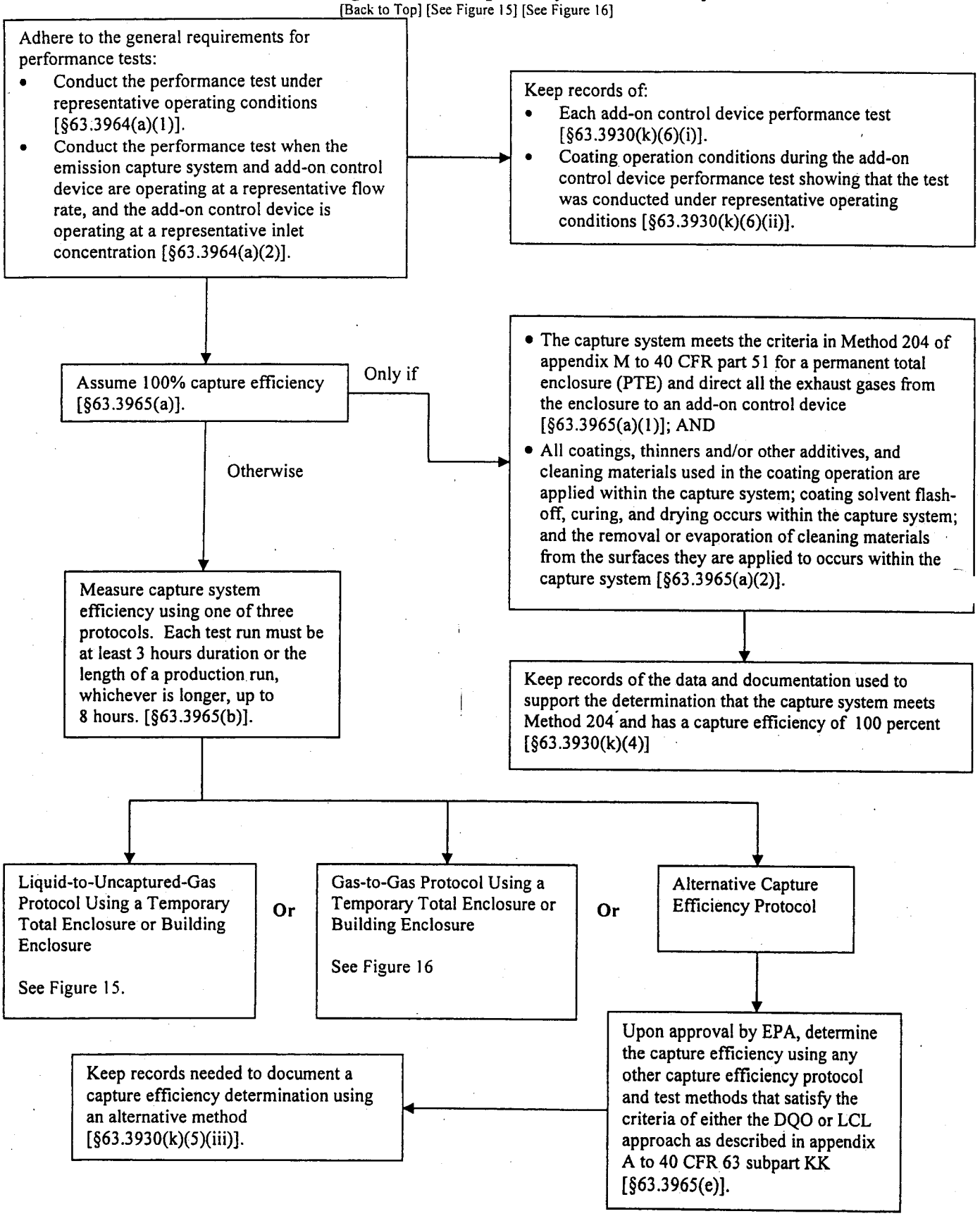


Figure 15
Measuring Capture Efficiency Via the Liquid-to-Uncaptured-Gas Protocol

[Back to Top] [See Figure 14]

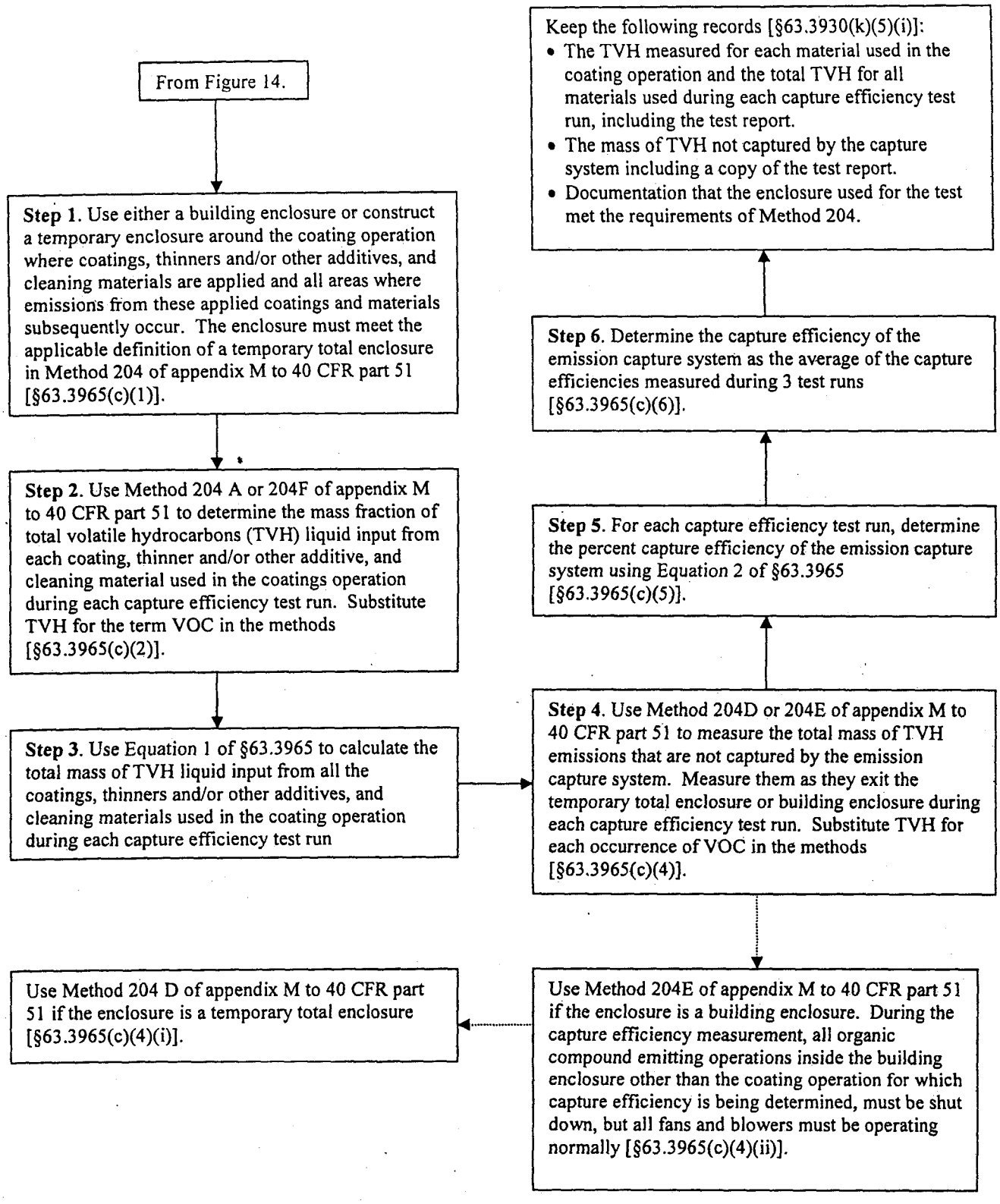


Figure 16
Measuring Capture Efficiency via Gas-to-Gas Protocol Using a Temporary Total Enclosure or a Building Enclosure

[Back to Top] [See Figure 14]

From Figure 14.

Step 1. Either use a building enclosure or construct a temporary enclosure around the coating operation where coatings, thinners and/or other additives, and cleaning materials are applied, and all areas where emissions from these applied coatings and materials subsequently occur [§63.3965(d)(1)].

Step 2. Use Method 204B or 204C of appendix M to 40 CFR part 51 to measure the total mass of TVH emissions captured by the emission capture system during each capture efficiency test run as measured at the inlet to the add-on control device. Substitute TVH for each occurrence of the term VOC in the methods [§63.3965(d)(2)]

The sampling points for the Method 204B or 204C measurement must be upstream from the add-on control device and must represent the total emissions routed from the capture system and entering the add-on control device [§63.3965(d)(2)(i)].

If multiple emission streams from the capture system enter the add-on control device without a single common duct, then the emissions entering the add-on control device must be simultaneously measured in each duct and the total emissions entering the add-on control device must be determined [§63.3965(d)(2)(ii)].

Keep the following records [§63.3930(k)(5)(ii)]:

- The mass of TVH emissions captured by the emission capture system at the inlet to the add-on control device, including a copy of the test report.
- The mass of TVH not captured by the capture system, including a copy of the test report.
- Records documenting that the enclosure used for the test met Method 204 requirements.

Step 3. Use Method 204D or 204E of appendix M to 40 CFR part 51 to measure the total mass of TVH emissions that are not captured by the emission capture system; they are measured as they exit the temporary total enclosure or building enclosure during each capture efficiency test run. Substitute TVH for each occurrence of the term VOC [§63.3965(d)(3)].

