west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3595
Plant ID No.:	031-00053
Applicant:	Allegheny Wood Products International, Inc.
Facility Name:	Baker Log Yard
Location:	Hardy County
NAICS Code:	321113
Application Type:	Construction
Received Date:	January 5, 2023
Engineer Assigned:	Steven R. Pursley, PE
Fee Amount:	$3,500
Date Received:	January 30, 2023
Complete Date:	January 30, 2023
Due Date:	April 28, 2023
Applicant Ad Date:	January 18, 2023
Newspaper:	*The Moorefield Examiner*
UTM's:	Easting: 689.438 Northing: 4,329.966 Zone: 17
Description:	Construction of a log fumigation facility.

DESCRIPTION OF PROCESS

Background

Allegheny Wood Products International, Inc. (AWP) was issued permit number R13-3393 to construct and operate a log fumigation facility in Moorefield, WV which is in Hardy County. That facility was constructed and has operated on a continuous basis since 2018. The property where the facility is located has been sold and AWP needs to relocate the process. Property for the installation of a new fumigation building and

associated infrastructure relocation has been leased at 148 Park Farm Drive near Baker, WV 26801. Baker is also located in Hardy County.

Fumigation operations will include methyl bromide fumigation of bulk log stacks and shipping containers inside a to be constructed building. Fumigation of the logs is necessary since these logs are to be shipped outside the United States to countries requiring fumigation with Methyl Bromide.

The facility will be designed and operated to comply with the requirements of the USDA APHIS, Plant Protection and Quarantine (PPQ) division, the regulatory body that oversees QPS treatments in the United States. The fumigant used at the facility is methyl bromide, which has been the principal QPS fumigation tool of APHIS for over forty years and has been regularly used at various ports and fumigation facilities throughout the United States.

Although methyl bromide has been a long-standing and principal QPS treatment tool as prescribed by APHIS, the compound was deemed a depleter of stratospheric ozone in 1992 under the terms of an international treaty, the Montreal Protocol on Substances That Deplete the Ozone Layer, and therefore subject to "phase-out" of most of its uses. The Federal Environmental Protection Agency (USEPA), in implementing the requirements of the Montreal Protocol, has greatly restricted use of methyl bromide for applications such as soil fumigation. However, its use for QPS applications such as those to be performed at this location has been preserved until such time as there is a replacement for it, and consequently, the compound is specifically authorized by the QPS exemption under Title VI (Stratospheric Ozone Protection) of the Clean Air Act (CAA).

The APHIS officers oversee fumigation of cargo entering the U.S. on which invasive pests, not native to the U.S., are found or are deemed to be present due to past inspections. The cargo is quarantined until it receives treatment in accordance with USDA requirements. APHIS officers also oversee pre-shipment quarantine fumigation treatments that are required by other countries (e.g., China, India, Turkey) to which U.S. goods are to be shipped.

The QPS process is dictated by APHIS protocols for commodities through its Plant Protection and Quarantine (PPQ) division. The APHIS protocols and treatment schedules are published in the 920-page PPQ Treatment Manual. Further, all QPS fumigation conducted by AWP at the temporary Moorefield location will be performed under the direct, on-site supervision of an APHIS officer. In addition, all fumigation at the site will be performed in accordance with USEPA's Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) pesticide label requirements as well as the PPQ Treatment Manual, and applicable international phytosanitary standards.

The treatment protocols published in the Treatment Manual are highly prescriptive

and dictate detailed requirements for many aspects of the fumigation process, including but not limited to the following:

• Fumigation chemical (e.g., methyl bromide);

• Dosage - pounds of fumigant per 1,000 cubic feet of fumigated space;

• Maintenance of dosage by monitoring fumigant concentrations at multiple locations within the treatment enclosure throughout the treatment period and periodic addition of fumigant as necessary to maintain the required concentration;

• Treatment duration;

• Forced recirculation within the enclosure to maintain the correct mixture of the fumigant in air throughout the prescribed treatment period;

• Monitoring the temperature of the environment and the commodity at multiple locations within the treatment enclosure throughout the treatment period;

• Weatherization of the treatment enclosure;

• Availability of utilities;

• Arrangement of commodities within the treatment enclosure;

• Aeration of the commodity and treatment enclosure at the conclusion of the treatment period; and

• Safety requirements for release of the commodity and reentry of facility personnel into the area at the end of the treatment.

