



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, ILLINOIS 60604**

**SUBJECT:** CLEAN AIR ACT INSPECTION REPORT  
Johns Manville Plant #8, Defiance, Ohio

**FROM:** Valeria Apolinario, Environmental Engineer  
AECAB (MN/OH)

**THRU:** Brian Dickens, Section Supervisor  
AECAB (MN/OH)

**TO:** File

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**BASIC INFORMATION**

**Facility Name:** Johns Manville Plant #8

**Facility Location:** 925 Carpenter Road Defiance, Ohio 43512

**Date of Inspection:** August 15, 2023

**EPA Inspector(s):**

1. Valeria Apolinario, Environmental Engineer
2. Matthew Walters, Environmental Engineer

**Other Attendees:**

1. John Akey, Complex Plant Manager
2. John Hawkins, Environmental Manager
3. Noah McManus, Environmental Manager- Water and Waste

**Contact Email Address:** john.hawkins@jm.com and john.akey@jm.com

**Purpose of Inspection:** to determine the facility's compliance with its Title V Permit (Permit No. P0130948), the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Wool Fiberglass Manufacturing (Subpart NNN), and the New Source Performance Standards for Wool Fiberglass Insulation Manufacturing Plants (NSPS Subpart PPP)

**Facility Type:** Wool Fiberglass Manufacturer

**Facility Name:** Johns Manville #8  
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**Regulations Central to Inspection:** The following regulations associated with each emission unit listed were central to the inspection:

Electric Melters P061, P062, and P063 (Lines 801-807), P126 (Line 808), and P047 (Line 89)

The Title V Permit states that particulate emissions from each electric glass melter are to be controlled by a baghouse. These melters are also subject to NESHAP Subpart NNN requirements, including the requirement to install, calibrate, maintain, and continuously operate a bag leak detection system (BLDS) for each baghouse. The Facility is required to maintain procedures on BLDS alarms in its operations, maintenance, and monitoring (OMM) plan.

Forming and Collection (F/C) units P128 (Line 808) and P048, P049, and P050 (Line 89)

The Title V Permit states that particulate emissions from the Line 808 F/C process are to be controlled by a wet electrostatic precipitator (WESP). Particulate emissions from the Line 89 F/C process are to be controlled by a set of three venturi scrubbers. Line 808 and 89 F/C units are subject to NSPS Subpart PPP. NSPS Subpart PPP requires the Facility to monitor the primary and secondary current and voltage in each electrical field and the inlet water flow rate into the WESP. The Facility must record the required current, voltage, and flow measurements at least once every four hours. In addition, NSPS Subpart PPP requires the facility to monitor the total solids content of the water entering the WESP and record the measurement at least once per day. NSPS Subpart PPP requires the Facility to monitor gas pressure drop and scrubbing liquid flow rate for scrubbers, and to record these measurements at least once every four hours.

Curing Ovens P128 (Line 808) and P051 (Line 89)

The Title V Permit requires VOC emissions from Line 808 curing processes to be controlled via a regenerative thermal oxidizer (RTO). All of the particulate and VOC emissions associated with the Line 808 curing oven are to be vented to the RTO. The Title V Permit requires VOC emissions from Line 89 curing processes (P051) to be controlled via a thermal oxidizer (TO). The Title V Permit requires the Facility to maintain a continuous temperature monitor for the firebox of each incinerator. The Facility must record all 3-hour blocks of time when the RTO or TO was more than 50 degrees Fahrenheit below the average temperature measured during the most recent stack test. NESHAP Subpart NNN requires the Facility to maintain a continuous temperature monitor and collect and record all 3-hour blocks of time when the TO was below the established average. NESHAP Subpart NNN requires the Facility to conduct TO inspections at least once per year according to the procedures in the OMM plan.

Finishing Unit P066, P069, P072, P075, P078, P081 and P084 (Lines 801-807)

The Title V Permit requires that the control systems, consisting of a cyclone and baghouse, shall achieve a 99% removal efficiency for particulate emissions with 100% capture.

**Arrival Time:** 1:30 PM

**Departure Time:** 5:00 PM

**Inspection Type:**

- ☒ Unannounced Inspection
- ☐ Announced Inspection

**OPENING CONFERENCE**

- ☒ Presented Credentials
- ☒ Stated authority and purpose of inspection
- ☐ Provided Small Business Resource Information Sheet
- ☒ Small Business Resource Information Sheet not provided. Reason: Not a Small Business.
- ☒ Provided CBI warning to facility

The following information was obtained verbally from John Akey and John Hawkins unless otherwise noted.