Step 4. For each capture efficiency test run, determine the percent capture efficiency of the emission capture system using Equation 3 of §63.3965 [§63.3965(d)(4)].

Step 5. Determine the capture efficiency of the emission capture system as the average of the capture efficiencies measured in the 3 test runs [§63.3965(d)(5)].

Use Method 204D of appendix M to 40 CFR part 51 if the enclosure is a temporary total enclosure [§63.3965(d)(3)(i)].

Use Method 204E of appendix M to 40 CFR part 51 if the enclosure is a building enclosure. During the capture efficiency measurement, all organic compound emitting operations inside the building enclosure, other than the coating operatio.. for which capture efficiency is being determined, must be shut down, but all fans and blowers must be operating normally [§63.3965(d)(3)(ii)].

Figure 17
Determining the Add-On Control Device Emission Destruction or Removal Efficiency

[Back to Top]

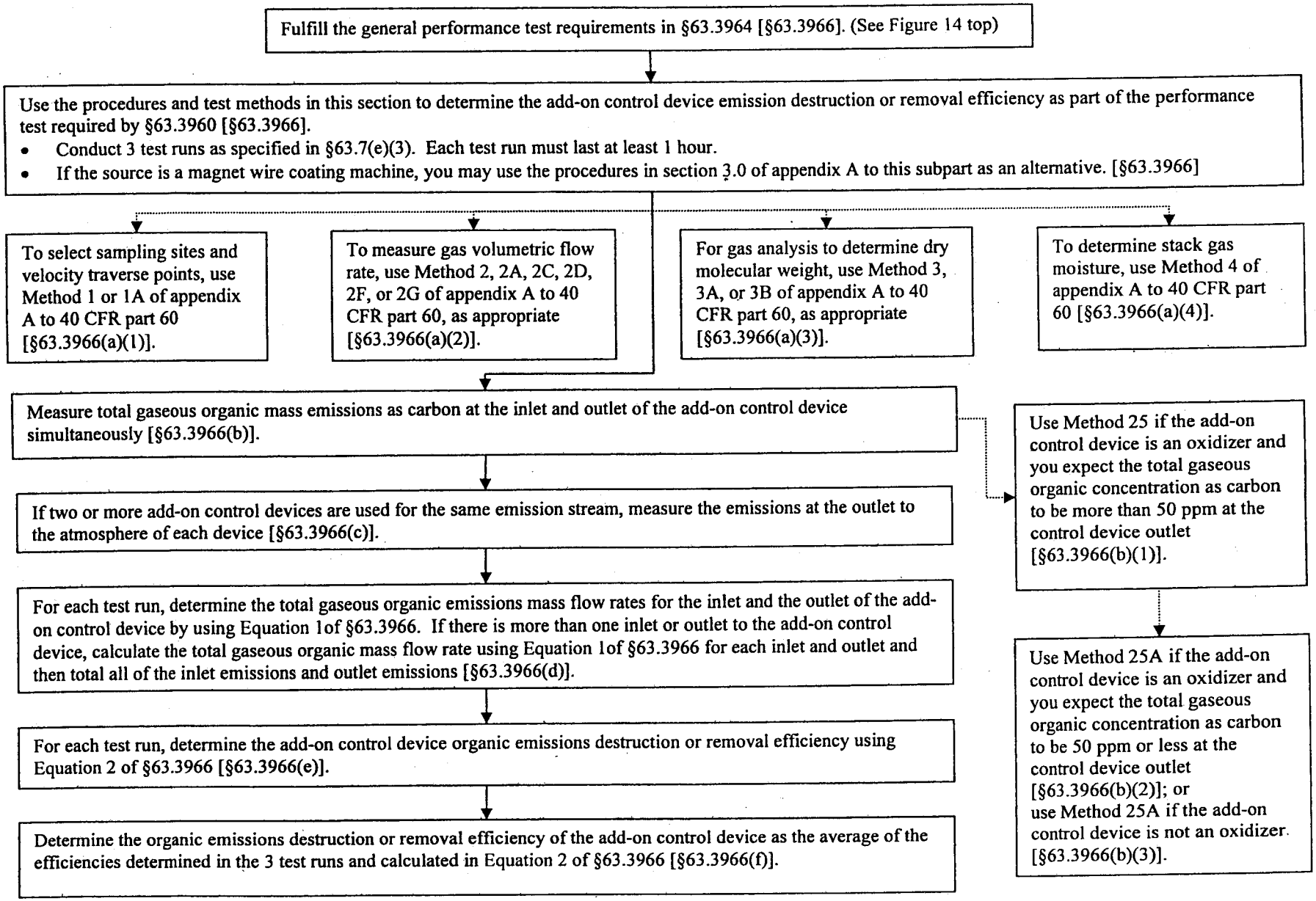


Figure 18
Establishing the Emission Capture System and Operating Limits During the Performance Test

[Back to Top]

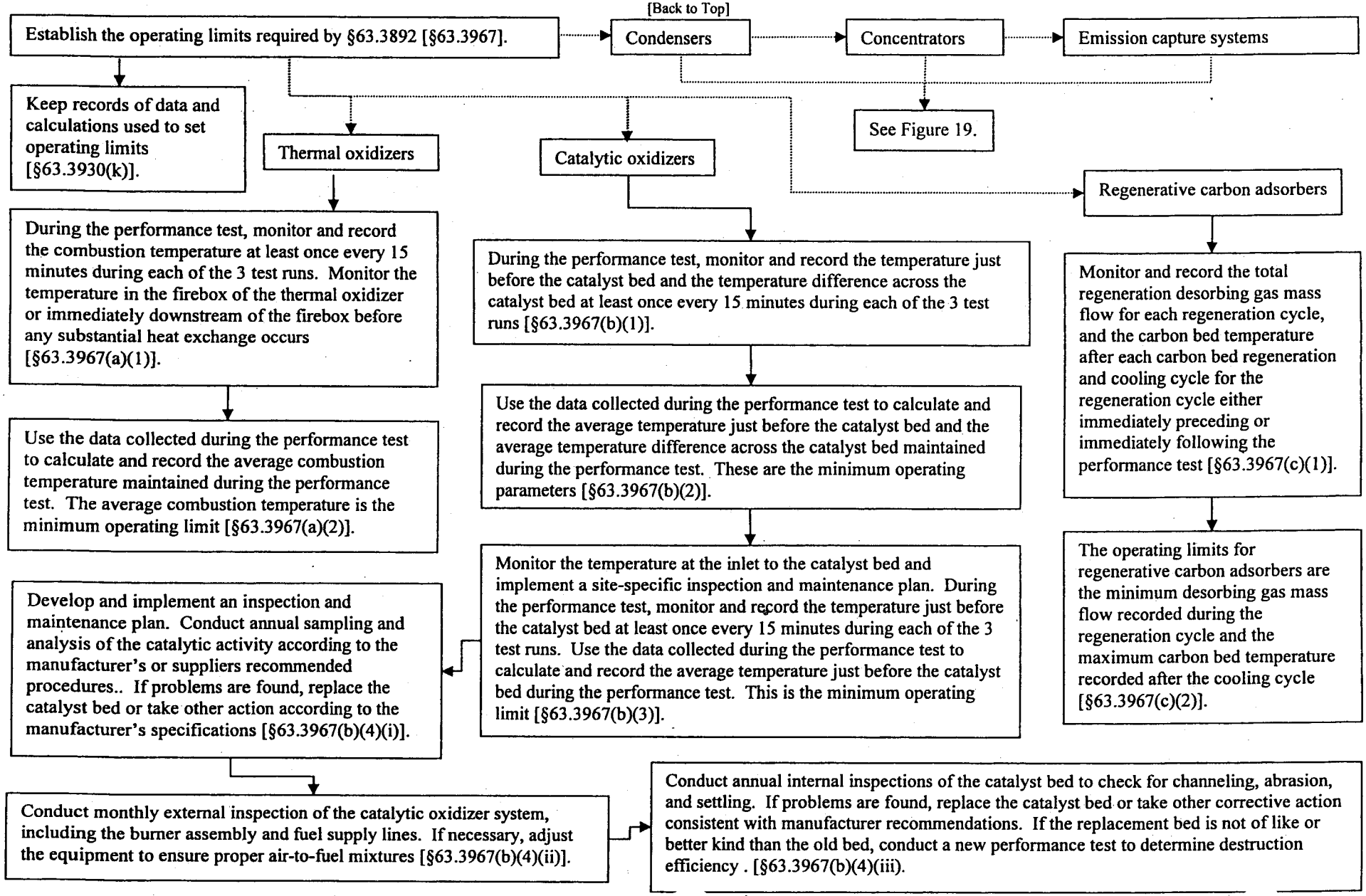


Figure 19
Establishing the Emission Capture System and Operating Limits During the Performance Test (Continued)

[Back to Top] [To Figure 18] [See Table 3]

