

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
FIELD INSPECTION REPORT**



| <b>SOURCE INFORMATION</b> |   |
|---------------------------|---|
| <u>SOURCE NAME</u>        | Keter North America, Inc.   |
| <u>SOURCE LOCATION</u>    | 6435 South Scatterfield Road, Anderson, IN 46013<br>Madison County  |
| <u>MAILING ADDRESS</u>    | Same as above   |
| <u>PLANT ID</u>           | NA  |
| <u>PERMIT INFORMATION</u> | Permit Type: Unpermitted<br>Permit Number:<br>Permit Expiration Date:<br>VFC Document No. (hyperlink):  |
| <u>ATTAINMENT STATUS</u>  | <input checked="" type="checkbox"/> Attainment for all criteria pollutants<br><input type="checkbox"/> Nonattainment for <input type="checkbox"/> SO <sub>2</sub> <input type="checkbox"/> CO <input type="checkbox"/> O <sub>3</sub> <input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> Pb <input type="checkbox"/> PM <sub>10</sub> <input type="checkbox"/> PM <sub>2.5</sub> |
| <u>SOURCE STATUS</u>      | <input type="checkbox"/> PSD Major (326 IAC 2-2) <input type="checkbox"/> Major Source of HAPs<br><input type="checkbox"/> Emission Offset (326 IAC 2-3) <input type="checkbox"/> Area Source of HAPs<br><input type="checkbox"/> Acid Rain (326 IAC 21)  |
| <u>SOURCE DESCRIPTION</u> | Keter North America is a plastic injection molding facility. They make plastic retail items such as shelving, toolboxes, totes, etc. for Home Depot and Wal-mart primarily.   |

| <b>INSPECTION INFORMATION</b>     |  |                         |            |                |                    |        |
|-----------------------------------|--|-------------------------|------------|----------------|--------------------|--------|
| <u>INSPECTED BY</u>               | Rebecca Hayes  |                         |            |                |                    |        |
| <u>INSPECTION DATE AND TIME</u>   | 12/8/2020  | TIME IN: 2:00           |            | TIME OUT: 4:30 |                    |        |
| <u>REPORTED BY</u>                | Rebecca Hayes  | REPORT DATE: 12/16/2020 |            |                |                    |        |
| <u>COMPLIANCE PERIOD REVIEWED</u> | 1/1/2020 to 12/8/2020  |                         |            |                |                    |        |
| <u>INSPECTION NOTIFICATION</u>    | <input checked="" type="checkbox"/> Unannounced <input type="checkbox"/> Announced:  |                         |            |                |                    |        |
| <u>INSPECTION OBJECTIVE(S)</u>    | <input checked="" type="checkbox"/> Complaint <input type="checkbox"/> Surveillance <input type="checkbox"/> Other:  |                         |            |                |                    |        |
| <u>ACES TRACKING NUMBER(S)</u>    | Inspection:  | 253061                  | Complaint: | 252825         | Violation/Warning: | 253234 |
| <u>RM TRACKING NUMBER(S)</u>      | Complaint:   | 94280                   |            |                |                    |        |
| <u>INSPECTION BACKGROUND</u>      | IDEM emergency response received a complaint from a private citizen of a chemical odor at 6435 South Scatterfield Road in Anderson on 11/23/2020. This site was the location of Magnequench International, Inc. (095-00062) which was an exempt source that closed in 2002. Now Keter North America, Inc. is occupying the location. I was unable to find any history for this facility in ACES or an active permit at that location in the permit database. |                         |            |                |                    |        |

| <b>SOURCE PERSONNEL INTERVIEWED</b> |                    |                                   |                             |
|-------------------------------------|--------------------|-----------------------------------|-----------------------------|
| <i>Name</i>                         | <i>Title</i>       | <i>Phone Number</i>               | <i>Email Address</i>        |
| Brian Vannarsdall                   | Director of Safety | 317-364-8174<br>765-615-7105 cell | brian.vannarsdall@keter.com |

| <b>INSPECTION AND COMPLAINT HISTORY (PREVIOUS 5 YEARS)</b> |                                  |               |                 |
|--|----------------------------------|---------------|-----------------|
| <i>Date</i>  | <i>Inspection/Complaint Type</i> | <i>Result</i> | <i>Comments</i> |
|  | COMPLAINT / OTHER                | N/A           |                 |

| <b>COMPLIANCE HISTORY (PREVIOUS 5 YEARS)</b> |                         |                              |                              |
|--|-------------------------|------------------------------|------------------------------|
| <b>Informal Enforcement Actions</b>          |                         |                              |                              |
| <i>Date Issued</i>                           | <i>Action Taken</i>     | <i>Describe Violation(s)</i> |                              |
|  | N/A                     |                              |                              |
| <b>Formal Enforcement Actions</b>            |                         |                              |                              |
| <i>Case Number</i>                           | <i>Enforcement Type</i> | <i>Civil Penalty</i>         | <i>Describe Violation(s)</i> |
|  | N/A                     | \$                           |                              |
| <b>Other Relevant Actions</b>                |                         |                              |                              |
| <i>Action Taken</i>                          | <i>Comments</i>         |                              |                              |
|  |                         |                              |                              |