Process Description

The containers of logs are tightly aligned in groups, typically of seven to nine (7 to 9) containers. Fumigant injection lines, monitoring lines and circulation fans (to mix the fumigant with the air) are then placed inside the containers.

Following an inspection and approval by an APHIS officer, the container doors are closed, and vents and other potential leakage sites are sealed. The volume inside each container is calculated, and the amount of fumigant appropriate for that volume (and the ambient temperature) is calculated per the Treatment Manual, the type of wood, the target pest, ambient temperature and other atmospheric conditions. The fumigant is then injected into the containers through the lines previously installed.

When the APHIS inspector is satisfied with the preparations, fumigant is injected into the containers, which now function as fumigation enclosures. Methyl bromide from pressurized cylinders (typically 110-pound or 150-pound cylinders) is piped through a "volatilizer," a heat exchanger that heats the gas to approximately 140° F. The warmed gas is delivered through reinforced hoses that discharge into the containers. Because methyl bromide converts from a liquid to a gas at 38.5 degrees F, the volatilizer is used to eliminate the possibility of any liquid methyl bromide being present during the fumigation.

Hardwood logs to be fumigated at the Baker facility are exposed to the fumigant for sixteen to seventy-two (16 – 72) hours depending on the species. During that time gas concentration levels within the fumigation enclosure as well as outside the fumigation building are monitored on a schedule to ensure that an adequate gas concentration over time is maintained to eliminate the target pest, but that no concentration of Methyl Bromide exceed the Occupation Safety and Health Administration Permissible Exposure level of 5 part per million (ppm). The fumigant concentration readings are taken with an APHIS-approved device, typically either a Fumiscope® manufactured by Key Chemical, a MB-ContainIR® manufactured by Spectros Instruments or, for the exterior area monitoring, a PureAire Monitor manufactured by PureAire Monitoring Systems, Inc. In addition to the gas readings, the fumigators periodically check to see that there are no gas leaks from the fumigation enclosures. During this time a buffer zone is maintained around the perimeter of the treated commodity. If the PureAire Monitors measure a concentration exceeding 5 ppm of Methyl Bromide, fumigation gas introduction is suspended until the containment is inspected for leaks and repairs performed.

Bulk log fumigations are performed in a similar manner, except the logs are placed in piles on the concrete floor of the building prior to covering with the tarpaulin. The building doors are sealed and the fumigant is introduced to the covered piles of logs.

At the end of the log exposure period, the cargo is aerated using permanently located fans to push the air inside the building towards the permanently located exhaust hood which is serviced by a 10,000 CFM exhaust fan which discharges the building exhaust air to atmosphere through a seventy- five (75) foot high exhaust stack. Aeration will be performed in accordance with the USDA APHIS Treatment Manual (Section 2), which provides requirements regarding aeration flow rates. For example, aerating nonsorptive, noncontainerized cargo (indoors and outdoors) requires a minimum 3,500 cfm fan capacity, and requires that the fans provide a minimum of 4 to 15 air exchanges per hour. Aeration using the closed-door container approach requires a minimum 5,200 cfm exhaust fan capacity.

The aeration discharge stack will be placed at the side of the building. When aeration begins, the container doors are opened and the fixed location fans are used to move the

fumigant to the aeration stack, which also pulls a supply fresh air through louvers in the building designed to open when there is a negative pressure in the building to remove and dilute any remaining fumigant. The ventilation period lasts a minimum of four hours, and the area is not cleared for re-entry by personnel until the concentration of fumigant in the air is less than five (5) parts per million (ppm), the level dictated by the USEPA-approved product label.