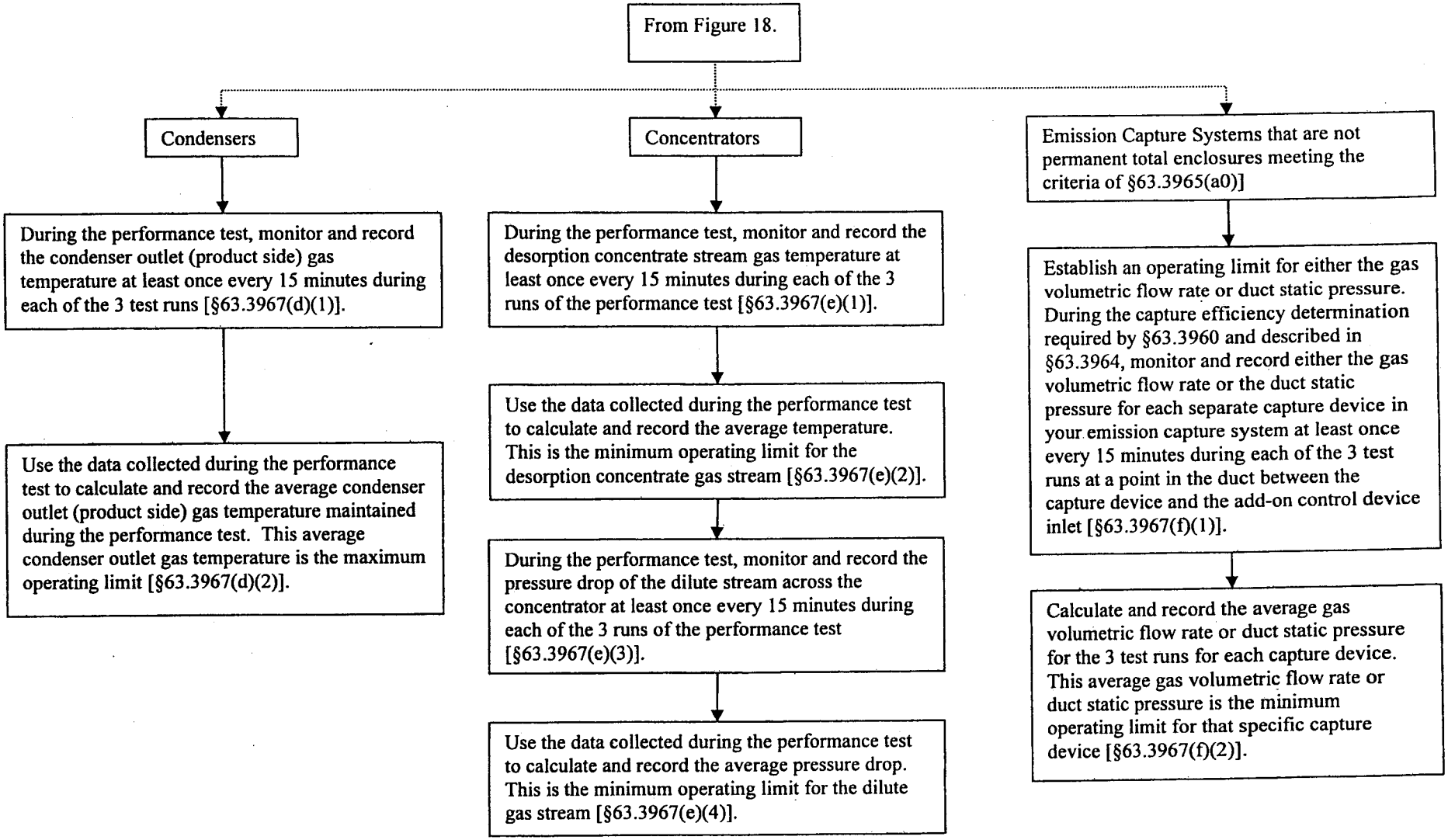


Figure 20
General Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance

[Back to Top]

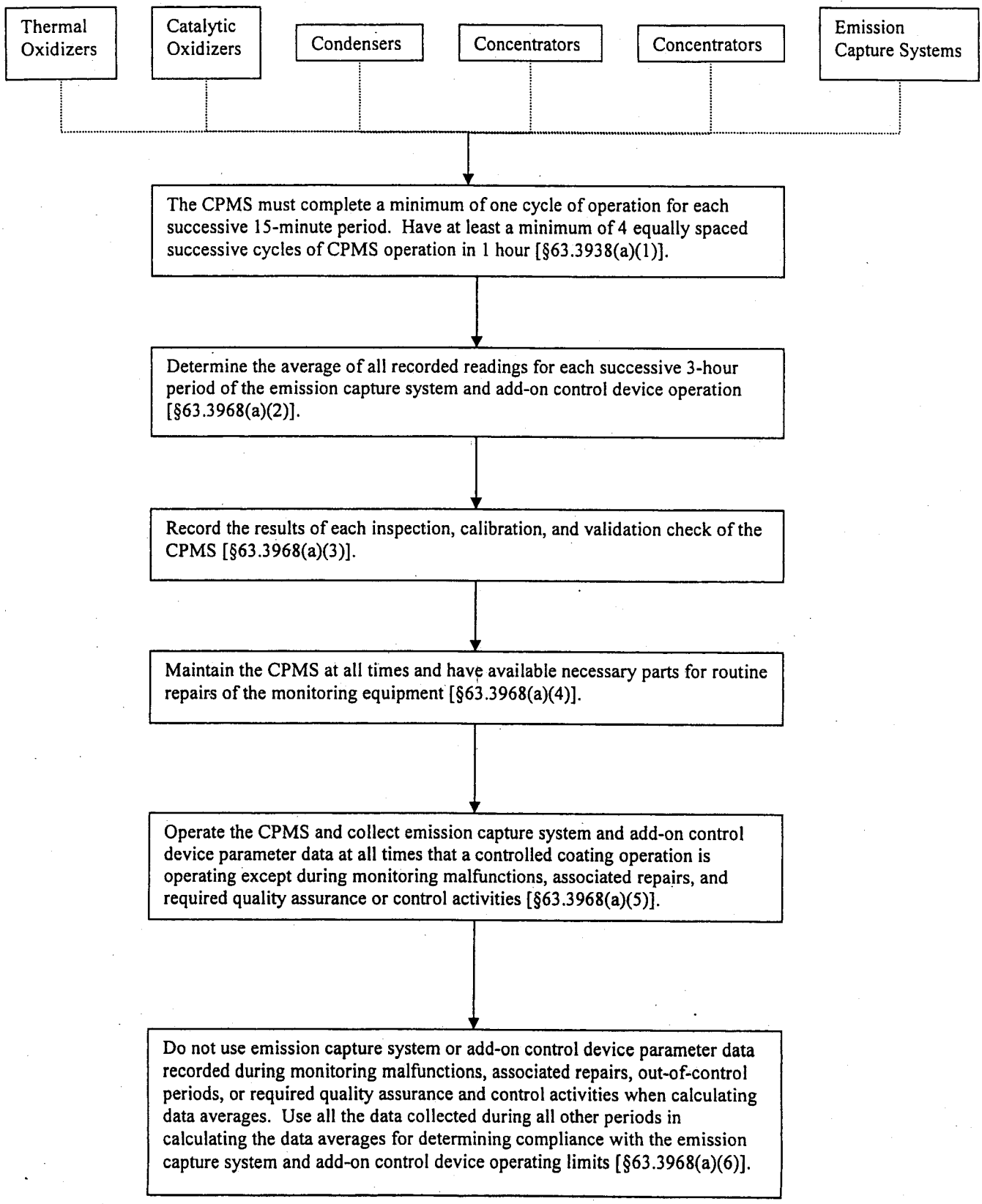


Figure 21

General Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Continued)

[Back to Top]

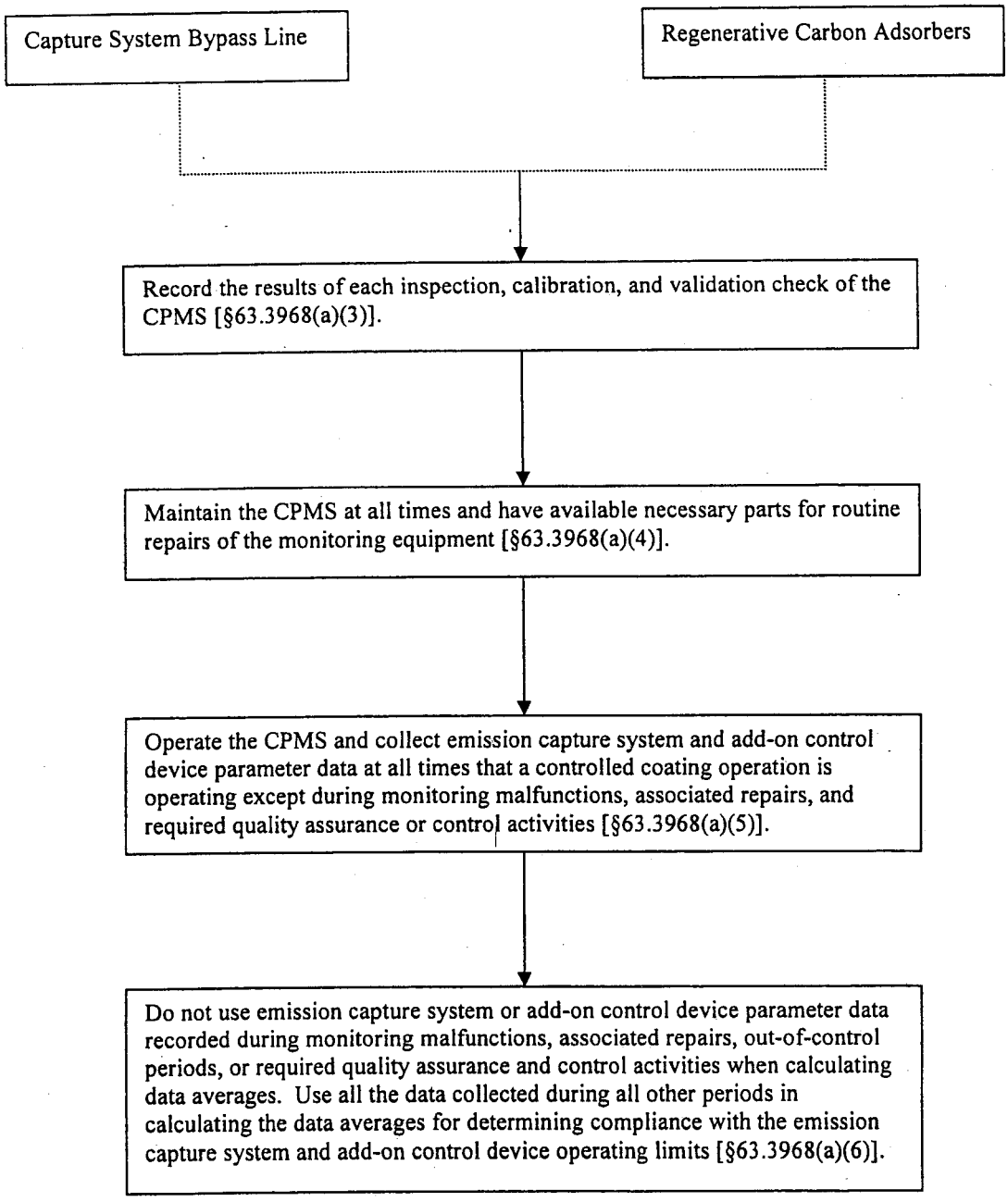


Figure 22
Specific Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Capture System Bypass Line)

