



**VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY**

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**MEMORANDUM**

**TO:** Regional Directors  
Regional Air Compliance Managers  
Regional Air Permit Managers  
Regional Enforcement Managers  
Central Office Air Managers

**CC:** Jeffery A. Steers, Director of Central Operations

**FROM:** Michael G. Dowd, Director, Air and Renewable Energy Division *MGD*

**SUBJECT:** ACG-015: Air Compliance Guidance for the Implementation of the Permitting Exemption for Qualified Fumigation Facilities

**DATE:** December 26, 2018

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**Purpose:**

The purpose of this document is to provide information to DEQ air compliance and permitting staff regarding implementation of the program exempting Qualified Fumigation Facilities (QFFs) from permitting that became effective July 1, 2011.

§10.1-1308<sup>1</sup> of the Code of Virginia provides a permitting exemption for QFF but requires QFFs to submit extensive information regarding their fumigation operations to DEQ for notification, PTE verification, and tracking purposes.

This guidance is not intended to cover every situation but should be applicable in most scenarios. Questions or comments concerning this guidance should be directed to DEQ's Office of Air Compliance Coordination.

**Applicability:**

This guidance is applicable to fumigation operations that meet the definition of a QFF as provided by §10.1-1308.01<sup>2</sup> of the Code of Virginia. Specifically, a QFF must meet the following criteria:

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<sup>1</sup> <https://law.lis.virginia.gov/vacode/title10.1/chapter13/section10.1-1308/>

<sup>2</sup> <https://law.lis.virginia.gov/vacode/title10.1/chapter13/section10.1-1308.01/>

1. **Commodity Fumigation** – The facility must perform commodity fumigation with a hazardous air pollutant (HAP) regulated under §112(b) of the Clean Air Act. In most cases, the fumigant will be either methyl bromide or phosphine. A commodity is a tangible good or product that is for sale or barter. Examples may include but are not limited to grains, nuts, tobacco, furniture, fruit, logs, etc.
2. **State Toxics** – The facility must be subject to permitting under Article 6 and not otherwise exempt from Article 6 permitting for state toxics. Since toxic pollutant exemption levels are relatively low for the fumigation pollutants, it is anticipated criteria pollutant exemption levels will not be exceeded. Methyl bromide is a volatile organic compound (VOC), but phosphine is neither a VOC nor a particulate. State toxic pollutant exemption formulas can be found in 9 VAC Chapter 60, Article 5<sup>3</sup> and calculated exemption threshold levels for each state toxic pollutant can be found on DEQ's Air Toxics website<sup>4</sup>.
3. **Potential to Emit (PTE)** – The facility's PTE must be less than 10 tons per year of any single HAP or less than 25 tons per year of any combination of HAPs. A facility with a PTE above the major HAP threshold level must submit a Form 7 for an Article 6 permit or a state operating permit (SOP) in order to limit the facility's PTE. Facilities with actual emissions over the major HAP threshold levels must submit an application for a Title V permit and may be required to submit an application for an Article 7 permit (§112(g) case-by-case MACT) if the facility was constructed after December 27, 1996. PTE calculation for fumigation facilities and potential QFFs is discussed below.

In-transit fumigations (e.g., via railcar) where the aeration is planned to occur outside of Virginia are not subject to State Air Pollution Control Board regulations and are not addressed by this guidance.

#### **Implementation:**

§10.1-1308.01<sup>5</sup> provides specific requirements for fumigation operations to remain classified as Qualified Fumigation Facilities. Through review of source reports, documentation, and inspection, DEQ should continually confirm a facility's QFF status.

*Operation* – In order to qualify for the QFF permitting exemption, a fumigation facility must conduct fumigation activities in at least one of the following ways:

1. Maintain a distance of at least 300 feet from the fence line or property line if the property is not fenced or 300 feet from an area not regularly occupied by the public. Examples of areas not regularly occupied by the public could include but is not limited to vacant lots, adjacent fields, or wooded areas not used for recreational purposes. DEQ may waive this requirement on a case-by-case basis.
2. Employ a capture and control system for the fumigation operation.
3. Monitor the fence line or property line if the property is not fenced during fumigation and aeration operations using appropriate monitoring equipment so that fumigant ambient concentrations do not exceed the more stringent of either (i) the Department of Labor and Industry exposure limits or (ii) the parts per million standards that are stipulated in the federally-approved pesticide labeling of the fumigant in use.