**Process Description:**

Johns Manville (Facility) operates wool fiberglass manufacturing processes at the Facility to produce several forms of insulation, including piping insulation.

Three manufacturing lines at the Facility (Lines 81, 82, and 86) consist of the Pot and Marble process, where marbles are melted in pots. These pots have holes at the bottom that aid in fiberizing the glass. These glass strands are further stretched by passing through a flame. A binder is applied during the fiberizing process. The fiberglass is collected and then passed through an oven for the binder to cure.

Lines 801-807 and 89 are fed by batch melters, which melt cullet glass with other raw materials. Melter P061 feeds into Lines 801-802, melter P062 feeds into Lines 803-804, and melter P063 feeds into lines 805-807. Line 808 is fed by marble melter P126, which operates similar to the batch melters, but with marbles as the glass material. The molten glass is collected in forehearth and distributed to several rotary spinners, which is the forming process for these lines. The melted glass is spun through a disk spinner with tiny holes, which fiberizes the glass. Water is used to cool down the fibers and a binder is applied during the spinning process. The fiberglass is collected and then passed through an oven for the binder to cure.

At Plant #8, all furnaces are fully electric. Each furnace has its own baghouse equipped with a BLDS. The Facility stated that emissions from Lines 801-807 F/C units are controlled with a scrubber, while emissions from the Line 808 F/C unit are controlled by a WESP. VOC emissions from the Line 89 F/C unit are controlled by three scrubbers. VOC Emissions from the Line 808 curing oven are controlled by an RTO, while VOC emissions from the Line 89 curing oven are controlled by a TO.

Depending on specification, the cured fiberglass can be finished through grinding operations controlled by cyclones, baghouses, or a combination of both control devices.

**Staff Interview:**

- There are approximately 600 employees at Plant #8, Plant #2, and the Columbus Avenue warehouse combined. Plant #2 is located in downtown Defiance, Ohio. The facility operates 24/7.
- The current Title V Permit combines emissions units at both Plant #8 and Plant #2.
- In the past five years, the facility has expanded its piping insulation manufacturing process. The addition of Line 808 was a part of this expansion.
- The facility conducts stack testing for the melters every five years. Lines 801-808 Melters are known by the facility as Melters 100, 200, 300, and 400, which correspond to P061, P062, P063, and P126, respectively, in the Title V Permit.
- Staff stated that BLDS alarms do not occur often. Staff was unsure of the calibration procedures for each BLDS.
- Only the secondary voltage of the WESP is monitored for NSPS Subpart PPP compliance purposes. Staff stated that they had requested this alternative monitoring in a permit application to Ohio EPA, who approved.
- Regular inspections of the TO are conducted once per year. The TO media is changed approximately four times per year.
- Preventative maintenance is conducted on the TO approximately twice per year.
- The facility has an environmental alarm system, known as the NESHAP system, that monitors and records the values of different control device parameters, including the pressure drop and flow rate of the Line 89 venturi scrubbers. When an alarm is triggered, Facility staff have 14 minutes to return the parameter back into the compliant range before the manufacturing line is shut down.
- The Facility also operates an “uncured” line known as Line 800. Fibers come pre-formed and are only cured and finished in this line.
- The Facility applies a variety of binders onto the fiberglass, including a phenol/formaldehyde mixture for resins.

**TOUR INFORMATION**

**EPA Tour of the Facility:** Yes

**Data Collected and Observations:**

EPA toured the Facility with the focus on the emissions units central to the inspection, in the order at they appeared. Therefore, the tour began at the Finishing sections of Lines 801-807. EPA noticed that the area around the Finishing operations at Line 806 had uncaptured particulate, including on the ductwork to the control devices (Images 1-2). EPA noted seeing uncaptured particulate around Finishing operations at 807.

Afterwards, EPA visited the melters for Lines 801-808. EPA observed uncaptured particulate emissions from melters P062 (Image 3, Video 1) and P061 (Image 4, Video 2). Melter P063 was enclosed and EPA did not observe uncaptured emissions from melter P126.

EPA then viewed the curing oven and RTO for Line 808. Using a Forward-looking Infrared camera (FLIR) EPA visualized VOC emissions leaving the curing oven (FLIR Video 1-2).