The APHIS-approved devices for "clearing," or permitting access to the area by persons not wearing personal protective equipment, are the PureAire fixed location monitors and colorimetric detector tubes such as those manufactured by Draeger. At any time the 5 ppm level is reached or exceeded, fumigators wear self-contained breathing apparatus with full face masks and other personal protective equipment such as long-sleeved shirts and pants. Once aeration begins, however, fumigant concentrations typically drop very rapidly.

Once aeration is completed, the bulk cargo is loaded into containers. Containers that already contain logs are sealed and all containers are transported to the port for loading onto ships. Each fumigation activity is documented in detail, and the APHIS inspector files a USDA Form 429 as the government's record of the fumigation. Thus, two independent, detailed records exist for every fumigation session.

SITE INSPECTION

The writer did not conduct an on-site inspection of the proposed location of the Baker Log Yard. However, using Google Earth, the proposed location can be investigated. Observations from the investigation are as follows:

The proposed location is located on Park Farm Drive just off of US Route 48 (Corridor H) in Hardy County.

The area in general is rural in nature, with only a few houses within a ½ mile radius.

The closest occupied dwelling is approximately 620 feet east of the facility.

Directions: [Latitude: 39.0984, Longitude: -78.8083] From Charleston take I79 north to exit 99. At the end of the off ramp merge onto US Route 119/48/33 east and proceed on US Route 48 for approximately 122 miles. Then turn left on Park Farm Drive and the facility will be on the left.

The following is satellite imagery of the proposed site of the Baker Log Yard:

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The only pollutant to be emitted from this process is Methyl Bromide which is classified as a Hazardous Air Pollutant (HAP) and VOC. In order to be conservative, all CH_3Br used in the process is assumed to be emitted during the first hour each shipping container is opened or the tarp is removed. The amount of CH_3Br is prescribed by the USDA and is based on the volume and type of wood being fumigated. In order to estimate annual emissions, AWP assumed 80% of logs being fumigated during a particular cycle would be Oak with the remaining 20% being non oak. To get the worst case hourly emissions, 100% oak logs are assumed. Additionally, it is assumed that all MB will be emitted within the first hour of aeration.

The permit will limit the total amount of Methyl Bromide charged per hour to 408 pounds.

Annual emissions are based on the total amount of CH_3Br used during a rolling 12 month period. **The permit will limit this amount to 19,094 pounds per year or 9.55**

tons per year. This is based on an average of 80% oak logs, 20% non oak logs (with a dosage rate of 7.5 lb/1,000 cubic feet) and 1 treatment cycle per week for 52 weeks per year.

REGULATORY APPLICABILITY

The following information came largely from Attachment D in permit application R13-3595 and the engineering evaluation for existing permit R13-3393:

*"**Regulatory Discussion***

Methyl bromide is a highly regulated pesticide. Attachment D presents a summary of regulation and advisories, as presented in the Toxicological Profile for Methyl Bromide (ATSDR, 1992). Methyl bromide regulatory programs and requirements are discussed below.

Federal Clean Air Act (CAA)

As discussed in the Introduction, since 1992 USEPA has implemented restrictions on many uses of methyl bromide in response to phase-out requirements established under the Montreal Protocol and the Clean Air Act. These restrictions were implemented because methyl bromide is considered a stratospheric ozone depleting substance. However, the use of methyl bromide for QPS applications such as those performed at the temporary AWP facility is specifically authorized by the QPS exemption under Title VI (Stratospheric Ozone Protection) of the Clean Air Act. The interim final regulation for the QPS exemption was issued by EPA on July 19, 2001, and the final regulation was published in the Federal Register on January 2, 2003.

