

## EMISSIONS ACTIVITY CATEGORY FORM IRON PRODUCTION

*This form is to be completed for each operation which is part of an iron production facility. State/Federal regulations which may apply to iron production facilities are listed in the instructions. Note that there may be other regulations which apply to this emissions unit which are not included in this list.*

Note: This emissions activity category (EAC) form does not include roadways and parking areas, storage piles, and material handling operations which may also be associated with an iron production facility. Therefore, additional EAC forms may need to be submitted for these emissions units.

1. Reason this form is being submitted (Check one)

New Permit       Renewal or Modification of Air Permit Number(s) (e.g. P001)\_\_\_\_\_

2. Maximum Operating Schedule: \_\_\_\_\_ hours per day; \_\_\_\_\_ days per year

If the schedule is less than 24 hours/day or 365 days/year, what limits the schedule to less than maximum? See instructions for examples. \_\_\_\_\_

3. Identification of emissions units:

Check Those  
 Emissions Units

Present

Emissions Units

How many?

- |                          |  |       |
|--------------------------|--|-------|
| <input type="checkbox"/> | Sinter machine windbox discharge               | _____ |
| <input type="checkbox"/> | Sinter machine discharge (breaker and screens) | _____ |
| <input type="checkbox"/> | Sinter cooler (not vented through a stack)     | _____ |
| <input type="checkbox"/> | Blast furnace charging                         | _____ |
| <input type="checkbox"/> | Blast furnace upsets (slips)                   | _____ |
| <input type="checkbox"/> | Blast furnace tapping (cast house emissions)   | _____ |
| <input type="checkbox"/> | Slag crushing                                  | _____ |
| <input type="checkbox"/> | Other (describe):_____                         | _____ |

4. General blast furnace data:

| Emissions Unit ID(s) | Number of identical furnaces | Manufacturer | Blown-in Capacity (tons/hour) | Maximum Pig Iron Production (tons/hour) | Maximum Pig Iron Production (tons/year) |
|----------------------|------------------------------|--------------|-------------------------------|---|---|
|                      |                              |              |                               |   |   |
|                      |                              |              |                               |   |   |
|                      |                              |              |                               |   |   |

5. Sinter machine process data:

| Emissions Unit ID(s) | Number of identical machines | Manufacturer | Maximum Design Production Capacity (tons/hour) | Maximum Hourly Sinter Production (tons/hour) | Maximum Annual Sinter Production (tons/year) |
|----------------------|------------------------------|--------------|--|--|--|
|                      |                              |              |  |  |  |
|                      |                              |              |  |  |  |
|                      |                              |              |  |  |  |

6. Blast furnace charging process data:

| Emissions Unit ID(s) | Number of Identical Machines | Type of Charging | Type of Charge  | Maximum Design Capacity (tons/hour) | Maximum Hourly Production (tons/hour) | Maximum Annual Production (tons/year) |
|----------------------|------------------------------|------------------|---|-------------------------------------|---------------------------------------|---------------------------------------|
|                      |                              |                  | <input type="checkbox"/> pellets<br><input type="checkbox"/> sinter<br><input type="checkbox"/> ore<br><input type="checkbox"/> other: _____<br>_____ |                                     |                                       |                                       |
|                      |                              |                  | <input type="checkbox"/> pellets<br><input type="checkbox"/> sinter<br><input type="checkbox"/> ore<br><input type="checkbox"/> other: _____<br>_____ |                                     |                                       |                                       |
|                      |                              |                  | <input type="checkbox"/> pellets<br><input type="checkbox"/> sinter<br><input type="checkbox"/> ore<br><input type="checkbox"/> other: _____<br>_____ |                                     |                                       |                                       |

7. Blast furnace upsets (slips) process data:

| Emissions Unit ID(s) | Maximum Number of Slips Per Hour | Maximum Number of Slips Per Year |
|----------------------|----------------------------------|----------------------------------|
|                      |                                  |                                  |
|                      |                                  |                                  |
|                      |                                  |                                  |