[Back to Top] [See Table 3]

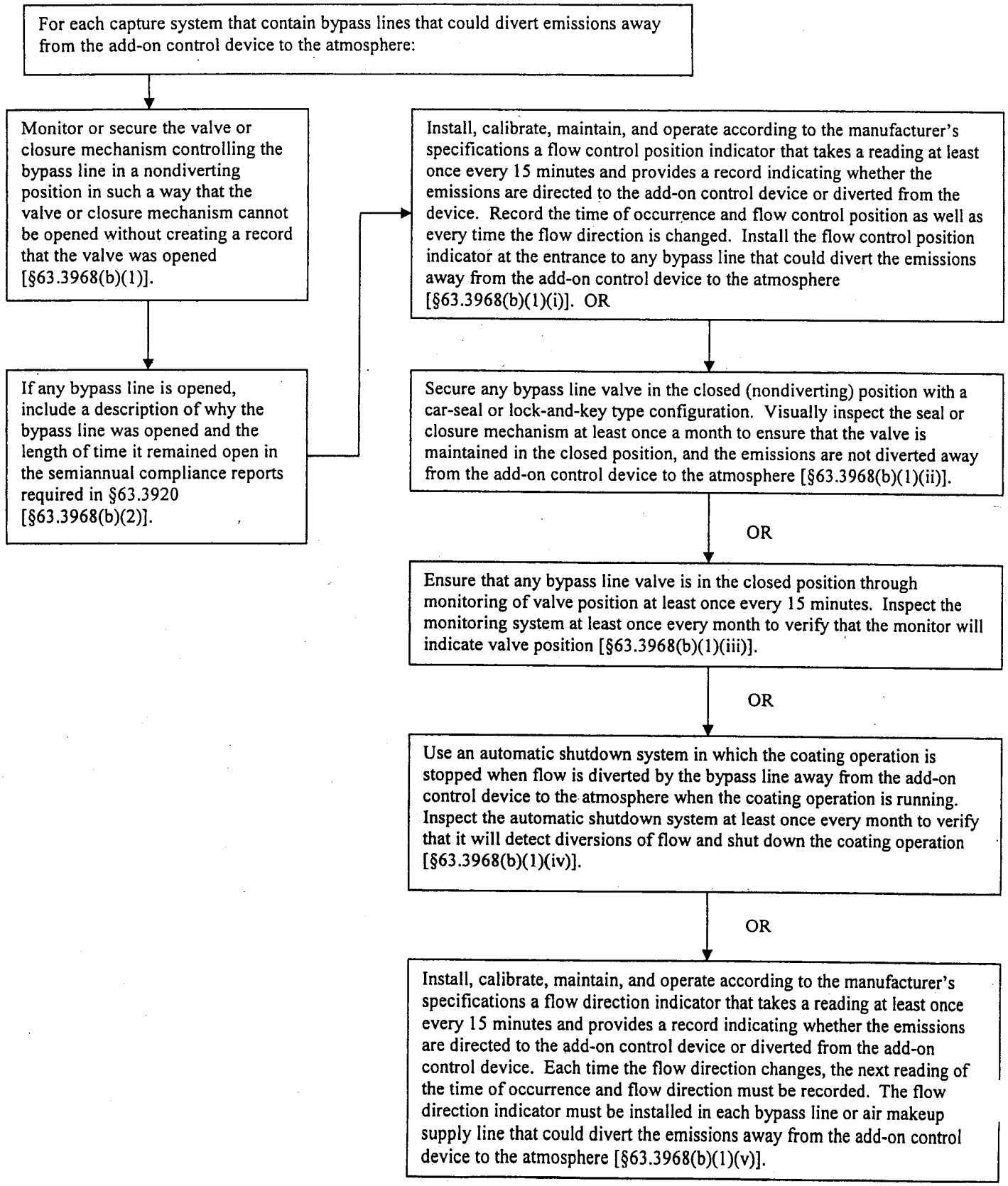


Figure 23

Specific Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Thermal and Catalytic Oxidizers)

[Back to Top] [See Table 3]

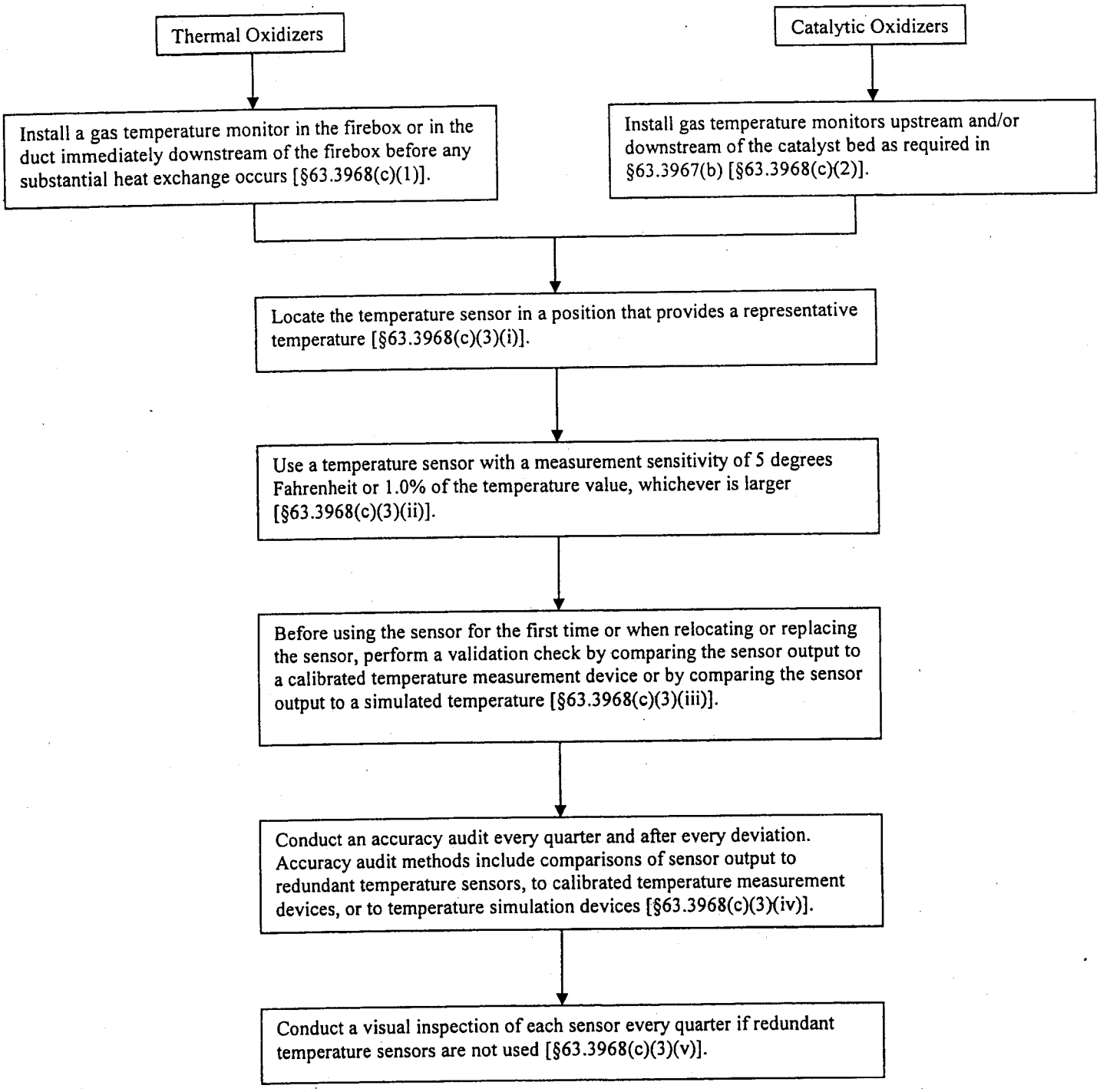


Figure 24
Specific Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Regenerative Carbon Adsorbers, Condensers, and Concentrators)

[Top of Page] [See Table 3]

