

Compliance Options Diagrams

The Paper and Other Web Coating (POWC) MACT contains more than one option for compliance, each resulting in different monitoring, recordkeeping, and reporting requirements. The Compliance Options Diagrams were developed as a road map for affected facilities or regulatory agencies to use to help them understand the applicable requirements associated with each option.

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Credits: This document was made possible through the efforts of the POWC Implementation Tool Development Partnership effort, an effort to bring together the regulated and regulatory community. It was through a group effort that this document was developed. The logo of the partner who was the lead for this tool is listed first below. To see a description of our partners or to get more information about the partnership effort, see <http://www.epa.gov/ttn/atw/powc/powcpg.html>



New York State Department of
Environmental Conservation



Figure 1
Compliance Options under Subpart JJJJ

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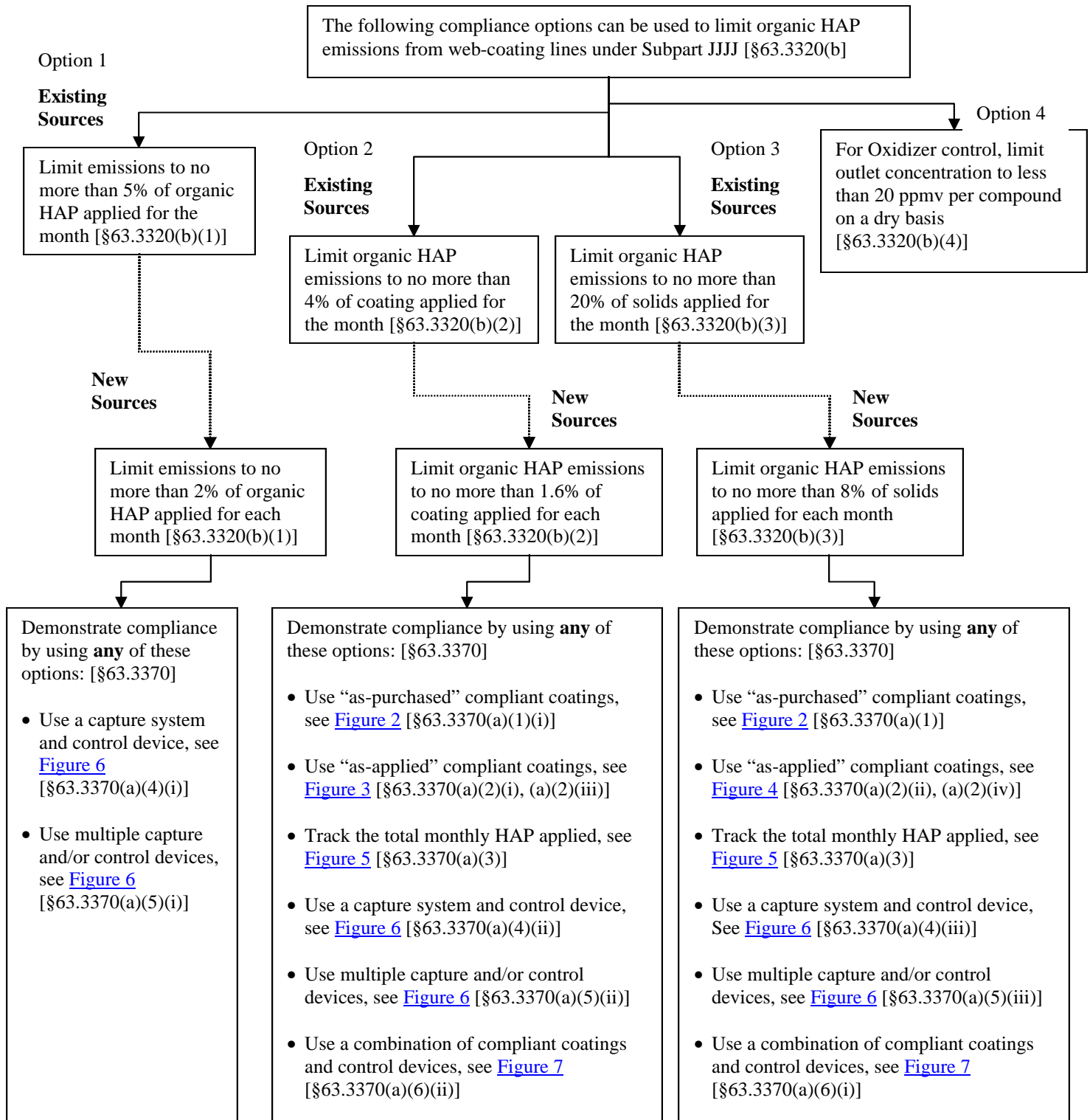
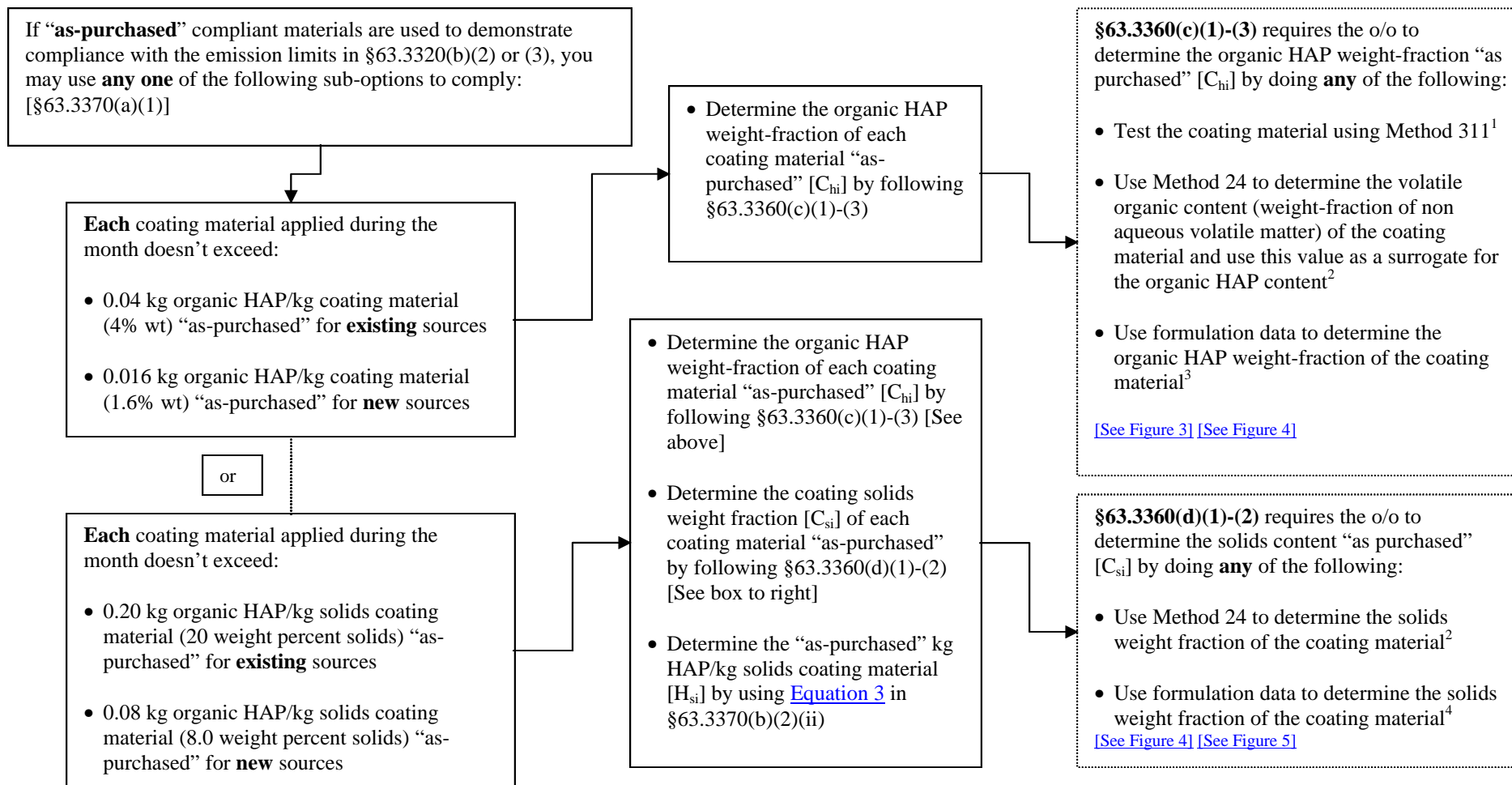


