



Fumigation Monitoring

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Department of Environmental Quality



Fumigation Industry in North Carolina

- **What is Fumigation?**

The operation where a fumigant is injected and retained in the container or chamber for a specific time-period for the purposes of treating the logs for insects and other pests to prevent the transfer of exotic organisms

- **Why Fumigation?**

Due to some specific pest concern and protocol requirements of clients (i.e. China, India etc...)



Fumigation Industry in North Carolina

- **Alternatives to Fumigation:**

- Debarking

- **Fumigation Process:**

- > Commodity moved to a fumigation treatment area and prepared for fumigation
- > Methyl bromide (MeBr) introduced to container or under tarpaulin
- > It is monitored to ensure no leakage and adequate exposure to commodity
- > 16-72 hr exposure period
- > Container/tarpaulin ventilation



Fumigation Industry in North Carolina

- **Affected Facilities:**
 - Active : 5 facilities (SM)
 - Pending Application: 4
 - * 1 TV
 - * 3 SM

North Carolina Fumigation



	Fum Regs	Permit Type	Threshold	Pollutant	Risk Modeling	Control Technology	Product	Type of Fumigation	Type of Aeration	Minimum Length of Time to disperse	Setback Limits	Exemptions	Notes:	Any Fumigation Permits?
North Carolina	Currently, no state regulations specific to fumigation.	Synthetic Minor and Title V	SM less than or = 10 tpy Title V > 10 tpy	MeBr (HAP, not NC TAP); Phosphine HAP and TAP; Sulfuryl Fluoride (not HAP or TAP)	Modeling has been conducted using AERMOD for a proposed TV facility.	Currently under review	Exports: hardwood (Oak) and Southern Yellow Pine. Imports: Fruits and Vegetables	Fumigation in shipping containers (66 cubic m) and Bulk fumigations under tarpaulins. All permitted fumigation sites are fenced to control entry.	Passive aeration for containers and active aeration using fans and a 30' stack for bulk fumigations.	None however, one SM permit had a condition that required mitigative measures to control emission rate if MeBr was detected at the property boundary.	There are currently no setback limitations in the existing permits.	Agricultural use of fumigants in the soil or on crops are not under DAQs purview.	A TV draft permit went to public notice. The permit requirements included operational restrictions (site specific) that resulted in no detectable level of MeBr at the property boundary. Over 1,000 comments were received by the public.	Synthetic Minor Permits: Five TV Permits: zero (one application in house)

Fumigation Industry in North Carolina

- **Malec Brothers Transport permit**
- Commodity: Southern yellow pine logs
- Title V up to 140 tons per year MeBr
- No 112(d) standard, Maximum Achievable Control Technology (MACT) by category
- DAQ developed the following 112(g) case-by-case MACT requirements based on the permit application

North Carolina - draft permit condition

- Permit Condition Includes:

- General Compliance Requirements

- * Written notification to adjacent neighbors
 - * Signage at property boundary
 - * Installation of wind sock onsite



North Carolina - draft permit condition

- Operating Limitation Requirements
 - * EPA Registered fumigant
 - * Allowable monitored concentration
 - * Follow specific-monitoring plan to establish total daily maximum methyl bromide charge rate
 - * Submit administrative amendment to the permit within 10 days
- Specific-Monitoring Requirements
- Recordkeeping Requirements
- Reporting Requirements

Draft Specific-Monitoring Requirements

- The fumigation requires monitoring downwind of the emission source and at a distance no greater than the distance between the emission source and the closest property boundary (The daily charge rate can be increased at any time using this procedure again).
- Monitoring shall begin at the beginning of the aeration period (active and/or passive aeration). Methyl bromide concentrations shall be recorded every 3 minutes at the start of aeration (i.e., when first container is opened) and continuing until 15 minutes after the last container is opened. In the case of active aeration, the rate of aeration cannot be increased after the end of the monitoring schedule.

Draft Specific-Monitoring Requirements

- If at any time during the aeration process, a reading of other than 0 ppm is obtained at the downwind property boundary, aeration shall be halted until five three-minute (15 minutes) consecutive intervals of readings demonstrate 0 ppm. (The monitoring shall resume, when aeration resumes)



Draft Specific-Monitoring Requirements

- All monitoring shall be conducted during fumigation cycles (loads) using at least 90% of the maximum daily methyl bromide charge rate. If during any period, the daily charge rate is less than 90% of the maximum charge established, monitoring is not required for that period.



Draft Specific-Monitoring Requirements

- If during monitoring a concentration of methyl bromide is measured above 0 ppm at the property boundary, the permittee shall send a written report to the DAQ Regional Supervisor with the details of the actions taken to minimize emissions of methyl bromide. The report shall include an administrative amendment to the permit with a new daily and hourly charge limit – further reduction.
- If the administrative amendment is not submitted, the DAQ Regional Supervisor may initiate a reopening of the Air Permit for cause requiring a modification of the permit to restrict daily maximum methyl bromide charge rate.

Draft Specific-Monitoring Requirements



- When the maximum daily charge (pounds) of methyl bromide is established, normal production may begin.



Draft Specific-Monitoring Requirements



- Property boundary monitoring to demonstrate continued compliance during fumigation using the maximum daily methyl bromide limit.
- The methyl bromide monitoring device shall be capable of reading to 0 ppm with no less than a +/- 0.5 ppm accuracy. Proper monitoring equipment shall be used and calibrated such that the detection level is no less than 0.5 ppm accuracy to a range of zero.

North Carolina – Monitoring Practices



Public Hearing

- 2 public hearings on the draft permit
- Over 300 attendees came to each hearing
- Over 1000 comments on the draft permit
- Hearing officer's report:
<https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/methyl-bromide-log-fumigation>

Hearing Officer's Report

Recommendations:

- The case-by-case MACT evaluation included in the **permit application** appears to contain some inaccurate information such as available control technology. DAQ should re-evaluate the MACT determination provided and evaluate appropriate air emissions control.
- The DAQ should re-evaluate the aeration process, emission capture methodologies, ducting and stack parameters in concert with the re-evaluation of emission control.

Hearing Officer's Report

Recommendations:

- After determining any controls/final scenarios, DAQ should conduct modeling to ensure protection of community health.
- Monitoring for container leak checks, frequency of monitoring at the boundary, as well as multiple locations at the property boundary should be re-evaluated.
- Finally, the Hearing Officer recommends to the Air Director that inhalation risk of methyl bromide be prioritized by the Scientific Advisory Board to evaluate the necessity of developing an Acceptable Ambient Level, in 15A NCAC Section 02D .1100.



Additional Monitoring to be Considered



- Continuous monitoring at the property boundary/ fence line
- Monitoring at multiple locations at the property boundary
- Container leak check
- Start time and end time for FUMIGATION
- Start time and end time for AERATION

July 26 Action

- 60 days notice letter intends to reopen a five existing permits for modification:
 - Director of DAQ to terminate, modify, or revoke and reissue a permit where “necessary to carry out the purposes of G.S. 143, Article 21B,” which include ensuring that standards of air purity are protective of human health and preserving the State’s air resources in a manner that serves the best interest of all citizens.
- Request for additional information from Malec transport and additional applicants:
 - Monitoring plan
 - Capture and control
 - Additional operational limitations

July 26 Action

- Request Scientific Advisory Board (SAB) to list methyl bromide as a toxic air pollutant
 - Establish Acceptable Ambient Level (AAL)
- Temporary rulemaking
- Permanent rulemaking



Thank you!

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<http://deq.nc.gov/about/divisions/air-quality>