



## REGION 5

CHICAGO, IL 60604

### **MEMORANDUM**

**SUBJECT:** CLEAN AIR ACT INSPECTION REPORT  
PureCycle, Ironton, Ohio

**FROM:** Jason Schenandoah, Environmental Engineer  
AECAB (IL/IN)

**THRU:** Nathan Frank, Section Supervisor  
AECAB (IL/IN)

**TO:** File

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### **BASIC INFORMATION**

**Facility Name:** PureCycle

**Facility Location:** 925 County Rd 1A Building 560, Ironton, OH 45638

**Date of Inspection:** July 10, 2024

**EPA Inspector(s):**

1. Jason Schenandoah, Environmental Engineer
2. Charles Zeman, Physical Scientist

**Other Attendees:**

1. Drew Kraemer, Environmental, Health, Safety, and Quality Manager, PureCycle
2. Jeffrey Kramer, Site Manager, PureCycle

**Contact Email Address:** dkraemer@purecycle.com; jkramer@purecycle.com

**Purpose of Inspection:** To ensure compliance with the Clean Air Act

**Facility Type:** Polypropylene recycling facility

**Regulations Central to Inspection:** To determine applicability to the proposed rulemaking on pyrolysis and gasification units.

**Arrival Time:** 10:45 am

**Departure Time:** 2:00 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:
- ☒ Provided CBI warning to facility

The following information was obtained verbally from PureCycle Personnel unless otherwise noted.

**Process Description:**

Bails of post-consumer waste arrive at the facility via truck. The bails are sorted to contain mostly polypropylene, #5 recycle plastic waste; the bails have 80-95% polypropylene while the balance is mostly polyethylene plastic and cardboard that is mixed in. The bailed material is fed into a wet line where the material is separated and sprayed off to remove dirt. Cardboard is removed as slurry in the water and any metals that were in the bail are separated via gravity. Material from the wet line is sent to one of two dry lines to be shredded and ground into smaller pieces. The material is then conveyed to an agglomeration process where really fine plastic pieces are agglomerated together. After agglomeration, the shredded, ground, and agglomerated plastics are pneumatically conveyed to storage silos.

Plastics from the storage silos are pneumatically conveyed to a feed extruder and where they are melted and formed into a continuous profile. That continuous profile is fed into a column where it is mixed with a proprietary solvent for an extraction process. Organics with low molecular weight are separated from the polypropylene, polyethylene, and inorganics. The organics with some solvents are sent to a flash tank where the pressure is dropped, and waxy organics drop out. The waxy organics are intended to be sold as a byproduct, but it was not being sold at the time of the inspection. The solvents enter a condenser following the flash tank to be condensed and recycled. The polypropylene, polyethylene, and inorganics from the extraction process are sent to a mixing column. The mixing column creates a homogeneous mixture of the polypropylene, polyethylene, inorganics, and solvent; the polypropylene goes into solution at this stage when subject to proprietary process parameters. The mixture then enters a settling tank where polyethylene is settled out of the mixture with some inorganics followed by a filtration system to remove the remaining inorganics from the mixture. The mixture then enters an adsorber where pigments and dyes are separated from the polypropylene in solution. The polypropylene in solution then enters a decanter where some of the solvent is removed and the remaining solution is 50-60% polypropylene. The remaining solution enters a flash tank to

remove nearly all of the solvent. Lastly, the polypropylene enters a product extruder. The polypropylene is degassed in three locations along the extruder to remove residual solvent and finally extrudes ultra-pure recycled polypropylene. At the end of the extruder, water cools the plastic and it's fed through a cutterhead wheel to cut pellet sized polypropylene. Outbound products are shipped via rail.