| <b>INSPECTION OBSERVATIONS AND COMMENTS</b>  |
|--|
| <p>The injection molding process starts with receiving plastic pellets (all resin is a variant polypropylene) at the facility primarily via railcar. Those pellets are pneumatically conveyed into 1 of 6 storage silos. Each silo can hold up to 200,000 lbs of pellets. They also receive a small amount of pellets by bulk truck and in super sacks, but the vast majority is delivered by railcar. The super sacks are reprocessed plastic they receive from outside plastic recyclers that will be added to the mix. There are no particulate filters on the vents to the silos. From the silos the pellets are transferred again pneumatically to blenders where the different pelletized polymers are mixed with colorants (pelletized form) for each specific job. All raw materials used for each batch onsite are in pellet form. There are no powdered materials used onsite. The blenders then feed the injection molding machines, which generate the final product. The facility currently has 42 injection molders and are in the process of receiving another 2 injection molding machines from a plant outside of Indiana that has closed. They also have 2 plastic grinders inhouse that they use to grind their own rejected products. This recycled plastic is fed back into the process. Emissions from each of the grinders is controlled by a cyclone and baghouse combination prior to being exhausted indoors.</p> <p>The facility operates 24 hours a day 7 days a week with only a couple days down each year for maintenance related activities. Mr. Vannarsdall estimated their typically rate of operation is around 75% of their injection molding capacity. They have no boilers, surface coating operations, or emergency generators onsite. They provide building heat through natural gas heaters. They have never to their knowledge applied for an air quality permit.</p> <p>I asked Mr. Vannarsdall if there had been any process upsets or other reasons that may have caused the odor complaint. The only process upset that he could think of was that occasionally the injection molding machines will have a small leak from a seam and if the liquid plastic touches one of the heating bands, it can cause smoldering and a burnt plastic smell. They call these small leak drooling. But there were no instances recently that are any different than the occasional drooling that they experience on an ongoing basis.</p> <p>I requested the following information to make a rough determination of the need for permitting.</p> <ul style="list-style-type: none"> <li>• Tons of raw material usage in the last 12 months broken down by the type of materials used.</li> <li>• Throughput of the injection molding machines</li> <li>• Throughput of the plastic grinding equipment and the capacity in terms of airflow of the cyclone / baghouse combination that controls each unit</li> </ul> <p><u>The following production information was provided on 12/10/2020</u></p> <ul style="list-style-type: none"> <li>• A total of 24,073 tons of resin was used during the 12 months from 12/1/2019 – 12/1/2020</li> <li>• Throughput on each injection molding machine varies based upon the product being produced and size of the machine</li> </ul> |

**INSPECTION OBSERVATIONS AND COMMENTS**

- During the COVID19 phases there were periods when the facility operated at about 33% capacity; however, they have been working currently at around 75% capacity and were operating at that higher capacity prior to COVID19
- With those variables the average machine consumes about 3,315 lbs per 24-hour period
- Only one of the grinders is currently operating during day-shift, mostly Monday-Friday on an as needed basis
- When grinding, the goal is 6,500 lbs per shift (590 lbs per hour)
- The second grinder is planned to start production by 12/31/2020

Actual and Potential Emission Calculations

A similar source in Indiana was used as a basis for the potential emission calculations. American Plastic Molding (143-00021) in Scottsburg Indiana with MSOP No. 42892 that issued 11/12/2020. This source has pneumatic material transfer of resin from storage silos to injection molding machines and a grinding station, so it is an analogous source.

**Injection Molding**

Polypropylene emission factors for PM, VOC and HAPs from Polypropylene molding were taken from a technical paper, volume 49 in January 1999, published by the Journal of Air and Waste Management Association titled "Development of Emission Factors for Polypropylene Processing"

Emission Factors are as follows:

- PM – 68.4 lbs emissions /10<sup>6</sup> lbs resin processed
- VOC – 177 lbs emissions /10<sup>6</sup> lbs resin processed
- CO – 100 lbs emissions /10<sup>6</sup> lbs resin processed
- HAP (formaldehyde) – 1.38 lbs emissions /10<sup>6</sup> lbs resin processed
- HAP (Acetaldehyde) – 0.54 lbs emissions /10<sup>6</sup> lbs resin processed

**Grinding**

The emission factor used for plastic grinding was 0.06 lbs PM / ton of material processed

**Material transfer**

Emission factor for conveyance of pellets is based on AP-42 Chapter 8.2 Table 8.2-1 for urea bagging  
 The emission factor used for pneumatic material transfer was 0.19 lbs PM / ton of material processed  
 This would be calculated for raw material silo loading and material transfer to the molding area.