Figure 2
Demonstrate Compliance by Using “As-Purchased” Compliant Coatings (Option 2 or 3)

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¹Follow §63.3360(c)(1)(i)-(iii) to determine the organic HAP mass fraction. The manufacturer may perform Method 311 determination.

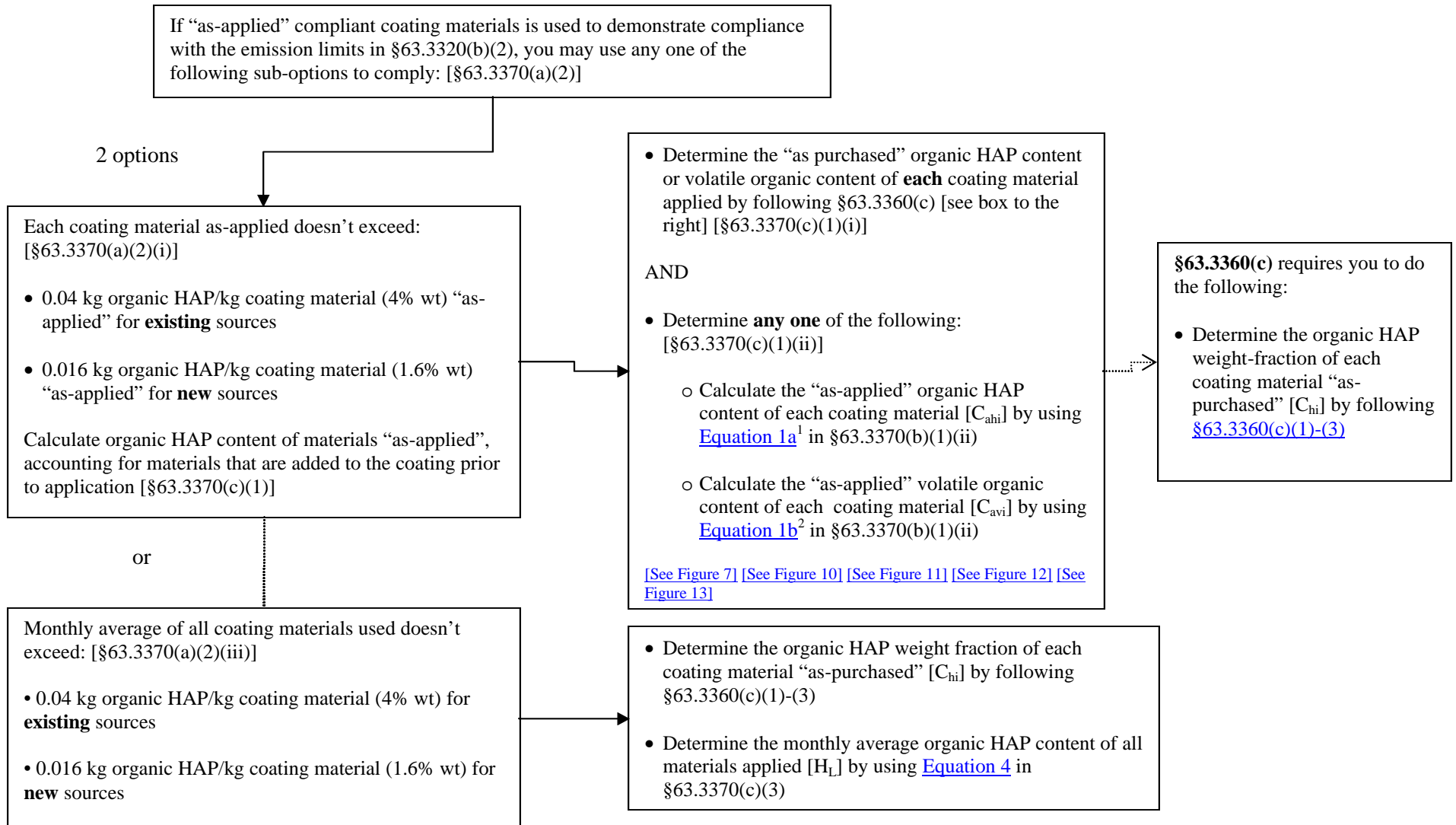
²Follow §63.3360(d)(1) to determine volatile organic and solids content. The manufacturer may perform Method 24 determination.

³Formulation data must represent all organic HAP present at levels 0.1% for carcinogens and 1.0% for non-carcinogens in any raw material used, weighted by the mass fraction of each raw material used. The manufacturer may provide formulation data. In the event there is any inconsistency between Method 311 and formulation data, the results of Method 311 will govern.

⁴In the event there is any inconsistency between Method 24 and formulation data, the results of Method 24 will govern.