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<sup>3</sup> <https://www.deq.virginia.gov/Portals/0/DEQ/Air/Regulations/605.pdf>

<sup>4</sup> <https://www.deq.virginia.gov/Programs/Air/PermittingCompliance/Permitting/AirToxics.aspx>

<sup>5</sup> <https://law.lis.virginia.gov/vacode/title10.1/chapter13/section10.1-1308.01/>

*Notification* – QFFs must submit notifications to DEQ before and after each fumigation event.

1. An Initial Fumigation Report must be submitted to DEQ prior to commencing the planned fumigation event. (See Attachment 1)
2. A Post Fumigation Report must be submitted to DEQ within four business days after completion of the fumigation event. (See Attachment 2)

Reports must be submitted to [QFF@deq.virginia.gov](mailto:QFF@deq.virginia.gov) with the following subject line: “*QFF Notification Form [Town/City/County where QFF located]*” to ensure timely review and processing by DEQ staff in the appropriate regional office.

DEQ Regional Office staff will not provide exemption letters, but staff will notify the facility if a determination is made that the facility does not qualify for the exemption and provide an appropriate permit application to the facility.

*Signage* – QFFs must post and maintain signs to notify the public of fumigation operations that meet all of the following requirements:

1. Signage must be posted prior to fumigation operations.
2. Signage must be visible and legible at the fence or property line closest to any public right-of way.
3. Signage must remain in place until completion of the aeration process.
4. Signage must conform to the format for placards mandated by the federally approved fumigant label.

**Potential to Emit Calculations for QFFs:**

*Fumigation Frequency:*

Calculating PTE for the QFF exemption for a particular location is dependent on the hourly emissions rate and the number of fumigation events that occur each year. The number of fumigation events in a year is calculated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

1. *For locations where fumigation occurs only once per year*, DEQ will assume that all of the fumigant is emitted in the first hour to determine the hourly emissions rate, and will consider the annual PTE for the location to be the actual amount of fumigant used (making both the hourly emissions rate and the annual PTE the same value).
2. *For locations where fumigation occurs more than once and up to four times per year*, DEQ will assume that all of the fumigant is emitted in the first hour to determine the hourly emissions rate, and will consider the annual PTE for the location to be the sum of the planned amount of fumigant used for all planned fumigation events for the year. If the actual amount of fumigant used is higher, DEQ will consider the annual PTE to be the actual amount of fumigant used.
3. *For locations where fumigation occurs more than four times per year*, DEQ will assume that the fumigant is emitted at a constant rate during a fumigation cycle to determine the hourly emissions rate (i.e., lbs of fumigant used during the fumigation event / hours in the single fumigation cycle = lbs of fumigant per hour). DEQ will then consider the annual PTE for the location to be (the maximum fumigant used per cycle) x (8760 hours per year) / (hours per fumigation cycle) taking into consideration operational restrictions.

*Exemptions:*

State toxic pollutant exemption formulas can be found in 9 VAC Chapter 60, Article 5, and the calculated exemption threshold levels for each state toxic pollutant can be found on the DEQ Air Toxics website. Permit exemption threshold levels for methyl bromide and phosphine are provided below:

Methyl Bromide:	Hourly: 1.254 pounds per hour (lb/hr) Annual: 2.755 tons per year (tpy)
Phosphine:	Hourly: 0.0462 lb/hr Annual: 0.0609 tpy

*Sample Calculations:*

The following examples are for illustrative purposes only. Set-up times as well as fumigation and aeration periods used in these examples are all hypothetical. The actual parameters to be used in calculating PTE should be supplied by the QFF for the particular fumigation event.