Based on the actual throughput for the 12 months from 12/1/2019 – 12/1/2020 of 24,073 tons, we can estimate the actual emissions over that year period as follows. I did not have actual information on the amount of grinding, so this value is the potential based on 590 lb/hr.

| ACTUAL EMISSIONS          |                  | Injection Molding          | Raw Material Transfer |                     | Grinding         |
|---------------------------|------------------|----------------------------|-----------------------|---------------------|------------------|
|                           |                  |                            | Silo loading          | Transfer to molding |                  |
| Throughput over 12 months |                  | 24,073 tons                |                       |                     | 590 lb/hr        |
| PM                        | Emission Factor  | 68.4 lb/10 <sup>6</sup> lb | 0.19 lb/ton           | 0.19 lb/ton         | 0.06 lb/ton      |
|                           | <b>Emissions</b> | <b>1.65 tons</b>           | <b>2.29 tons</b>      | <b>2.29 tons</b>    | <b>0.08 tons</b> |
| VOC                       | Emission Factor  | 177 lb/10 <sup>6</sup> lb  |                       |                     |                  |
|                           | <b>Emissions</b> | <b>4.26 tons</b>           |                       |                     |                  |
| CO                        | Emission Factor  | 100 lb/10 <sup>6</sup> lb  |                       |                     |                  |
|                           | <b>Emissions</b> | <b>2.41 tons</b>           |                       |                     |                  |
| HAP                       | Emission Factor  | 1.38 lb/10 <sup>6</sup> lb |                       |                     |                  |
|                           | <b>Emissions</b> | <b>0.03 tons</b>           |                       |                     |                  |
| HAP                       | Emission Factor  | 0.54 lb/10 <sup>6</sup> lb |                       |                     |                  |
|                           | <b>Emissions</b> | <b>0.01 tons</b>           |                       |                     |                  |

Based on the information provided by the source from December 1, 2019 to December 1, 2020, the injection molding machines consumed on average 3,315 lbs per 24-hour period; however, this data was based on a period of reduced capacity. During the period of data provided, around half the year was at 33% capacity and the remainder was around 75% capacity. The potential emissions calculations for injection molding were based on scaling up to operating at 100% capacity of the operations on a 24/7 schedule. The potential emissions for the raw material transfer was based

**INSPECTION OBSERVATIONS AND COMMENTS**

on scaling up the annual throughput provided to an operation at 100% capacity as well. The information for the grinding machine was based on potential of the equipment at a rate of 590 lb/hr for each unit, so there was no need to scale up this number. The source wide potential is calculated at 8760 hours per year and for 2 grinders and 44 injection molding machines.

| POTENTIAL EMISSIONS |                  | Injection Molding          | Raw Material Transfer |                     | Grinding         |
|---------------------|------------------|----------------------------|-----------------------|---------------------|------------------|
|                     |                  |                            | Silo loading          | Transfer to molding |                  |
|                     |                  | 6,630 lb/day (x44)         | 48,146 tons annually  |                     | 590 lb/hr (x2)   |
| PM                  | Emission Factor  | 68.4 lb/10 <sup>6</sup> lb | 0.19 lb/ton           | 0.19 lb/ton         | 0.06 lb/ton      |
|                     | <b>Emissions</b> | <b>3.64 tons</b>           | <b>4.57 tons</b>      | <b>4.57 tons</b>    | <b>0.16 tons</b> |
| VOC                 | Emission Factor  | 177 lb/10 <sup>6</sup> lb  |                       |                     |                  |
|                     | <b>Emissions</b> | <b>9.4 tons</b>            |                       |                     |                  |
| CO                  | Emission Factor  | 100 lb/10 <sup>6</sup> lb  |                       |                     |                  |
|                     | <b>Emissions</b> | <b>5.32 tons</b>           |                       |                     |                  |
| HAP                 | Emission Factor  | 1.38 lb/10 <sup>6</sup> lb |                       |                     |                  |
|                     | <b>Emissions</b> | <b>0.07 tons</b>           |                       |                     |                  |
| HAP                 | Emission Factor  | 0.54 lb/10 <sup>6</sup> lb |                       |                     |                  |
|                     | <b>Emissions</b> | <b>0.03 tons</b>           |                       |                     |                  |

| POTENTIAL EMISSIONS |                   |
|---------------------|-------------------|
| PM                  | <b>12.94 tons</b> |
| VOC                 | <b>9.4 tons</b>   |
| CO                  | <b>5.32 tons</b>  |
| HAPs                | <b>0.10 tons</b>  |

These estimated potential emissions are above the threshold requiring permitting.

**INSPECTION FINDINGS**

- No violations were observed or determined at the time of the inspection.
- The following violations were determined at the time of the inspection:

| Condition/Citation | Description of Violation(s)   |
|--------------------|---|
| 326 IAC 2-5.1      | The source constructed and operated the facility without being appropriately permitted. |

|                           |   |
|---------------------------|---|
| <b>RECOMMENDED ACTION</b> | Issue inspection summary/violation letter.  |
| <b>EXIT INTERVIEW</b>     | I explained my findings, recommendations, and conclusions with Mr. Vannarsdall prior to exiting the facility. |