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Staff explained to EPA that Line 89 was undergoing a cleaning cycle. The F/C units and curing oven were therefore down at the time of the inspection. However, melter P047 was operating.

EPA observed that melter P047 was completely exposed to the Facility environment. EPA observed particulate emissions bypassing ductwork to the melter baghouse. Particulate had accumulated around the melter area. Shovels and wheelbarrows were noted in the area. A roof vent above the melter was partially exposed to the atmosphere and EPA noted particulate accumulated in the vent (Images 5-10).

EPA viewed the F/C rotary spinners associated with Line 89; the units were offline at the time of the inspection (Image 11).

EPA visited the control room to view and obtain values from the NESHAP system (Image 12). EPA did not see any recorded parameter values outside of the limits visible in the system. EPA has requested the OMM Plan to confirm the parameter limits.

EPA then exited the Facility to view the stacks. EPA did not observe visible emissions from the stacks. EPA noted with Facility staff that there was a “hot” smell in the area.

**Photos and/or Videos:** were taken during the inspection.

### **CLOSING CONFERENCE**

☒ Provided U.S. EPA point of contact to the facility

### **Requested documents:**

- The most recent stack tests conducted for all melters, forming/collection emissions units, and curing ovens, including the parameter data used to establish min/max setpoints for all associated scrubbers, the Wet Electrostatic Precipitator (WESP), the Thermal Oxidizer (TO) for Line 89 and the Regenerative TO (RTO) for Unit 808
- Most recent emissions report to Ohio EPA, including the spreadsheet(s) of emission calculations
- Copy of the most recent Title V Permit application to Ohio EPA containing emissions calculations for each emissions unit
- Operations, Maintenance, and Monitoring Plan required by NESHAP Subpart NNN
- BLDS alarms since January 1, 2023, including time, duration, and corrective action conducted
- Scrubber, WESP, TO, and RTO parameter alarms since January 1, 2023, including time, duration, and corrective action conducted
- Unit 808 RTO and Line 89 TO Temperatures since January 1, 2023
- Scrubber flow rates and pressure drop for the venturi scrubber(s) and cooling scrubber associated with Line 89 since January 1, 2023
- Primary and secondary current and voltage in each electrical field and the inlet water flow rate of the WESP since January 1, 2023
- Most recent RTO inspection and maintenance

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- BLDS outputs since January 1, 2023, for each BLDS
- Most recent calibration, drift test, and setpoint change for each BLDS
- Past 4 Quarterly deviation reports and past 2 semiannual NSPS PPP reports
- Notification of Compliance Status for NESHAP NNN
- A facility diagram, including all furnaces, forming/collection, curing, and cooling sections
- Process Flow Diagrams from melter to finished product for Melters 100, 200, 300, and 400 and for Line 89
- Records of communication with Ohio EPA of approval to monitor solely secondary voltage for the WESP
- A sentence stating the numbers of zones within the WESP

**Concerns:** EPA noted concerns of uncaptured particulate from melters P061, P062, and P047. The Facility stated that melter P047 is the largest batch melter and that Line 89 has a higher glass pull rate than the other manufacturing lines. EPA also noted that the FLIR camera visualized VOC emissions from the Line 808 curing oven that would not be routed to the RTO. EPA also expressed concerns about potential lower particulate capture efficiency at Lines 806 and 807 Finishing operations.

#### **DIGITAL SIGNATURES**

Report Author: **VALERIA APOLINARIO**  Digitally signed by VALERIA APOLINARIO  
Date: 2023.10.13 09:52:57 -05'00'

Section Supervisor: **BRIAN DICKENS**  Digitally signed by BRIAN DICKENS  
Date: 2023.10.13 13:16:02 -05'00'

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**APPENDICES AND ATTACHMENTS**