Figure 3
Demonstrate Compliance by Using “As-Applied” Compliant Coatings (Option 2)

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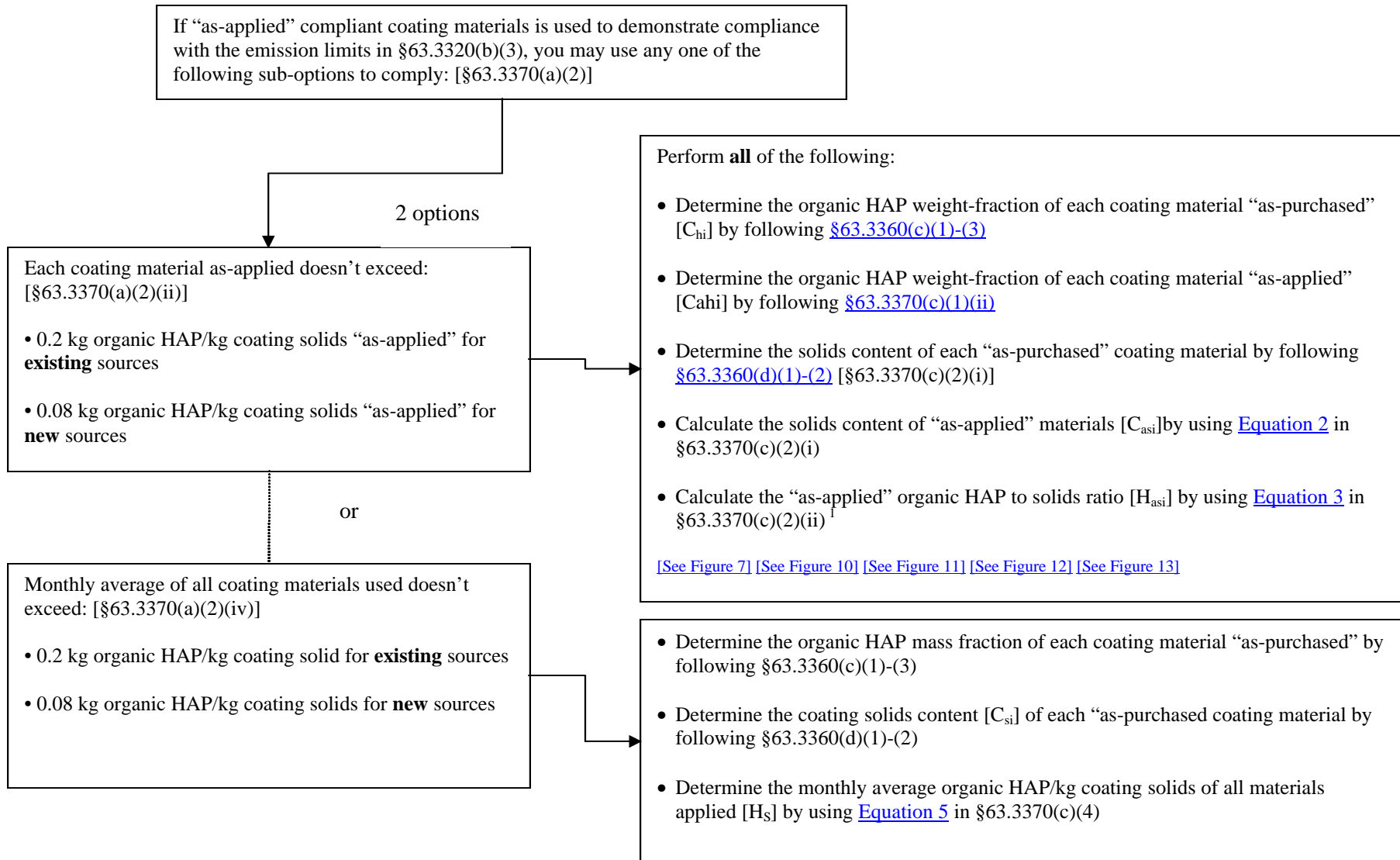


¹If solvent or other materials are not added to the as-purchased coating material, then the as-applied organic HAP mass fraction is equal to the as-purchased organic HAP mass fraction.

²Follow this method if you choose to use the volatile organic mass fraction as a surrogate for the organic HAP mass fraction of coatings.

Figure 4
Demonstrate Compliance by Using “As-Applied” Compliant Coatings (Option 3)

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¹If solvent or other materials are not added to the “as-purchased” coating materials, then the “as-applied” kg organic HAP/kg coating solids is equal to the “as-purchased” kg organic HAP/kg coating solids.

Figure 5
Demonstrate Compliance by Tracking the Total Monthly HAP Applied

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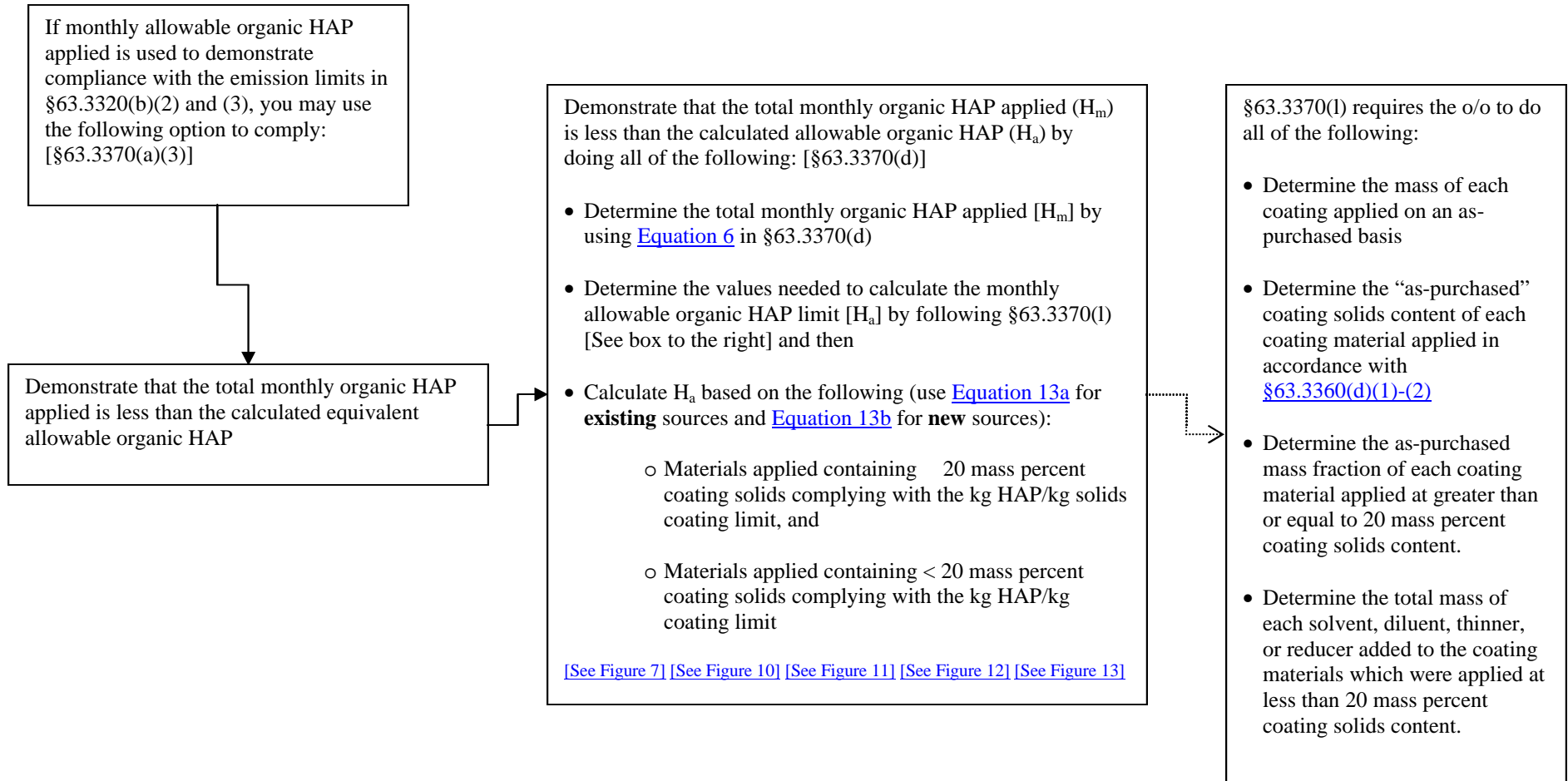