**Staff Interview:**

The wet line, the dry lines, agglomeration, and the intermediate shredded plastic storage silos have baghouses for particulate matter control. A thermal oxidizer (TO) controls emissions controls emissions from several sources. All lower pressure process systems route emissions to the TO. Vapor balanced emissions from organic wax drum filling operations are routed to the TO. Media from the filter and adsorber are degassed in an enclosure and emissions from that enclosure are routed to the TO. Any emergency pressure relief devices are routed to an emergency flare. An initial staging silo for final product is used to store final product in a short-term manner; the initial staging silo is slightly heated to volatilize any residual solvent off. The initial staging silo emissions are routed to the TO. The emergency flare has been used more often around the time of the inspection because as maintenance events are needed the units that are being worked on are vented to the flare prior to work. The emergency flare has a thermocouple to monitor for flame presence, it is natural gas and steam assisted, and a drop out box is in place prior to the flare to prevent solids from entering the flare during emergency venting.

**TOUR INFORMATION**

**EPA Toured the Facility:** Yes

**Data Collected and Observations:**

EPA inspectors utilized Optical Gas Imaging (OGI) technology via a Forward Looking Infrared (FLIR) camera while touring PureCycle's facility. Inspectors did not note any excess emissions while conducting OGI. PureCycle's operations are not a pyrolysis or gasification process.

**Photos and/or Videos:** were taken during the inspection and are listed in Appendix A.

**Field Measurements:** were not taken during this inspection.

**CLOSING CONFERENCE**

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

**Facility Name:** PureCycle  
**Facility Location:** 925 County Rd 1A Building 560, Ironton, OH 45638  
**Date of Inspection:** July 10, 2024

**Requested documents:**

- 1-year's worth of parametric monitoring data for:
  - Baghouses
    - Wet line
    - Dry lines
    - Agglomeration
    - Intermediate shredded plastic storage silos
  - TO
  - Emergency flare

**DIGITAL SIGNATURES**

Report Author: **JASON**  
**SCHENANDOAH**



Digitally signed by JASON  
SCHENANDOAH  
Date: 2024.09.06  
14:21:30 -05'00'

Section Supervisor: **NATHAN**  
**FRANK**



Digitally signed by  
NATHAN FRANK  
Date: 2024.09.06  
16:04:04 -05'00'

**APPENDICES**

1. Appendix A: Digital Image Log and Digital Video Log

**Facility Name:** PureCycle  
**Facility Location:** 925 County Rd 1A Building 560, Ironton, OH 45638  
**Date of Inspection:** July 10, 2024

**APPENDIX A: DIGITAL IMAGE LOG AND DIGITAL VIDEO LOG**

**Inspector Name:** Charles Zeman      **Archival Record Location:** [ERC Folder](#)

| Image Number | File Name    | Date and Time (incl. Time zone and DST) | Description of Image           |
|--------------|--------------|-----------------------------------------|--------------------------------|
| Image Number | File Name    | Date and Time                           | Description of Image           |
| 1            | IMG_0653.JPG | 7/10/2024 11:56                         | Emergency flare                |
| 2            | IMG_0654.JPG | 7/10/2024 12:01                         | #5 bails                       |
| 3            | IMG_0655.JPG | 7/10/2024 12:03                         | Recycling signage              |
| 4            | IMG_0656.JPG | 7/10/2024 12:05                         | Wet line shredder              |
| 5            | IMG_0657.JPG | 7/10/2024 12:06                         | Wet line washer                |
| 6            | IMG_0658.JPG | 7/10/2024 12:08                         | Wet line dryer                 |
| 7            | IMG_0659.JPG | 7/10/2024 12:09                         | Wet line dust collector        |
| 8            | IMG_0660.JPG | 7/10/2024 12:10                         | Shredded plastic               |
| 9            | IMG_0661.JPG | 7/10/2024 12:13                         | Agglomeration units            |
| 10           | IMG_0662.JPG | 7/10/2024 12:16                         | Shredded plastic storage silos |
| 11           | IMG_0663.JPG | 7/10/2024 12:24                         | Settler                        |
| 12           | IMG_0664.JPG | 7/10/2024 12:28                         | Extruder                       |
| 13           | IMG_0665.JPG | 7/10/2024 12:39                         | Extraction column              |