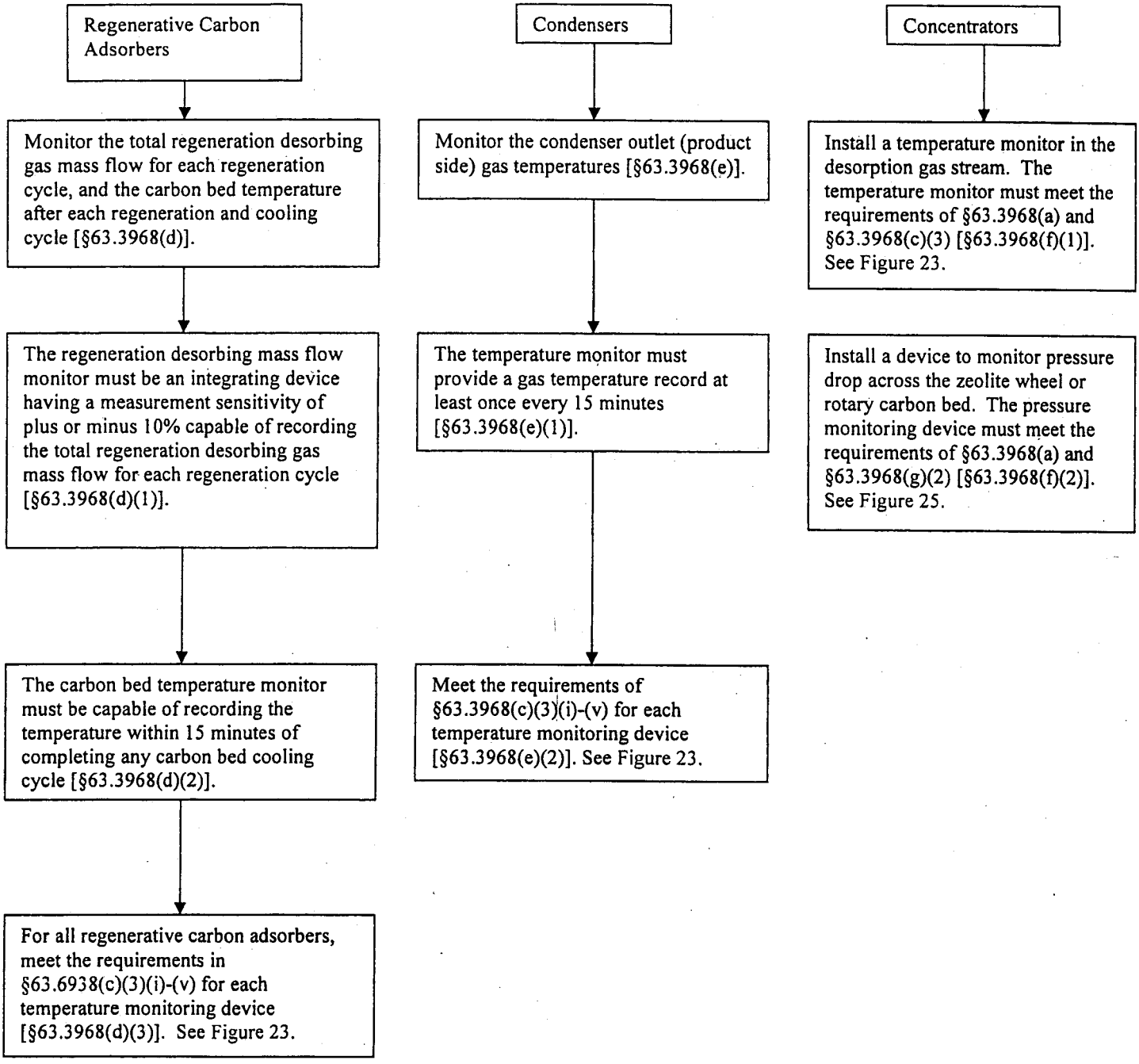


Figure 25

Specific Requirements for Continuous Parameter Monitoring System Installation, Operation, and Maintenance (Emission Capture Systems)

[Top of Page] [See Table 3]

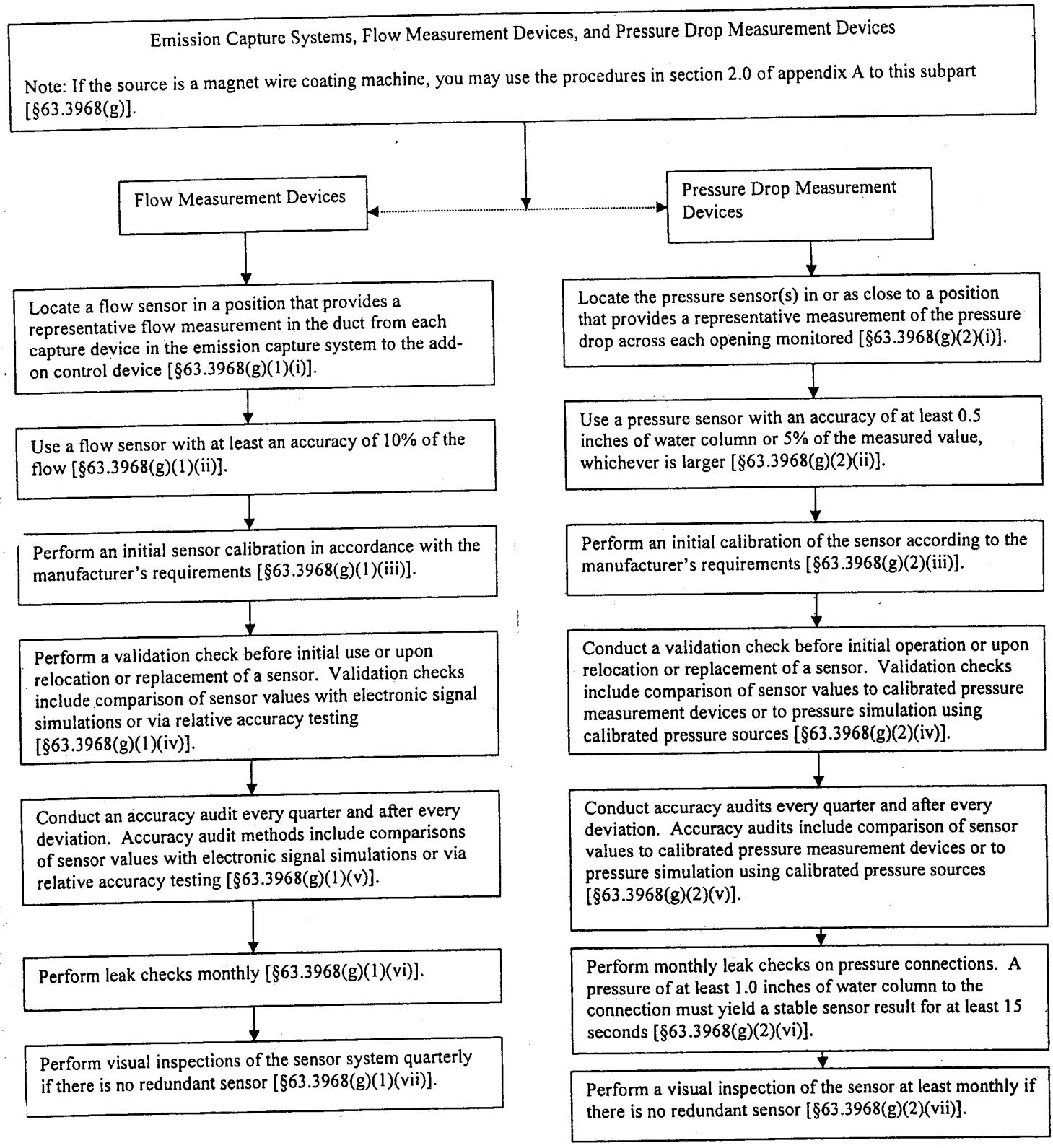


Figure 26
List of Equations

[Back to Top]

Equation 1– (§63.3941) $V_s = 1 - \frac{m_{volatiles}}{D_{avg}}$ [See Figure 2]

Equation 2 – (§63.3941) $H_c = \frac{(D_c)(W_c)}{V_s}$ [See Figure 2], [See Figure 3]

Equation 1 – (§63.3951) $H_e = A + B + C - R_w$ [See Figure 4], [See Figure 5], [See Figure 6], [See Figure 10]

Equation 1A – (§63.3951) $A = \sum_{i=1}^{m} (Vol_{c,i})(D_{c,i})(W_{c,i})$ [See Figure 4], [See Figure 5], [See Figure 10]

Equation 1B – (§63.3951) $B = \sum_{j=1}^{n} (Vol_{t,j})(D_{t,j})(W_{t,j})$ [See Figure 4], [See Figure 5], [See Figure 10]

Equation 1C – (§63.3951) $C = \sum_{k=1}^{p} (Vol_{s,k})(D_{s,k})(W_{s,k})$ [See Figure 4], [See Figure 5], [See Figure 10]

Equation 2 – (§63.3951) $V_{st} = \sum_{i=1}^{m} (Vol_{c,i})(V_{s,i})$ [See Figure 4], [See Figure 5], [See Figure 6], [See Figure 10]

Equation 3 – (§63.3951) $H_{yr} = \frac{\sum_{y=1}^{n} H_e}{\sum_{y=1}^{n} V_{st}}$ [See Figure 4], [See Figure 5]

Equation 1 – (§63.3961) $H_c = (A_c + B_c + C_c - R_w - H_{UNC})\left(\frac{CE}{100} \times \frac{DRE}{100}\right)$ [See Figure 7], [See Figure 10], [See Figure 12]