Figure 6 Demonstrate Compliance by Using a Control Device (Option 1)

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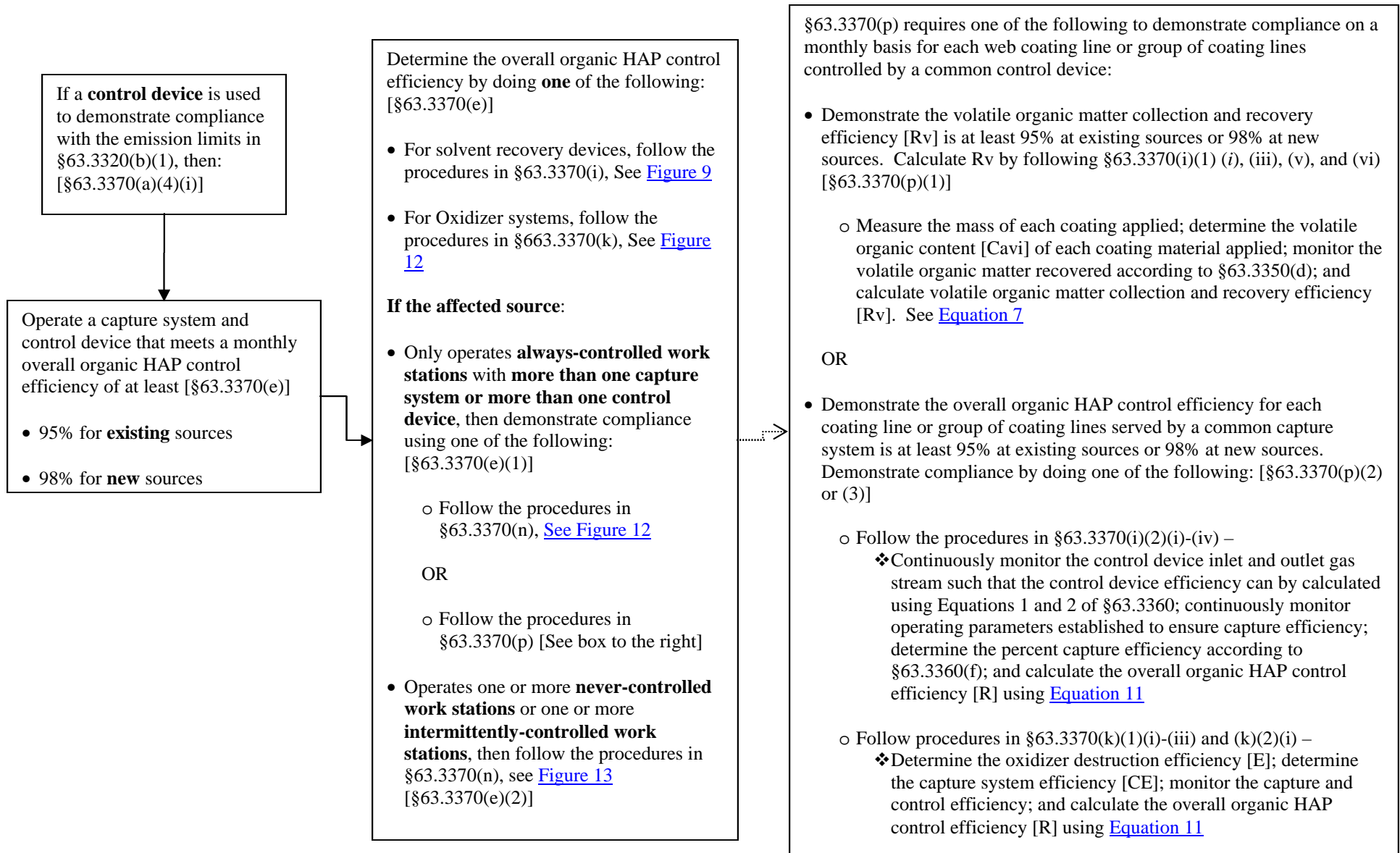


Figure 7
Demonstrate Compliance by Using A Combination of Compliant Coatings and Control Devices (Option 2 Or 3)

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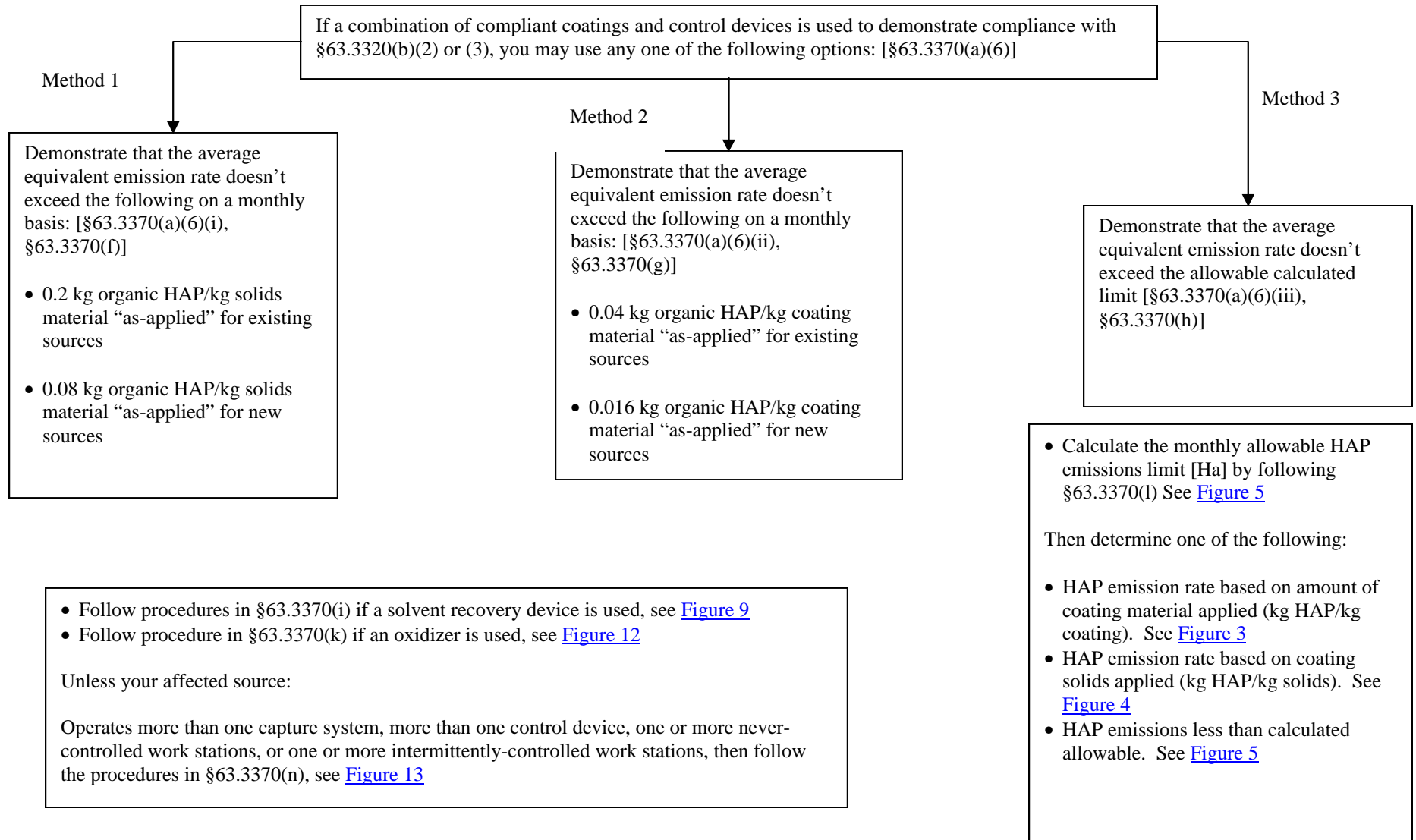