There are three exemptions from the phase-out of methyl bromide found in the Montreal Protocol and also in the US implementation of the Protocol through Title VI of the Clean Air Act: (1) emergency use; (2) certain short-term "critical" uses where anticipated alternatives to methyl bromide have not yet become economically and technologically feasible; and (3) QPS. In contrast to the "critical" uses, for which application must be made each year, the QPS exemption is indefinite and will continue until there are alternatives for methyl bromide. Despite the passage of several decades and a myriad of research efforts, however, finding alternatives for QPS methyl bromide treatments has proven extremely difficult.
Methyl bromide is classified as both a HAP and a VOC (reference: 40 CFR 51.100(s)) by USEPA. However, testing has demonstrated that methyl bromide has negligible photochemical reactivity (i.e., negligible ozone generation potential) and it is eligible for exclusion from definition and regulation as a VOC, per EPA policy. A petition to

exempt methyl bromide from regulation as an ozone precursor and photochemically reactive VOC was submitted to EPA by the Methyl Bromide Industry Panel of the Chemical Manufacturer's Association in July 1996. The petition was subsequently updated by the American Chemistry Council in about 2008. While EPA has acknowledged that methyl bromide is negligibly reactive based on its low photochemical reactivity, final processing of the petition has not been completed.

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)

Methyl bromide was introduced as a pesticide in 1932 and was first registered in the U.S. in 1961. Because of advances in science, public policy, and pesticide use practices, USEPA requires that pesticides first registered before November 1, 1984 be re-registered to ensure that they meet today's more stringent standards (USEPA, 2008). The re-registration process for methyl bromide is ongoing.

The USEPA Office of Pesticide Programs (OPP) plays a role in managing QPS uses through its pesticide labeling program established under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). OPP is developing specific methyl bromide labels for both QPS and soil fumigation to more clearly define permissible uses. The OPP is also developing new pesticide use requirements that could include lower maximum application rates, fumigation management plans, good agricultural practices to reduce emissions, lower permeability films (lower mass transfer coefficients) for soil fumigation, and buffers between the treated area and habited structures, schools, hospitals, and day care centers (UNEP 2009b). Any new label requirements that may apply to QPS treatments will of necessity need to be harmonized with USDA APHIS requirements.

USDA Animal and Plant Health Inspection Service (APHIS)

The USDA has developed a series of detailed fumigation protocols for various QPS commodities. The treatment schedules are published in the USDA APHIS PPQ Treatment Manual. All quarantine fumigation conducted at the temporary AWP facility will be performed under the direct supervision of APHIS officers and in accordance with the Treatment Manual, USEPA approved product labels and, in certain instances, international phytosanitary standards or commodity trade association standards. AWP will also observe industry practice in using the APHIS Treatment Manual as a "default protocol" if it encounters situations that are not covered by any of the other protocols.

As noted in elsewhere in this submittal, the APHIS Treatment Manual is highly prescriptive, dictating procedures in at least thirteen different categories and requiring

the use of specific equipment and monitoring devices.
Within the broad range of APHIS protocols for methyl bromide fumigation, there are significant differences in methyl bromide dosages and durations for various commodities.

The Treatment Manual is the product of decades of research, often performed by the USDA's Agricultural Research Service and/or in conjunction with universities, dedicated to finding the most effective means of controlling quarantine pests on specific commodities. For this reason, EPA approval of an alternative treatment to methyl bromide is but a first step in its implementation as a QPS treatment. APHIS, in turn, must assess whether a proposed alternative is at least as effective, if not more so, than methyl bromide in removing a specific quarantine pest on a specific commodity (UNEP 2009b). It must also consider whether the treatment will adversely affect the commodity or leave unacceptable residues, often a significant issue with food products.

USEPA Methyl Bromide Guidance on Buffer Zones

The USEPA has provided guidance on the establishment of buffer zones for the use of Methyl Bromide as a fumigant. This guidance was provided as Appendix 1 to application R13-3393.