1. Appendix A: Digital Image Log
2. Appendix B: Digital Video Log
3. Appendix C: FLIR Video Log

**Facility Name:** Johns Manville #8  
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**APPENDIX A: DIGITAL IMAGE LOG**

|                                           |                                                                        |
|-------------------------------------------|------------------------------------------------------------------------|
| <b>1. Inspector Name:</b> Matthew Walters | <b>2. Archival Record Location:</b> Region 5 Electronic Records Center |
|-------------------------------------------|------------------------------------------------------------------------|

| <b>Image Number</b> | <b>File Name</b>        | <b>Date and Time (incl. Time zone and DST)</b> | <b>Description of Image</b>                                             |
|---------------------|-------------------------|------------------------------------------------|-------------------------------------------------------------------------|
| 1                   | 2023.08.15_MSW (1).JPG  | 2023:08:15 15:24:56                            | Line 806 Finishing - Grinding; Particulate on Ductwork                  |
| 2                   | 2023.08.15_MSW (2).JPG  | 2023:08:15 15:25:09                            | Line 806 Finishing - Grinding; Particulate on Ductwork                  |
| 3                   | 2023.08.15_MSW (3).JPG  | 2023:08:15 15:36:43                            | Batch Melter 200 (P062) Lines 801-807 Uncaptured Particulate Emissions  |
| 4                   | 2023.08.15_MSW (5).JPG  | 2023:08:15 15:38:59                            | Batch Melter 100 (P061) Lines 801-807; Uncaptured Particulate Emissions |
| 5                   | 2023.08.15_MSW (7).JPG  | 2023:08:15 16:11:32                            | Batch Melter (P047) Line 89; Uncaptured Particulate Emissions           |
| 6                   | 2023.08.15_MSW (8).JPG  | 2023:08:15 16:11:54                            | Batch Melter (P047) Line 89; Accumulated Particulate Surrounding Melter |
| 7                   | 2023.08.15_MSW (9).JPG  | 2023:08:15 16:12:05                            | Batch Melter (P047) Line 89; Gaps in Melter                             |
| 8                   | 2023.08.15_MSW (10).JPG | 2023:08:15 16:12:23                            | Batch Melter (P047) Line 89; Accumulated Particulate Surrounding Melter |
| 9                   | 2023.08.15_MSW (11).JPG | 2023:08:15 16:12:59                            | Batch Melter (P047) Line 89; Roof Open to Ambient Air above furnace     |
| 10                  | 2023.08.15_MSW (12).JPG | 2023:08:15 16:13:05                            | Batch Melter (P047) Line 89; Accumulated Particulate in Roof Opening    |
| 11                  | 2023.08.15_MSW (13).JPG | 2023:08:15 16:15:31                            | Line 89 F/C Rotary Spinners; Offline                                    |
| 12                  | 2023.08.15_MSW (14).JPG | 2023:08:15 16:24:10                            | NESHAP Alarm Limits and Present Values                                  |

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**APPENDIX B: DIGITAL VIDEO LOG**

|                                              |  |                                                                        |  |
|----------------------------------------------|--|------------------------------------------------------------------------|--|
| <b>1. Inspector Name:</b> Valeria Apolinario |  | <b>2. Archival Record Location:</b> Region 5 Electronic Records Center |  |
|----------------------------------------------|--|------------------------------------------------------------------------|--|

| <b>Video Number</b> | <b>File Name</b>       | <b>Date and Time (incl. Time zone and DST)</b> | <b>Description of Image</b>                                             |
|---------------------|------------------------|------------------------------------------------|-------------------------------------------------------------------------|
| 1                   | 2023.08.15_MSW (4).MP4 | 8/15/2023 15:37                                | Batch Melter 200 (P062) Lines 801-807 Uncaptured Particulate Emissions  |
| 2                   | 2023.08.15_MSW (6).MP4 | 2023:08:15 15:39                               | Batch Melter 100 (P061) Lines 801-807; Uncaptured Particulate Emissions |

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**APPENDIX C: FLIR VIDEO LOG**

|                                              |                                                                        |
|----------------------------------------------|------------------------------------------------------------------------|
| <b>1. Inspector Name:</b> Valeria Apolinario | <b>2. Archival Record Location:</b> Region 5 Electronic Records Center |
|----------------------------------------------|------------------------------------------------------------------------|

| <b>FLIR Video Number</b> | <b>File Name</b> | <b>Date and Time (incl. Time zone and DST)</b> | <b>Description of Image</b>               |
|--------------------------|------------------|------------------------------------------------|-------------------------------------------|
| 1                        | MOV_3191.mp4     | 8/15/2023 14:51                                | Uncaptured VOCs from Line 808 Curing Oven |
| 2                        | MOV_3192.mp4     | 8/15/2023 14:53                                | Uncaptured VOCs from Line 808 Curing Oven |