Figure 8
Demonstrate Compliance by Using a Capture and Control System to Meet the Outlet Concentration Limit (Option 4)

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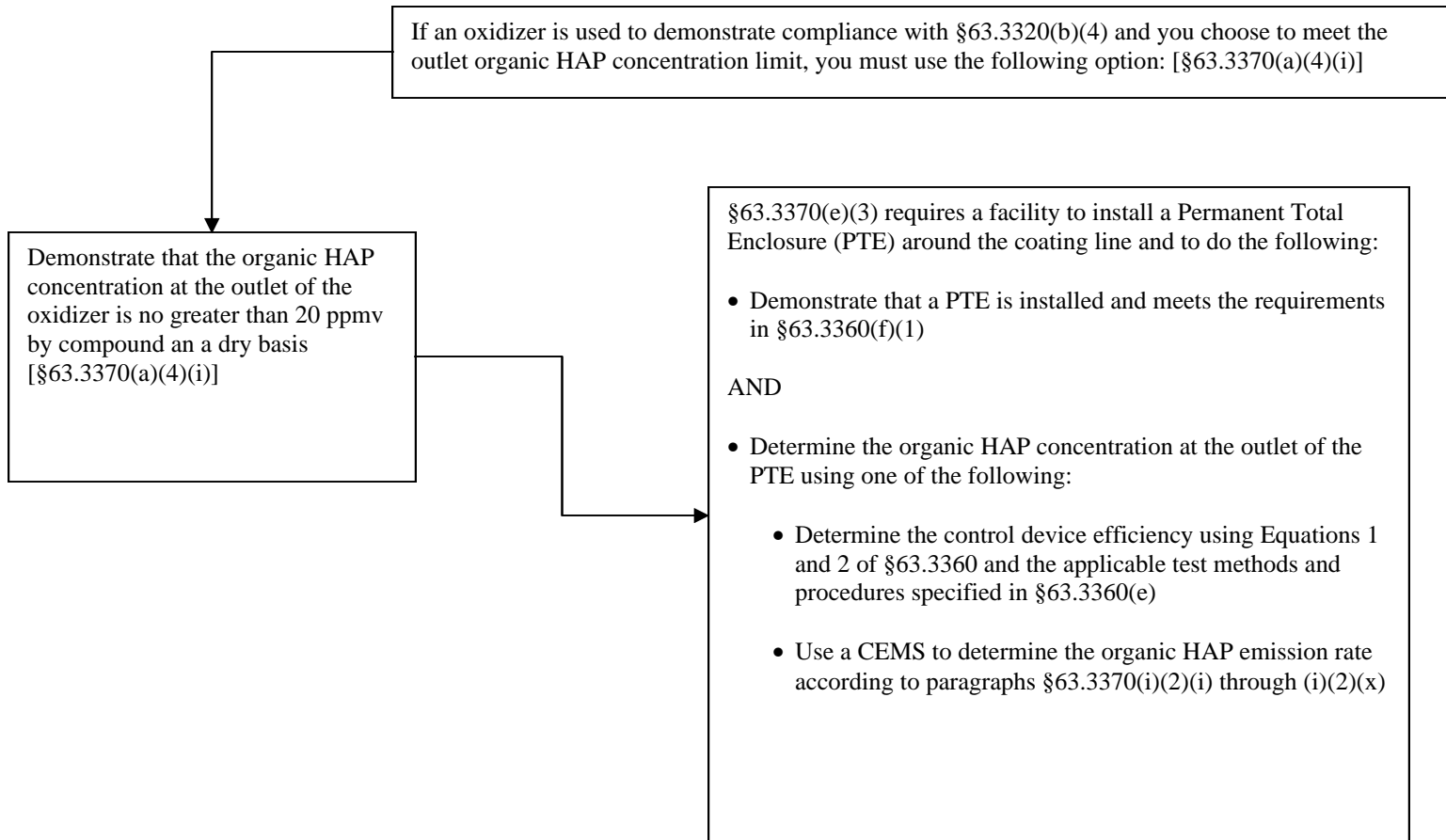