Equation 1A – (§63.3961) $A_c = \sum_{i=1}^{m} (Vol_{c,i})(D_{c,i})(W_{c,i})$ [See Figure 7], [See Figure 10], [See Figure 12]

Equation 1B – (§63.3961) $B_c = \sum_{j=1}^{n} (Vol_{t,j})(D_{t,j})(W_{t,j})$ [See Figure 7], [See Figure 10], [See Figure 12]

Equation 1C – (§63.3961) $C_c = \sum_{k=1}^{p} (Vol_{s,k})(D_{s,k})(W_{s,k})$ [See Figure 7], [See Figure 10], [See Figure 12]

Equation 1D – (§63.3961) $H_{UNC} = \sum_{h=1}^{q} (Vol_h)(D_h)(W_h)$ [See Figure 7], [See Figure 10], [See Figure 12]

Equation 2 – (§63.3961) $R_v = 100\left[\frac{M_{VR}}{\sum_{i=1}^{m} Vol_i D_i WV_{c,i} + \sum_{j=1}^{n} Vol_j D_j WV_{t,J} + \sum_{k=1}^{p} Vol_k D_k WV_{s,k}}\right]$ [See Figure 8], [See Figure 10], [See Figure 12]

Equation 3 – (§63.3961) $H_{CSR} = (A_{CSR} + B_{CSR} + C_{CSR})\left(\frac{R_v}{100}\right)$ [See Figure 8], [See Figure 10], [See Figure 12]

Equation 3A – (§63.3961) $A_{CSR} = \sum_{i=1}^{m} (Vol_{c,i})(D_{c,i})(W_{c,i})$ [See Figure 8], [See Figure 10], [See Figure 12]

Equation 3B – (§63.3961) $B_{CSR} = \sum_{j=1}^{n} (Vol_{t,j})(D_{t,j})(W_{t,j})$ [See Figure 8], [See Figure 10], [See Figure 12]

Equation 3C – (§63.3961) $C_{CSR} = \sum_{k}^{p} (Vol_{s,k})(D_{s,k})(W_{s,k})$ [See Figure 8], [See Figure 10]

Equation 4 – (§63.3961) $H_{HAP} = H_e - \sum_{i=1}^{q} (H_{c,i}) - \sum_{j=1}^{r} H_{CSR,j}$ [See Figure 6], [See Figure 10]

Equation 5 – (§63.3961) $H_{annual} = \frac{\sum_{y=1}^{n} H_{HAP,y}}{\sum_{y=1}^{n} V_{st,y}}$ [See Figure 6], [See Figure 10], [See Figure 12]

Equation 1 – (§63.3890) $\text{Facility-Specific Emission Limit} = \frac{\sum_{i=1}^{n} (Limit_i)(Solids_i)}{\sum_{i=1}^{n} (Solids_i)}$ [See Figure 13]

Equation 1 – (§63.3965) $TVH_{used} = \sum_{i=1}^{n} (TVH_i)(Vol_i)(D_i)$ [See Figure 15]

Equation 2 – (§63.3965) $CE = \frac{(TVH_{used} - TVH_{uncaptured})}{TVH_{used}} \times 100$ [See Figure 15]

Equation 3 – (§63.3965) $CE = \frac{TVH_{captured}}{(TVH_{captured} + TVH_{uncaptured})} \times 100$ [See Figure 16]

Equation 1 – (§63.3966) $M_f = Q_{sd}(12)(0.0416)(10^{-6})$ [See Figure 17]

Equation 2 – (§63.3966) $DRE = \frac{M_{fi} - M_{fo}}{M_{fi}} \times 100$ [See Figure 17]

MACT Subpart MMMM
Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table

Requirement	MACT Part 63, Subpart A	MACT Part 63, Subpart MMMM
Applicability	➢ New/reconstructed major sources must submit application for pre construction review by EPA, or by the applicable state program that has been delegated MACT standard enforcement responsibilities [§63.5] Note: A new source is one where construction commenced after December 4, 2002 of a completely new miscellaneous metal parts and products facility where previously no such facility existed.	• Applies to each new and existing major source of HAPs that uses 946 liters (250 gallons (gal)) per year, or more, or coatings that contain HAP in the surface coating of miscellaneous metal parts [40 CFR §63.3880(b)] • Miscellaneous metal parts and products include metal components of the following types of products, as well as the products themselves: motor vehicle parts and accessories, bicycles and sporting goods, recreational vehicles, extruded aluminum structural components, railroad cars, heavy duty trucks, medical equipment, lawn and garden equipment, electronic equipment, magnet wire, steel drums, industrial machinery, metal pipes, and numerous other industrial, household and consumer products. Except as provided in paragraph §63.3881(c) (and as specified in the rule), Subpart MMMM applies to the surface coating of any miscellaneous metal parts or products. [§63.3881(a)] • Specifically excluded are the following coating operations: [§63.3881(c)] • 40 CFR Part 63 Subpart QQQQ (Wood Building Products Surface Coating Operations) • 40 CFR Part 63 Subpart GG (Aerospace Industry Surface Coating Operations) • 40 CFR Part 63 Subpart II (Shipbuilding and Ship Repair Industry Surface Coating Operations) • 40 CFR Part 63 Subpart JJJJ (Paper and Other Web Surface Coating Operations) • 40 CFR Part 63 Subpart SSSS (Metal Coil Surface Coating Operations) • 40 CFR Part 63 Subpart VVVV (Boat Manufacturing Surface Coating Operations)

MACT Subpart MMMM Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table		
Requirement	**MACT Part 63, Subpart A**	**MACT Part 63, Subpart MMMM**
Applicability (cont.)		Specifically excluded (continued): • 40 CFR Part 63 Subpart NNNN (Large Appliance Surface Coating Operations) • 40 CFR Part 63 Subpart RRRR (Metal Furniture Surface Coating Operations) • 40 CFR Part 63 Subpart IIII (Automobile and Light-Duty Truck Surface Coating Operations) • Facility that uses only coatings, thinners, other additives, and cleaning materials that contain no organic HAP • Surface coating operations that occur at research or laboratory facilities, or as part of janitorial, building, and facility maintenance operations, or that occur at hobby shops that are operated for noncommercial purposes. [§63.3881(c)(2)] • Surface coating operations of metal parts or products that use less than 189 liters (50 gal) of coating per year, provided that the total volume of exempt coatings does not exceed 946 liters (250 gal). [§63.3881(c)(4)] • Surface coating operations of metal parts or products performed at on-site installations owned or operated by Armed Forces of the United States or the National Aeronautics and Space Administration, or the surface coating of military munitions manufactured by for the Armed Forces of the United States. [§63.3881(c)(4)] • Plastic extruded onto metal, e.g., wire [§63.3881(c)(5)]
Emission/ Operating Limits		**Emission Limits** (1) Comply with the following subcategory emission limits [§63.3890(a) and (b)]: General Use Coating (i) New source - Limit organic HAP emissions to no more than 0.23 kg (1.9 lb) organic HAP per liter (gal) of coating solids used during each 12-month compliance period (ii) Existing source – Limit organic HAP emissions to no more than 0.31 kg (2.6 lb) organic HAP per liter (gal) coating solids used during each 12-month compliance period

MACT Subpart MMMM
Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table

Requirement	MACT Part 63, Subpart A	MACT Part 63, Subpart MMMM
Emission/ Operating Limits (cont.)		<u>High Performance Coating</u> (i) New source – Limit organic HAP emissions to no more than 3.3 kg (27.5 lb) organic HAP per liter (gal) coating solids used during each 12-month compliance period (ii) Existing source - Limit organic HAP emissions to no more than 3.3 kg (27.5 lb) organic HAP per liter (gal) coating solids used during each 12-month compliance period <u>Magnet Wire Coating</u> (i) New source - Limit organic HAP emissions to no more than 0.050 kg (0.44 lb) organic HAP per liter (gal) coating solids used during each 12-month compliance period (ii) Existing source - Limit organic HAP emissions to no more than 0.12 kg (1.0 lb) organic HAP per liter (gal) coating solids used during each 12-month compliance period <u>Rubber-to-Metal Coating</u> (i) New source – Limit organic HAP emissions to no more than 0.81 kg (6.8 lb) organic HAP per liter (gal) coating solids used during each 12-month compliance period (ii) Existing source – Limit organic HAP emissions to no more than 4.5 kg (37.7 lb) organic HAP per liter (gal) coating solids used during each 12-month compliance period <u>Extreme Performance Fluoropolymer Coating</u> (i) New source – Limit organic HAP emissions to no more than 1.5 kg (12.4 lb) organic HAP per liter (gal) coating solids used during each 12-month compliance period (ii) Existing source – Limit organic HAP emissions to no more than 1.5 kg (12.4 lbs) organic HAP per liter (gal) coating solids used during each 12-month compliance period - OR – (2) If your source surface coating operation meets the applicability criteria of more than one of the subcategory emission limits, you can either comply with each subcategory emission limit or comply by one of the following alternatives. [§63.3890(c)] (i) Comply with the predominant activity (accounts for 90 percent or more of the surface coating activity at your facility) emission limit for all surface coating operations (constitutes compliance with the other applicable emission limits). Only general use or