Example 1

One container with furniture imported from another country was found to contain a quarantined pest. The container is placed under quarantine until the container can be fumigated with phosphine. The fumigation facility uses 0.02 pounds of phosphine to fumigate the container. This is an isolated occurrence and fumigations are not normally conducted at this location. The hourly and annual emission rate would be 0.02 lb/hr and 0.000001 tons per year. These rates fall below the permitting threshold values for phosphine. The facility is exempt under Article 6 and does not qualify for the QFF exemption. The facility is not required to submit the QFF notification form.

Example 2

A flourmill conducts an annual methyl bromide fumigation of the facility. The fumigation requires 30 pounds of methyl bromide. Assuming all of the methyl bromide is aerated in the first hour, hourly emissions would be 30 lb/hr. Because the facility only fumigates once per year, the annual emissions would also be 0.015 tpy. Since the hourly emission rate exceeds the permit exemption threshold level for methyl bromide and the annual threshold is below major source levels, the facility qualifies for the exemption. No permits are required, but the QFF form must be submitted both before and after the fumigation event.

Example 3

A company operates one methyl bromide fumigation chamber to fumigate fruit. Each fumigation cycle requires 10 pounds of methyl bromide and one complete fumigation cycle is 12 hours (includes set-up time, fumigation, and aeration period). Assume all the methyl bromide is aerated in one hour. Hourly emissions of methyl bromide would be 10 lb/hr. The number of possible fumigation cycles annually would be 8760 hours divided by 12 hours per cycle = 730 fumigation cycles per year.

$$\text{Annual} = 10 \text{ lb/fumigation cycle} \times 730 \text{ cycles per year} \times \text{tons}/2000 \text{ lb} = 3.65 \text{ tpy}$$

Since both the hourly and annual methyl bromide emissions exceed the corresponding exemption threshold levels but the annual emissions are less than the major source threshold, the facility qualifies for the QFF exemption based on emissions. Because the annual PTE for methyl bromide is less than 10 tons per year, the facility does not require a permit to limit its PTE of

methyl bromide. While no permit is required, the QFF forms must be submitted both before and after each fumigation event.

#### Example 4

A company plans to construct a log fumigation facility. The fumigations will take place inside a warehouse built for that purpose. The facility will fumigate both hardwood and softwood. The fumigant is methyl bromide. For softwood, 150 pounds of methyl bromide is required to fumigate a full warehouse of logs. The fumigation cycle including set-up, fumigation, aeration and log removal takes 56 hours. For hardwood, 250 pounds of methyl bromide is required and the fumigation cycle lasts 120 hours.

#### *Softwood Calculation*

Hourly = 150 lb/hr methyl bromide

Annual = 8760 hr/yr / 56 hours per fumigation cycle = 156.4 fumigation cycles/year

156.4 fumigation cycles/year x 150 lb methyl bromide/fumigation cycle x ton/2000 lb =  
11.7 tpy methyl bromide

#### *Hardwood calculation*

Hourly = 250 lb/hr methyl bromide

Annual = 8760 hr/yr / 120 hours/fumigation cycle = 73 fumigation cycles/year

73 fumigation cycles/year x 250 lb methyl bromide/fumigation cycle x ton/2000 lb = 9.125  
tpy

The PTE for the facility is the greater of the hardwood or softwood, which in this example is 11.7 tons per year of methyl bromide for softwood fumigation. The facility needs a permit to limit its PTE of methyl bromide. Since methyl bromide is a volatile organic compound (VOC), an Article 6 permit should be issued to limit VOC emissions (as methyl bromide) to less than 10 tons per year. If the facility also fumigates with phosphine, then a state operating permit may be needed to limit the facility's PTE since phosphine is neither a VOC nor a particulate. If the facility does not want to limit their PTE to below the major source threshold levels, the facility would be required to submit an application for an Article 7 permit (§112(g) case-by-case MACT).

#### **Attachments:**

Templates for the required both the Initial Fumigation Report and the Post Fumigation Report are included as attachments to this guidance as of the issuance date of this document. More updated versions of the templates are maintained on DEQ's Air Forms website.<sup>6</sup>

- Attachment 1: Initial Fumigation Report
- Attachment 2: Post Fumigation Report

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<sup>6</sup> <https://www.deq.virginia.gov/Programs/Air/Forms.aspx>.