Figure 9 Requirements for Solvent Recovery Devices

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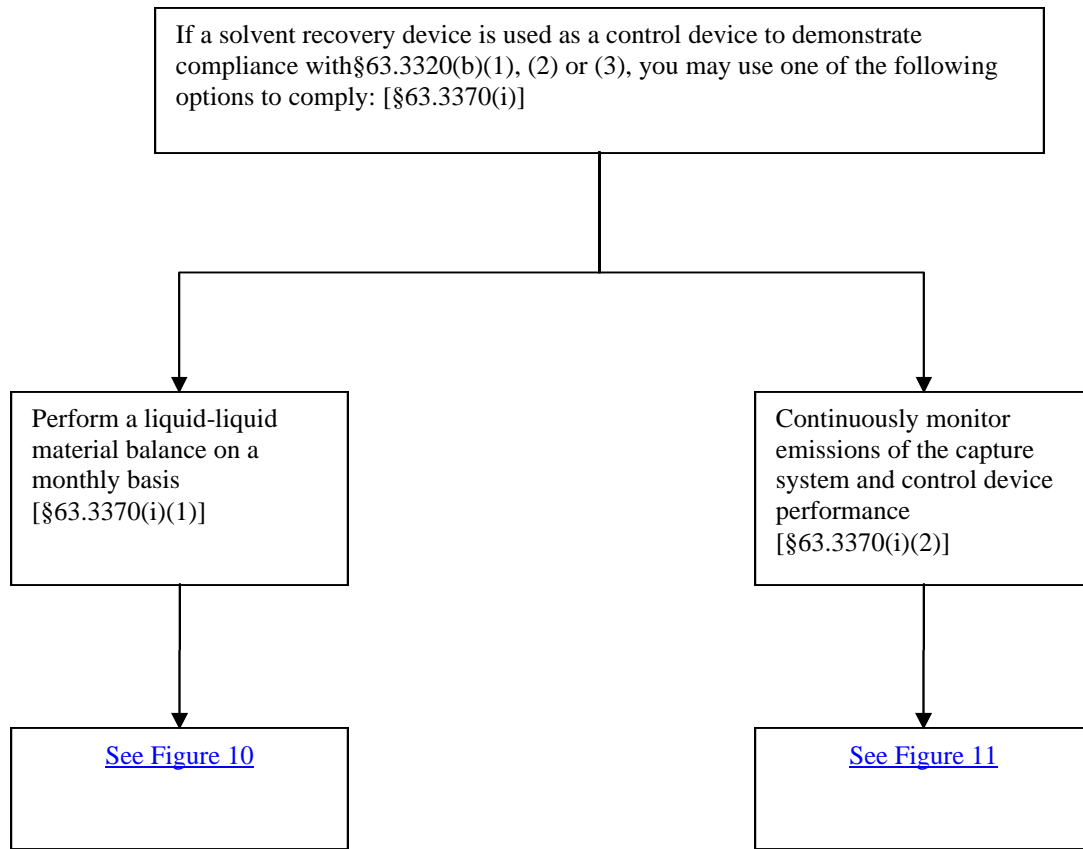


Figure 10 Liquid-Liquid Material Balance for Solvent Recovery Devices

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If **liquid-liquid material balance** is used to demonstrate compliance of your **solvent recovery control device**, you must do all of the following: [[§63.3370\(i\)\(1\)](#)]

- Measure the mass of each coating material applied on the coating line or group of coating lines that are controlled during the month [[§63.3370\(i\)\(1\)\(i\)](#)]
- Determine the volatile organic content [C_{avi}] of each coating material “as-applied” during the month by following [§63.3360\(d\)](#) [[See Figure 3](#)] [[§63.3370\(i\)\(1\)\(iii\)](#)]
- Measure and monitor the amount of volatile organic matter recovered for the month by following [§63.3350\(d\)\(2\)](#) [see box to the right] [[§63.3370\(i\)\(1\)\(v\)](#)]
- Calculate the volatile organic matter collection and recover efficiency using [Equation 7](#)
- Calculate the organic HAP emitted during the month using [Equation 8](#)

[§63.3350\(d\)\(2\)](#) requires you to do all of the following:

- Install, calibrate, maintain, and operate according to the manufacturer’s specifications a device that indicates the cumulative amount of volatile mater recovered by the solvent recovery device on a monthly basis
- Certify (through the manufacturer) that the device is accurate to within $\pm 2.0\%$ by mass

- If you’re demonstrating compliance with **any** of the following, then determine the **organic HAP content** of each coating material “as-applied” [C_{ahi}] during the month by following [§63.3360\(c\)](#) [[See Figure 3](#)], then calculate the organic HAP emission rate based on coating material applied using [Equation 10](#): [[§63.3370\(i\)\(1\)\(ii\)](#)]
 - The organic HAP emission rate based on solids applied
 - The organic HAP emission rate based on material applied
 - Emissions less than the calculated allowable organic HAP
- If you’re demonstrating compliance with any of the following, then determine the solids content of each coating material applied during the month by following [§63.3360\(d\)](#) [[See Figure 4](#)], then calculate the organic HAP emission rate based on coating solids applied using [Equation 9](#): [[§63.3370\(i\)\(1\)\(iv\)](#)]
 - The organic HAP emission rate based on solids applied
 - Emissions less than the calculated allowable organic HAP
- If you’re demonstrating compliance by limiting emissions to less than the allowable, determine the monthly allowable organic HAP emissions following [§63.3370\(l\)](#). [[See Figure 5](#)]

Figure 11 Continuous Emission Monitoring for Solvent Recovery Devices

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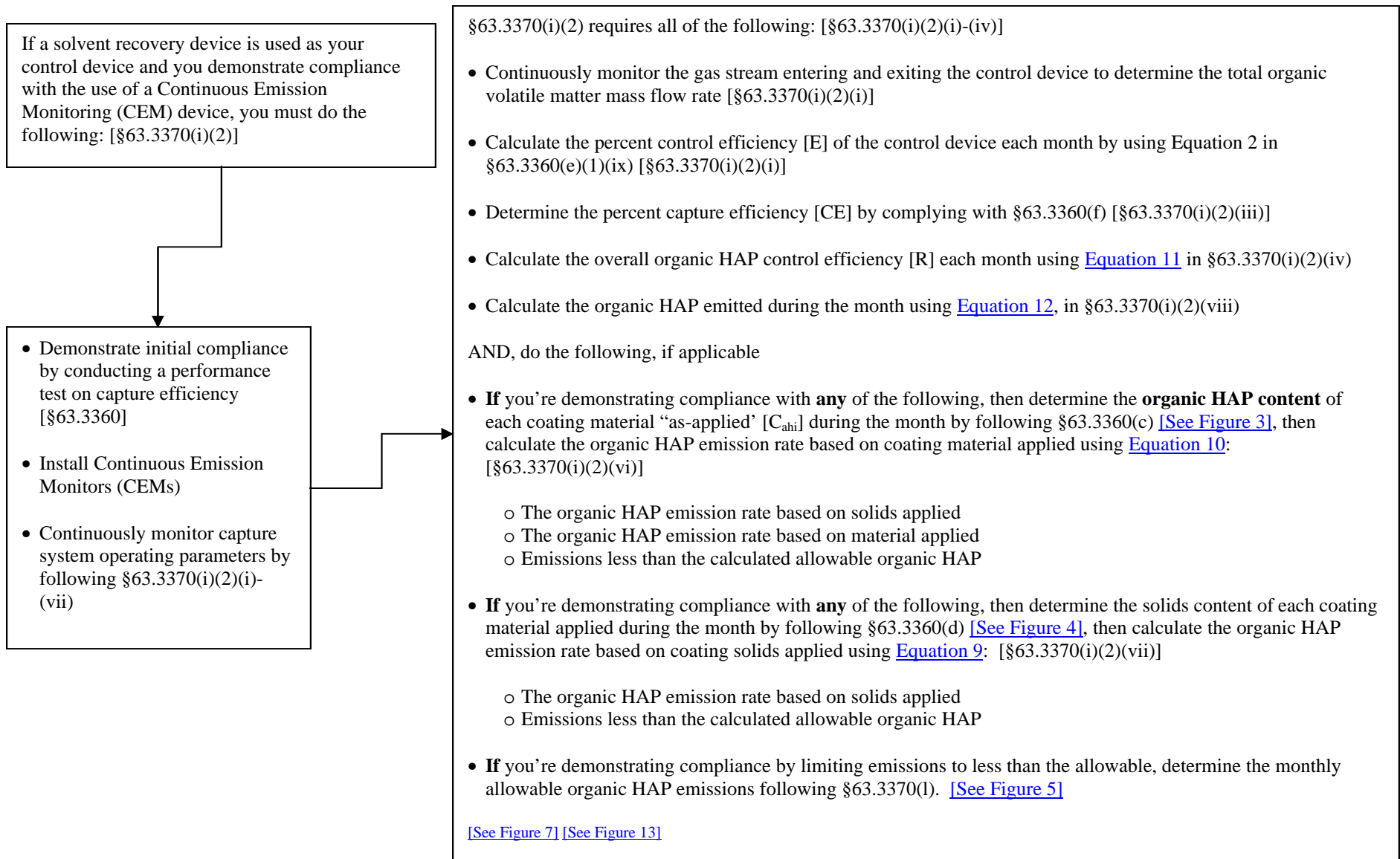