The buffer zone can be determined using the USEPA set of tables for aeration lasting more than 8 hours which is contained in Appendix 1. Assuming a similarly sized building to that used at the existing facility, the interior size will be approximately 70,000 cubic feet. For the Table use we round that up to 100,000 cubic feet. The use of a 10,000 CFM fan for venting the building (70,000 cubic feet) during aeration results in an air exchange rate of 8.6 air exchanges per hour. The application rated per 1000 cubic feet of the 2700 cubic feet of shipping container volume is 15 (40.5 lb of MB per container). The EPA manual requires a 25 foot high stack (stack height in WV is always considered the height above the roof line of an adjacent building to achieve proper dilution), so with a 18 foot high building the stack needs to be 43 feet high at a minimum. With aeration time exceeding 8 hours, application rate of 15 lb of MB per 1000 cubic feet of treatment volume, stack height of 25 feet (assume total stack height required of 45 feet), and an exhaust rate of 10,000 cfm during aeration, the result is a buffer zone distance of a 10 foot radius of the stack. Assuming a 2 foot diameter stack, the resulting discharge velocity will be just under 3,200 feet per minute which is good for dispersion of any contaminant. The distance from the center of the stack to the outer edge of the buffer zone is an 11 foot radius. Since the building is under negative pressure during both fumigant injection as well as during aeration the buffer zone in not associated with the building, but with the stack."

State Rules

45CSR13 - **Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation**

The emissions associated with the proposed construction exceed 2 pounds per hour and 5 tons per year of a Hazardous Air Pollutant. Therefore a permit is required. As required under §45-13-8.3 ("Notice Level A"), AWP placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." The ad ran on January 18, 2023 in *The Moorefield Examiner* and the affidavit of publication for this legal advertisement was submitted to the WVDAQ on February 14, 2318. .

45CSR22 **- Air Quality Management Fee Program**

In accordance with 45CSR22 - "Air Quality Management Fee Program", the permittee shall not operate nor cause to operate the permitted facility or other associated facilities on the same or contiguous sites comprising the plant without first obtaining and having in current effect a Certificate to Operate (CTO). Such Certificate to Operate (CTO) shall be renewed annually, shall be maintained on the premises for which the Certificate has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

45CSR27 - **To Prevent and Control the Emissions of Toxic Air Pollutants** *(Non Applicability)*

This rule is not applicable. Methyl bromide is not a toxic air pollutant (TAP).

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides general toxicity information for those pollutants not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NOx), Ozone, Particulate Matter (PM), and Sulfur Dioxide (SO2).

These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and state programs designed to limit their emissions and public exposure. These programs include federal source-specific HAP limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). However, these programs are not applicable to the proposed facility.

The majority of non-criteria regulated pollutants fall under the definition of Hazardous Air Pollutants (HAPs). Methyl Bromide is defined as a Hazardous Air Pollutant (HAP).

HAPs

Section 112(b) of the Clean Air Act (CAA) identifies 188 compounds as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. Although Methyl Bromide is defined as a HAP, the potential HAP emissions from the facility are below the levels that define a major HAP source. Therefore, the facility is considered a minor (or area) HAP source, and no source-specific major source NESHAP or MACT standards apply. The following table lists is based on analysis provided in the Integrated Risk Information System (IRIS):

HAPs	Type	Known/Suspected Carcinogen	Classification
Methyl Bromide	VOC	No	D -Not Classifiable

AIR QUALITY IMPACT ANALYSIS

No air modeling was performed in support of this permit application.

MONITORING OF OPERATIONS

The following monitoring and record keeping will be required by the permit.

* The identity of each shipping container used
* The type of logs (oak or non-oak) stored in each shipping container
* The initial methyl bromide charge made to each shipping container
* Any additional methyl bromide charge made during the batch treatment cycle.

* The total individual container methyl bromide charge made during the treatment cycle.

* The total methyl bromide charge made to all containers during the treatment cycle.

* The actual time each container begins and ends its aeration period.

* Any other monitoring required by APHIS protocols and published in the PPQ Treatment Manual.

* Methyl Bromide concentrations recorded by the PureAire Air check monitors.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable state and federal air quality regulations will be achieved concerning the construction evaluated above. Therefore, I recommend to the Director the issuance of Permit Number R13-3595 to Allegheny Wood Products International, Inc. for their Baker Log Yard located in Hardy County, WV.

Steven R. Pursley

Digitally signed by: Steven R. Pursley
DN: CN = Steven R. Pursley email = steven.r.pursley@wv.gov C = US O = WV DEP OU = WV DAQ
Date: 2023.03.27 13:16:40 -04'00'

Steven R. Pursley, PE
Engineer

March 27, 2023