MACT Subpart MMMM Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table		
Requirement	**MACT Part 63, Subpart A**	**MACT Part 63, Subpart MMMM**
Emission/ Operating Limits (cont.)		magnet wire surface coating operations can be designated as the predominant activity. Operations must be verifiable through documentation. [§63.3890(c)(1)] (ii) Comply with a facility-specific emission limit that accounts for all coating activities meeting applicability criteria of multiple subcategories and/or other surface coating NESHAPs. [§63.3890(c)(2)] **Operating Limits** (1) You are not required to meet any operating limits if you use the compliant material option or emission rate without add-on controls option. [§63.3892(a)] (2) For controlled coating operation(s) where you use the emission rate with add-on controls option (except those for which you use a solvent recovery system and conduct a liquid-liquid material balance), you must meet the following emission capture and control system operating limits. [§63.3892(b); Table 1 to Subpart MMMM] (i) When complying using thermal oxidation, maintain a rolling 3-hour average combustion zone temperature at or above that demonstrated during the compliance test. (ii) When complying using a catalytic oxidizer, maintain a rolling 3-hour average catalyst bed inlet temperature at or above that demonstrated during the compliance test. Also, maintain temperature rise across catalyst bed at or above that demonstrated during the compliance test. Alternatively, develop and implement an inspection and maintenance plan for the oxidizer. (iii) When complying by using a regenerative carbon adsorber, maintain the desorbing gas mass flow for each carbon bed regeneration cycle at or above the total regeneration desorbing gas mass flow limit established according to the initial compliance test, and maintain the temperature of the carbon bed at or below the carbon bed temperature limit established during the initial compliance test. (iv) When complying by using a condenser, maintain the average condenser outlet gas temperature in any 3-hour period at or below the temperature limit established during the initial compliance test. (v) When complying by using a concentrator, including zeolite wheels and rotary carbon adsorbers, maintain a rolling 3-hour average of the gas temperature of the desorption

MACT Subpart MMMM
Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table

Requirement	MACT Part 63, Subpart A	MACT Part 63, Subpart MMMM
Emission /Operating Limits (cont.)		concentrate stream at or above the limit established during the initial compliance test, and a rolling 3-hour average pressure drop of the dilute stream across the concentrator at or above the limit established during the initial compliance test. (vi) When complying by using an emission capture system that is a permanent total enclosure, maintain the direction of the air flow at all times into the enclosure, and either (a) maintain the average facial velocity of air through all natural draft openings in the enclosure at least 200 feet per minute; or (b) maintain the pressure drop across the enclosure at 0.007 inches H_2O or more. (vii) When complying by using an emission capture system that is not a permanent total enclosure, maintain a 3-hour rolling average of the average gas volumetric flow rate or duct static pressure in each duct between a capture device and add-on control device inlet at levels at or above the average established for that capture device.
Other - Work Practice Standards	➢ Operate and maintain source and control equipment consistent with good air pollution control practices [§63.6(e)(1)] ➢ Develop and implement a written start-up, shutdown, and malfunction plan (SSMP) for affected source and control equipment [§63.6(e)(3)]	(1) For any coating operation(s) on which you use the compliant material option or the emission rate without add-on controls option, you are not required to meet any work practice standards. [§63.3893(a)] (2) If you use the emission rate with add-on controls option, you must develop and implement a work practice plan to minimize organic HAP emissions from storage, mixing, and conveying of coatings, thinners, and/or other additives, and cleaning materials used in, and waste materials generated by the controlled coating operation(s) for which you use this option; or you must meet an alternative standard (as provided in §63.6(g)). The plan must specify practices and procedures to ensure that, at a minimum, the following elements are implemented. [§63.3893(b)] (i) All organic-HAP-containing coatings, thinners and/or other additives, cleaning materials, and waste materials must be stored in closed containers. (ii) Spills of organic-HAP-containing coatings, thinners and/or other additives, cleaning materials, and waste materials must be minimized. (iii) Organic-HAP-containing coatings, thinners and/or other additives, cleaning materials, and waste materials must be conveyed from one location to another in closed containers or pipes.

MACT Subpart MMMM Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table		
Requirement	**MACT Part 63, Subpart A**	**MACT Part 63, Subpart MMMM**
Testing (cont.)		**Emission Rate Without Add-On Controls Options** When complying using the emission rate without add-on controls option, no additional add-on control devices or performance tests are required. The organic HAP emission rate must not exceed the emission limit either for each subcategory, or for the predominant activity or facility-specific emission limit, as applicable [§§63.3951, 63.3952]. **Emission Rate With Add-On Controls Option** (1) Existing affected sources: All emission capture systems, add-on control devices, and continuous parameter monitoring systems (CPMS) must be installed and operating no later than January 2, 2007. (i) Conduct a performance test of each capture system and add-on control device according to the procedures in §§63.3964, 63.3965, and 63.3966 and establish the operating limits required by §63.3892 no later January 2, 2007. (ii) For a solvent recovery system with liquid-liquid material balance, you must initiate the first material balance no later than January 2, 2007. (iii) Magnet wire coating operations may, with approval, test a single representative magnet wire coating machine. (2) New and reconstructed affected sources: All emission capture systems, add-on control devices, and continuous parameter monitoring systems (CPMS) must be installed and operating upon initial startup. (i) Conduct a performance test of each capture system and add-on control device according to the procedures in §§63.3964, 63.3965, and 63.3966 and establish the operating limits required by §63.3892 no later 180 days after initial startup. (ii) For a solvent recovery system with liquid-liquid material balance, you must initiate the first material balance no later than initial startup. (3) Conduct performance tests under representative operating conditions for the coating operation, and with the emission capture system and add-on control device operating at a representative flow rate, and the add-on control device operating at a representative inlet concentration [§63.3964].

MACT Subpart MMMM
Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table

Requirement	MACT Part 63, Subpart A	MACT Part 63, Subpart MMMM
Other - Work Practice Standards (cont.)		(iv) Mixing vessels which contain organic-HAP-containing coatings and other materials must be closed except when adding to, removing, or mixing the contents. (v) Emissions or organic HAP must be minimized during cleaning of storage, mixing, and conveying equipment
Testing	➢ Notification of test at least 60 days in advance [§63.7(b)]. ➢ Development and, if requested, submittal of site-specific test plan at least 60 days in advance of test [§63.7(c)]. ➢ CMS Performance Evaluations for VOC inlet/outlet mass rate monitoring system with initial test [§63.8(e)].	**General Requirements Applicable to all Compliance Options** (1) Determine the mass fraction of organic HAP for each coating, thinner and/or other additive, and cleaning material, either (i) using Method 311, (ii) using Method 24 to determine the mass fraction of nonaqueous volatile matter and use that value as a substitute, (iii) using information from the supplier or manufacturer of the material, or (iv) using an alternative test method approved by EPA [§63.3941(a)]. (2) Determine the volume fraction of coating solids for each coating either (i) using specified analytical procedures, (ii) using information from the supplier or manufacturer of the material, (iii) by calculation, or (iv) using an alternative test method approved by EPA [§63.3941(b)]. (3) Determine the density of each coating, either (i) using specified analytical procedures, (ii) using information from the supplier or manufacturer of the material, or (iii) using specific gravity data for pure chemicals [§63.3941(c)]. See also subpart A. **Compliant Material Option Requirements** When complying using the compliant material option, no additional add-on control devices or performance tests are required. Each coating must not exceed the emission limit, and each thinner and/or other additive, and cleaning material must not contain any organic HAP [§§63.3941, 63.3942].

MACT Subpart MMMM
Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table

Requirement	MACT Part 63, Subpart A	MACT Part 63, Subpart MMMM
Testing (cont.)		(4) Determine the emission capture system efficiency. If the capture efficiency does not meet the criteria for 100 percent assumption at §63.3965(a), measure the capture efficiency using the liquid-to-uncaptured-gas protocol using a temporary total enclosure or building enclosure, the gas-to-gas protocol using a temporary total enclosure or a building enclosure, or an alternative capture efficiency protocol approved by EPA [§63.3965]. (5) Determine add-on control device emission destruction or removal efficiency (inlet and outlet mass flow on dry basis) as part of the performance test, using specified test protocols. If two or more add-on control devices are used for the same emission stream, then you must measure emissions at the outlet to the atmosphere of each device [§63.3966]. (6) Except for solvent recovery system with liquid-liquid material balance, operate the CPMS during the performance test to establish operating limits [§63.3967]. (7) When complying using the emission rate with add-on controls option, the organic HAP emission rate must not exceed the emission limit either for each subcategory, or for the predominant activity or facility-specific emission limit, as applicable. Also comply with operating limits (except for solvent recovery systems for which you conduct liquid-liquid material balances), and work practice requirements [§§63.3961, 63.3963].
Equipment Monitoring	➢ Operate and maintain CEMS consistent with good air pollution control practices, in accordance with manufacturer's specifications for installation, operation and calibration [§63.8(c)(1) - (c)(3)].	You must install, operate, and maintain each continuous parameter monitoring system according to §63.3968 as follows: (1) General requirements: You must install, operate and maintain each CPMS according to the following [§63.3968(a)]: (i) CPMS must complete a minimum of one cycle of operation for each successive 15 minute period, and you must have a minimum of four equally spaced successive cycles of CPMS operation in 1 hour. (ii) You must determine the average of all recorded readings for each successive 3-hour period of the emission capture system and add-on control device operation.