Figure 12 Requirements for Oxidizers

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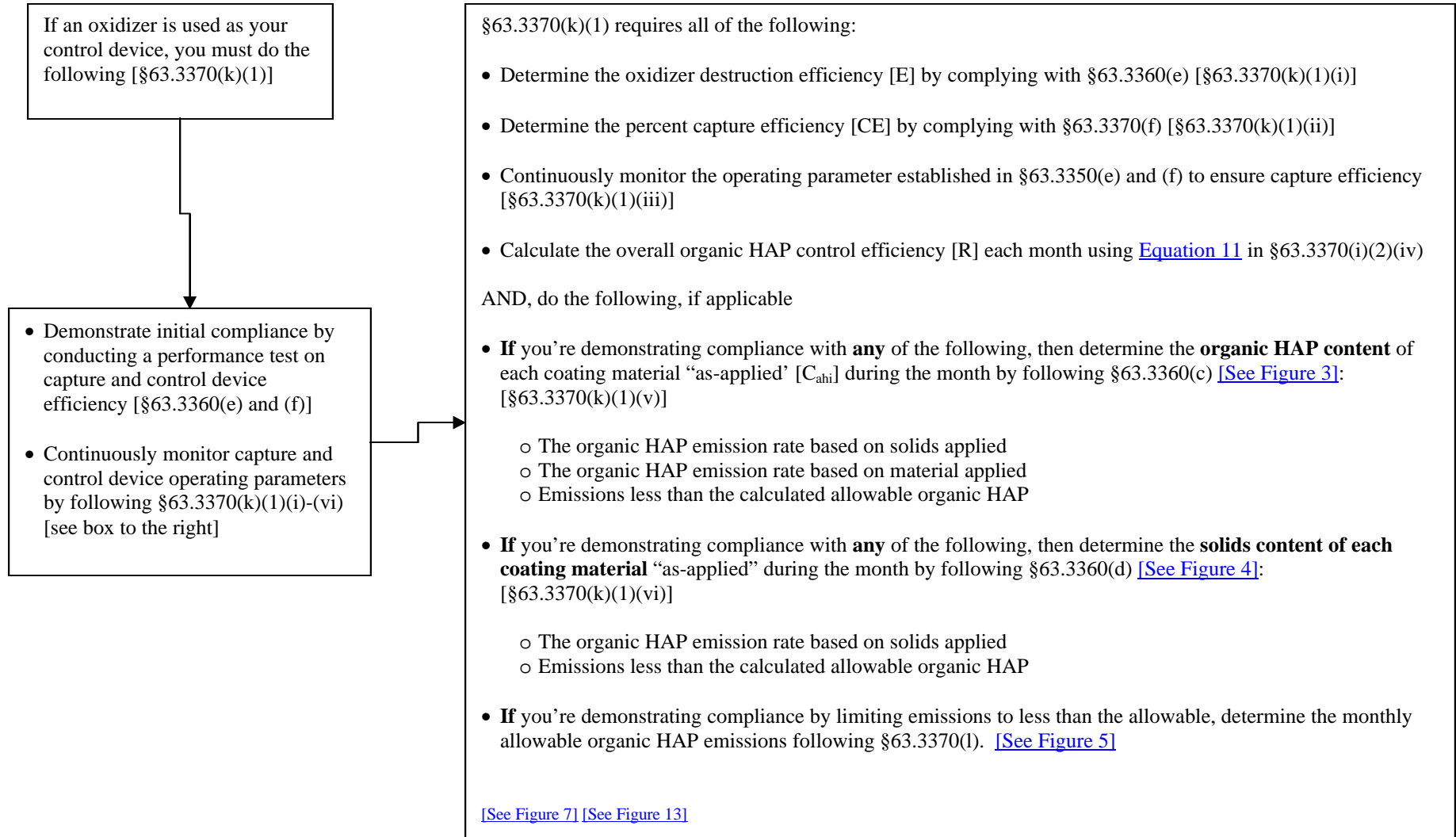


Figure 13 Requirements for Multiple Control Devices and Never-Controlled or Intermittently-Controlled Work Stations