**Attachment 1 – Initial Fumigation Report**

# Qualified Fumigation Facilities - Notification and Reporting

## *Initial Fumigation Report*

The operator of the Qualified Fumigation Facility (QFF) (VA Code § 10.1-1308.01) must complete and submit to DEQ this *Initial Notification Report* with the preliminary information required prior to commencing the planned fumigation event to [QFF@deq.virginia.gov](mailto:QFF@deq.virginia.gov). To allow efficient review and processing, DEQ requests the subject line contain the following: **QFF Notification Form and the Town/City/County where the fumigation facility is located**. If electronic mail is not available, then this report may be faxed or mailed to the Air Compliance Manager at the [appropriate DEQ Regional Office](#).

Start Date of Fumigation:

Registration No.:

Contact Information of Operator of Qualified Fumigation Facility Submitting this Form:

Name: \_\_\_\_\_ Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Exact Physical Location of Fumigation Operation:

Distance to Nearest Public Area From Fumigation Operation:

Object and Number Being Fumigated (e.g., 1 rail car, 4 truck containers, 1 warehouse, 10 bins, etc.):

Product and Quantity Being Fumigated (e.g., grain, logs, peanuts, tobacco, etc.):

Containment System (e.g., tarp, sealed container, etc.):

Fumigant to be used:                      Methyl Bromide                       Phosphine

Expected Quantity (specify grams or pounds) of Fumigant to be used:

Expected Duration of Fumigation:

Expected Duration of Aeration:

Calculated Potential to Emit (Hourly Emissions):

Hourly Emissions = Total Expected Fumigant Amount / (Minimum Fumigation Time + Minimum Aeration Time)

Safety Data Sheet (SDS) for Fumigant: Enclosed  Previously Submitted  Date Previously Submitted:

Compliance Requirement Used: Distance (>300 ft. to Nearest Public Area)  Capture and Control  Monitoring

Brief Description of Capture and Control Device (if used):

**Document Certification (9VAC5-20-230):** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering and evaluating the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name of Responsible Official: \_\_\_\_\_ Title: \_\_\_\_\_

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

**Attachment 2 – Post Fumigation Report**

# Qualified Fumigation Facilities - Notification and Reporting

## *Post Fumigation Report*

The operator of the Qualified Fumigation Facility (QFF) (VA Code § 10.1-1308.01) must complete and submit to the DEQ this *Post Fumigation Report* with the additional information required within four business days of the completion of the fumigation event to [QFF@deq.virginia.gov](mailto:QFF@deq.virginia.gov). To allow efficient review and processing, DEQ requests the subject line contain the following: **QFF Notification Form and the Town/City/County where the fumigation facility is located**. If electronic mail is not available, then this report may be faxed or mailed to the Air Compliance Manager at the [appropriate DEQ Regional Office](#).

Start and End Date of Fumigation:

Registration No.:

Contact Information of Operator of Qualified Fumigation Facility Submitting this Form:

Name:

Address:

Phone:

Email:

Exact Physical Location of Fumigation Operation:

Fumigant Used:            Methyl Bromide                       Phosphine

Total Quantity of Fumigant Actually Used (specify grams or pounds):

Aeration Start Date/Time:

Aeration End Date/Time:

Actual Duration of Aeration (in hours):

Actual Hourly Emissions:

Hourly Emissions = Total Actual Fumigant Amount / (Actual Fumigation Time + Actual Aeration Time)

12-Month Rolling Total (Most Recent) at this Fumigation Operation Location:

12-Month Rolling Total Time period:            (month and year) to            (month and year)

Fumigant Used: Methyl Bromide     Phosphine

Quantity of Fumigant (specify grams or pounds) Used in 12-Month Rolling Period:

Compliance Requirement Used: Distance (>300 ft. to Nearest Public Area)  Capture and Control  Monitoring

Monitoring Results Attached: Yes  No

**Document Certification (9VAC5-20-230):** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering and evaluating the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name of Responsible Official: \_\_\_\_\_ Title: \_\_\_\_\_

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)