MACT Subpart MMMM Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table		
Requirement	**MACT Part 63, Subpart A**	**MACT Part 63, Subpart MMMM**
Equipment Monitoring (cont.)		(iii) You must record the results of each inspection, calibration, and validation check of the CPMS. (iv) You must maintain the CPMS at all times and have available necessary parts for routine repairs of the monitoring equipment. (v) You must operate the CPMS and collect emission capture system and add-on control device parameter data at all times that a controlled coating operation is operating, except during monitoring malfunctions, associated repairs, and required quality assurance or control activities. (vi) You must not use emission capture system or add-on control device parameter data recorded during monitoring malfunctions, associated repairs, out-of-control periods, or required quality assurance or control activities when calculating data averages. You must use all the data collected during all other periods in calculating the data averages for determining compliance with the emission capture system and add-on control device operating limits. (vii) A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the CPMS to provide valid data. (2) Capture system bypass line-specific requirements. [§63.3968(b)] (i) You must monitor or secure the valve or closure mechanism controlling the bypass line in a nondiverting position in such a way that the valve or closure mechanism cannot be opened without creating a record that the valve was opened. The method used to monitor or secure the valve or closure mechanism must meet the reqs. of §63.3968(b)(1). (ii) If any bypass line is opened, you must include a description of why the bypass line was opened and the length of time it remained open in the semiannual compliance reports. (3) Thermal oxidizer and catalytic oxidizer-specific requirements. [§63.3968(c)] (i) For a thermal oxidizer, install a gas temperature monitor in the firebox of the thermal oxidizer or in the duct immediately downstream of the firebox before any substantial heat exchange occurs.

MACT Subpart MMMM
Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table

Requirement	MACT Part 63, Subpart A	MACT Part 63, Subpart MMMM
Equipment Monitoring (cont.)		(ii) For a catalytic oxidizer, install gas temperature monitors upstream and/or downstrem of the catalyst bed as required in §63.3967(b). (iii) For all thermal oxidizers and catalytic oxidizers, meet the temperature sensor location, calibration, accuracy audit, measurement, and visual inspection requirements of §63.3968(c)(3). (4) Regenerative carbon adsorber-specific requirements. [63.3968(d)] (i) Regeneration desorbing gas mass flow monitor must be an integrating device having a measurement sensitivity of plus or minus 10 percent capable of recording the total regenerative.desorbing gas mass flow for each regeneration cycle. (ii) The carbon bed temperature monitor must be capable of recording the temperature within 15 minutes of completing any carbon bed cooling cycle. (iii) For regenerative carbon adsorbers, you must meet the temperature sensor location, calibration, accuracy audit, measurement, and visual inspection requirements of §63.3968(c)(3)(i) through (v) for each temperature monitoring device. (5) Condenser-specific requirements. [§63.3968(e)] (i) The temperature monitor must provide a gas temperature record at least once every 15 minutes. (ii) For all condensers, you must meet the temperature sensor location, calibration, accuracy audit, measurement, and visual inspection requirements of §63.3968((c)(3)(i) through (v) for each temperature monitoring device. (6) Concentrator-specific requirements. [§63.3968(f)] (i) You must install a temperature monitor in the desorption gas stream. The temperature monitor must meet the temperature sensor location, calibration, accuracy audit, measurement, and visual inspection requirements of §63.3968(c)(3)(i) through (v). (ii) You must install a device to monitor pressure drop across the zeolite wheel or rotary carbon bed that meets the pressure drop measurement device-specific pressure sensor location, accuracy, calibration, validation, accuracy audit, leak and visual inspection requirements of §63.3968(g)(2).

MACT Subpart MMMM
Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table

Requirement	MACT Part 63, Subpart A	MACT Part 63, Subpart MMMM
Equipment Monitoring (cont.)		(7) Emission capture system-specific requirements. [§63.3968(g)] (i) For each flow measurement device, you must meet the location, accuracy, calibration, validation, accuracy leak, and visual inspection requirements of §63.3968(g)(1). (ii) For each pressure drop measurement device, you must meet the specific pressure sensor location, accuracy, calibration, validation, accuracy audit, leak and visual inspection requirements of §63.3968(g)(2).
Recordkeeping	➢ Written SSM plan and other recordkeeping relevant to SSM periods and CMS [§63.6(e)(3), §63.10(b) and (c)]. ➢ Records showing consistency of actions with SSM plan [§63.6(e)(3)(iii), §63.10(b)(2)]. ➢ Records showing any actions inconsistent with SSM plan [§63.6(e)(3)(iv)]. ➢ A record of data from CMS measurements, audits, calibrations, and malfunctions [§63.10(b)(2), §63.10(c)(1)-(6), (9)-(15)]. ➢ Records of all reports and notifications [§63.10(b)].	You must collect and keep records of the data and information specified in 40 CFR Part 63, Subpart MMMM, Section 63.3930 and the General Provisions, as specified in Table 2 to Subpart MMMM. A summary of those requirements include the following [§63.3930]: (1) Copies of each notification and report submitted to comply with 40 CFR Part 63, Subpart MMMM, and the documentation supporting each notification and report. (2) Records of data and calculations used to determine predominant activity or facility-specific emission limit. (3) Current copies of information provided by materials suppliers or manufacturers. (4) Test reports for facility determination of mass fraction of organic HAP, density, or volume fraction of coating solids. (5) For each compliance period, maintain the following records: (i) Record of coating operations and compliance option used, as applicable (ii) For compliant material option, a record of the calculation of the organic HAP content for each coating. (iii) For the emission rate without add-on controls option, a record of the calculation of the total mass of organic HAP emissions for the coatings, thinners and/or other additives, and cleaning materials used, and, if applicable, the calculation used to determine mass organic HAP in waste materials, the calculation of the total volume of solids used each month, and the calculation of each 12-month organic HAP emission rate.

MACT Subpart MMMM
Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table

Requirement	MACT Part 63, Subpart A	MACT Part 63, Subpart MMMM
Recordkeeping (cont.)	➢ Records of each applicability determination [§63.10(b)(3)].	(iv) For the emission rate with add-on controls options, records of the calculations specified in §63.3930(a)(4)(i) through (v). (6) A record of the name and volume of each coating, thinner and/or other additive, and cleaning material used rather than a record of the volume used during each compliance period. (7) A record of the mass fraction of coating solids for each coating used during each compliance period. (8) A record of the volume fraction of coating solids for each coating used during each compliance period. (9) If you use either the emission rate without add-on controls or the emission rate with add-on controls compliance option, the density for each coating, thinner and/or other additive, and cleaning material used during each compliance period. (10) If you use an allowance in Equation 1 of §63.3951 for organic HAP contained in waste materials sent to or designated for shipment to a treatment, storage, and disposal facility, you must keep records of the information specified in §63.3951(h)(1) though (3). (11) Records of the date, time, and duration of each deviation. (12) If you use the emission rate with add-on controls option, you must keep the records specified in §63.3951(k)(1) through (8). (13) See also Subpart A (General Provisions) Records are to be maintained on-site for 2 years and maintained for a total of 5 years. Records must be in a form suitable and readily available for expeditious review. [§63.3931].

MACT Subpart MMMM
Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table

Requirement	MACT Part 63, Subpart A	MACT Part 63, Subpart MMMM
Reporting	➢ Application for Approval of Construction/Reconstruction [§63.5] ➢ Initial notification of standard applicability [§63.9(b)]. ➢ Notification of Compliance Status [§63.9(h)] ➢ SSM plan submittal, if requested [§63.6(e)(3)]. ➢ Notification of initial performance test and submittal of site-specific test plan if requested [§63.7(b), 7(c) & 9(e)]. ➢ Submittal of performance test report [§63.7(g)]. ➢ Semiannual SSM reports [§63.10(d)(5)]	(1) You must submit the notifications in §§63.7(b) and (c), 63.8(f)(4), and 63.9(b) through (e) and (h) that apply to you by the dates specified in those sections, except: (i) For existing sources, submit an initial notification by January 2, 2005. For new or reconstructed sources, submit an initial notification no later than 120 days after January 2, 2004, or no later than 120 days after startup, whichever is later. [§63.3910(b)]. (ii) Notification of Compliance Status. Must be submitted no later than 30 calendar days following the end of the initial compliance period. [§63.3910(c). Specifics required to be included in report are specified in §63.3910(c). (2) Semiannual Compliance Reports. Dates, Inclusion with Title V report, General Requirements, and the specifics to be included in reports (e.g., deviations), are specified in §63.3920(a). (i) The first semiannual compliance report must cover the first semiannual reporting period which begins the day after the end of the initial compliance period. The initial compliance period begins on the compliance date (January 2, 2007 for existing sources) and ends on the last day of the twelfth full month afterward (January 31, 2008 for existing sources). The first semiannual report covers the first semiannual reporting period which begins the day after the end of the initial compliance period and ends on the following June 30 or December 31 (June 30, 2008 for existing sources.) (ii) Each subsequent semiannual compliance report must cover the subsequent semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31. (iii) For each affected source that is subject to permitting regulations pursuant to 40 CFR part 70 or 40 CFR part 71, and if the permitting authority has established dates for submitting semiannual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), you may submit the first and subsequent compliance reports according to the dates the permitting authority has established. (iv) Each semiannual compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period.

MACT Subpart MMMM Work Practice, Testing, Monitoring, Recordkeeping, and Reporting Summary Table		
Requirement	**MACT Part 63, Subpart A**	**MACT Part 63, Subpart MMMM**
Reporting (cont.)		(3) Performance Test Reports. If you use the emission rate with add-on controls option, you must submit reports of performance test results for emission capture systems and add-on control devices no later than 60 days after completing the tests as specified in §63.10(d)(2) (4) Startup, Shutdown, and Malfunction Reports. If you used the emission rate with add-on controls option and you had a startup, shutdown, or malfunction during the semi-annual reporting period, and your actions were consistent with your startup, shutdown and malfunction plan, you must include the information specified in §63.10(d) in the semiannual compliance report. If your actions were not consistent with your plan, you must submit an immediate startup, shutdown, and malfunction report as specified in §63.3920(c)(2)(i) and (ii). (5) See also Subpart A (General Provisions) (6) See also Compliance Timeline