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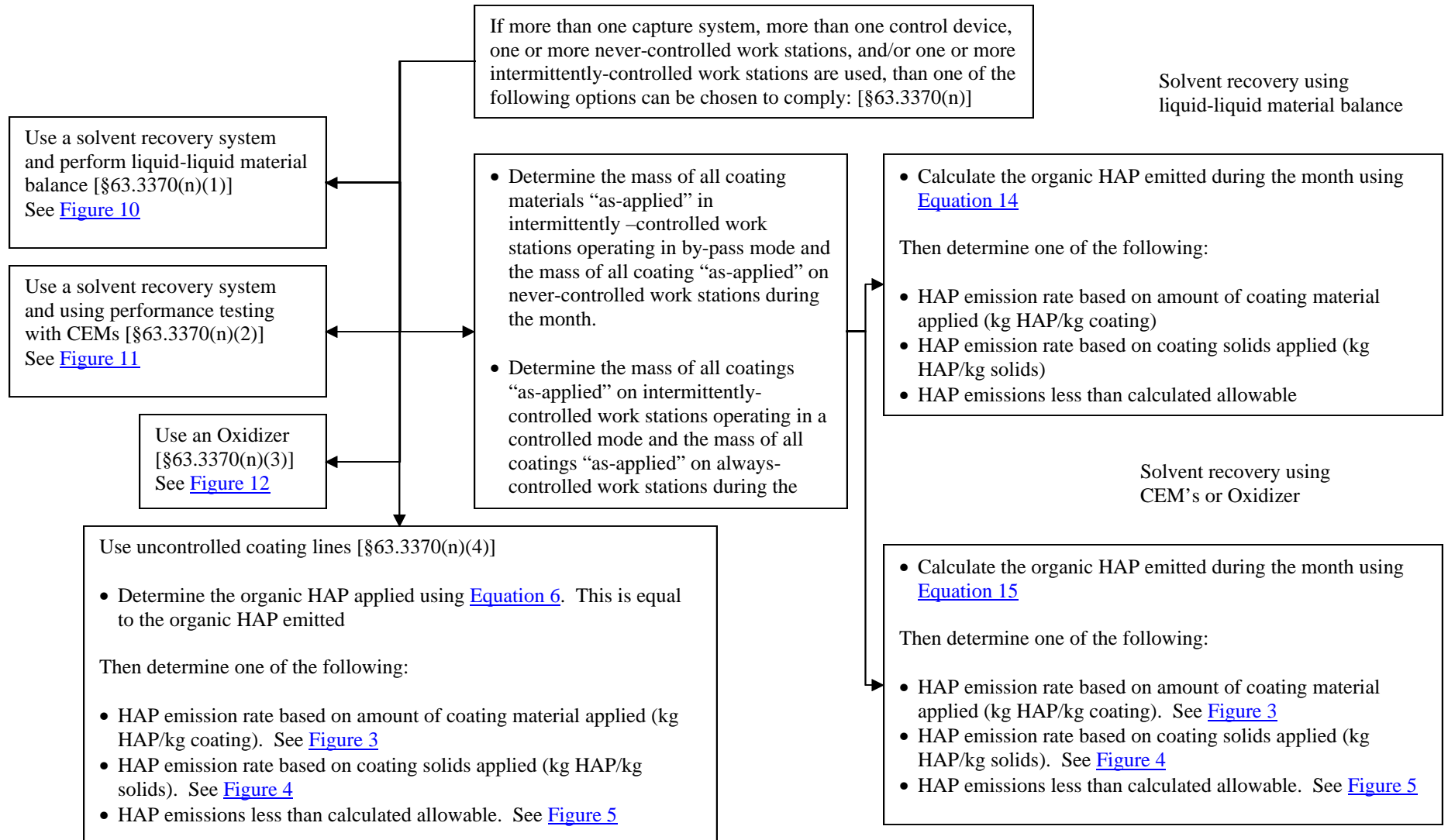


Figure 14 List of Equations

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$$\text{Equation 1a} - C_{ahi} = \frac{\left(C_{hi}M_i + \sum_{j=1}^q C_{hij}M_{ij} \right)}{M_i + \sum_{j=1}^q M_{ij}} \quad \text{[See Figure 3]}$$

$$\text{Equation 1b} - C_{avi} = \frac{\left(C_{vi}M_i + \sum_{j=1}^q C_{vij}M_{ij} \right)}{M_i + \sum_{j=1}^q M_{ij}} \quad \text{[See Figure 3]}$$

$$\text{Equation 2} - C_{asi} = \frac{\left(C_{si}M_i + \sum_{j=1}^q C_{sij}M_{ij} \right)}{M_i + \sum_{j=1}^q M_{ij}} \quad \text{[See Figure 4]}$$

$$\text{Equation 3} - H_{si} = \frac{C_{ahi}}{C_{asi}} \quad \text{[See Figure 2] [See Figure 4]}$$

$$\text{Equation 4} - H_L = \frac{\left(\sum_{i=1}^p C_{hi}M_i + \sum_{j=1}^q C_{hij}M_{ij} - M_{vret} \right)}{\left(\sum_{i=1}^p M_i + \sum_{j=1}^q M_{ij} \right)} \quad \text{[See Figure 3]}$$

$$\text{Equation 5} - H_S = \frac{\left(\sum_{i=1}^p C_{hi}M_i + \sum_{j=1}^q C_{hij}M_{ij} - M_{vret} \right)}{\left(\sum_{i=1}^p C_{si}M_i + \sum_{j=1}^q C_{sij}M_{ij} \right)} \quad \text{[See Figure 4]}$$

$$\text{Equation 6} - H_m = \sum_{i=1}^p C_{hi}M_i + \sum_{j=1}^q C_{hij}M_{ij} - M_{vret} \quad \text{[See Figure 5] [See Figure 13]}$$

$$\text{Equation 7} - R_v = \frac{M_{vr} + M_{vret}}{\left(\sum_{i=1}^p C_{vi}M_i + \sum_{j=1}^q C_{vij}M_{ij} \right)} \times 100 \quad \text{[See Figure 10]}$$

Figure 14 (continued)
List of Equations

$$\text{Equation 8 - } H_e = \left[1 - \frac{R_v}{100} \right] \left[\sum_{i=1}^p C_{hi} M_i + \sum_{j=1}^q C_{hj} M_{ij} - M_{vret} \right] \quad \text{[See Figure 10]}$$

$$\text{Equation 9 - } L = \frac{H_e}{\left(\sum_{i=1}^p C_{si} M_i + \sum_{j=1}^q C_{sj} M_{ij} \right)} \quad \text{[See Figure 10]}$$

$$\text{Equation 10 - } S = \frac{H_e}{\left(\sum_{i=1}^p M_i + \sum_{j=1}^q M_{ij} \right)} \quad \text{[See Figure 10]}$$

$$\text{Equation 11 - } R = \frac{(E)(CE)}{100} \quad \text{[See Figure 6] [See Figure 11]}$$

$$\text{Equation 12 - } H_e = (1 - R) \left(\sum_{i=1}^p C_{ahi} M_i \right) - M_{vret} \quad \text{[See Figure 11]}$$

$$\text{Equation 13a - } H_a = 0.20 \left[\sum_{i=1}^p M_i G_i C_{si} \right] + 0.04 \left[\sum_{i=1}^p M_i (1 - G_i) + \sum_{j=1}^q M_{Lj} \right] \quad \text{[See Figure 5]}$$

$$\text{Equation 13b - } H_a = 0.08 \left[\sum_{i=1}^p M_i G_i C_{si} \right] + 0.016 \left[\sum_{i=1}^p M_i (1 - G_i) + \sum_{j=1}^q M_{Lj} \right] \quad \text{[See Figure 5]}$$

$$\text{Equation 14 - } H_e = \left[\sum_{i=1}^p M_{Ci} C_{ahi} \right] \left[1 - \frac{R_v}{100} \right] + \left[\sum_{i=1}^p M_{Bi} C_{ahi} \right] - M_{vret} \quad \text{[See Figure 13]}$$

$$\text{Equation 15 - } H_e = \left[\sum_{i=1}^p M_{Ci} C_{ahi} \right] \left[1 - \frac{R}{100} \right] + \left[\sum_{i=1}^p M_{Bi} C_{ahi} \right] - M_{vret} \quad \text{[See Figure 13]}$$