8. Blast furnace tapping (cast house emissions) process data:

| Emissions Unit ID(s) | Number of Tap Holes | Maximum Number of Taps Per Hour | Maximum Number of Taps Per Day | Maximum Number of Taps Per Year | Slag Tapped From or Removed Through  | Slag Discharged Into  | Average Length of Tapping Period (minutes) |
|----------------------|---------------------|---------------------------------|--------------------------------|---------------------------------|--|---|--|
|                      |                     |                                 |                                |                                 | <input type="checkbox"/> separate notch<br><input type="checkbox"/> iron notch | <input type="checkbox"/> adjacent slag pit<br><input type="checkbox"/> slag thimble |  |
|                      |                     |                                 |                                |                                 | <input type="checkbox"/> separate notch<br><input type="checkbox"/> iron notch | <input type="checkbox"/> adjacent slag pit<br><input type="checkbox"/> slag thimble |  |
|                      |                     |                                 |                                |                                 | <input type="checkbox"/> separate notch<br><input type="checkbox"/> iron notch | <input type="checkbox"/> adjacent slag pit<br><input type="checkbox"/> slag thimble |  |

9. Slag crushing process data:

| Emissions Unit ID(s) | Number of Identical Processes | Manufacturer | Maximum Design Input Capacity (tons/hour) | Maximum Hourly Throughput (tons/hour) | Maximum Annual Throughput (tons/year) |
|----------------------|-------------------------------|--------------|---|---------------------------------------|---------------------------------------|
|                      |                               |              |   |                                       |                                       |
|                      |                               |              |   |                                       |                                       |
|                      |                               |              |   |                                       |                                       |

10. Control methods to be used for emissions from iron production:

|  | Capture Method  | Capture Efficiency | Control Method   | Control Efficiency |
|--|---|--------------------|--|--------------------|
| Blast Furnace                                  |   |                    | <input type="checkbox"/> Enclosure <input type="checkbox"/> Other (describe):<br><input type="checkbox"/> Vent to fabric filter _____  |                    |
| Sinter Machine Windbox Discharge               |   |                    | <input type="checkbox"/> Water spray<br><input type="checkbox"/> Enclosure<br><input type="checkbox"/> Vent to fabric filter<br><input type="checkbox"/> Precautionary operating practices (describe): _____<br><br><input type="checkbox"/> Other (describe):           |                    |
| Sinter Machine Discharge (breaker and screens) |   |                    | <input type="checkbox"/> Enclosure <input type="checkbox"/> Other (describe):<br><input type="checkbox"/> Vent to fabric filter _____  |                    |
| Sinter Cooler (not vented through a stack)     |   |                    | <input type="checkbox"/> Enclosure <input type="checkbox"/> Other (describe):<br><input type="checkbox"/> Vent to fabric filter _____  |                    |
| Blast Furnace Charging                         |   |                    |  |                    |
| Blast Furnace Upsets (slips)                   |   |                    | <input type="checkbox"/> Operating practices and control of raw materials (describe): _____<br><input type="checkbox"/> Vent bleeder to valve to water well<br><input type="checkbox"/> Baffled enclosure of bleeder valve<br><input type="checkbox"/> Other (describe): |                    |
| Blast Furnace Tapping (cast house emissions)   | <input type="checkbox"/> Hooding tap holes and troughs to skimmers<br><input type="checkbox"/> Hooding tap holes to runners<br><input type="checkbox"/> Building evacuation<br><input type="checkbox"/> Other (describe): |                    | <input type="checkbox"/> Vent to fabric filter<br><input type="checkbox"/> Other (describe): _____<br>_____  |                    |
| Slag Crushing                                  |   |                    | <input type="checkbox"/> Watering<br><input type="checkbox"/> Chemical suppression<br><input type="checkbox"/> Vent to fabric filter<br><input type="checkbox"/> Other (describe):   |                    |
| Other (describe):                              |   |                    |  |                    |

11. Details for wet suppression systems:

| Activity                            | Material Used<br>(wetting agent) | Application Point(s) | Application Rate<br>(gal./ton processed) |
|-------------------------------------|----------------------------------|----------------------|--|
| Sinter Machine Windbox<br>Discharge |                                  |                      |  |
| Slag Crushing                       |                                  |                      |  |
| Other Activity (describe):          |                                  |                      |  |
|                                     |                                  |                      |  |
|                                     |                                  |                      |  |

# INSTRUCTIONS FOR COMPLETION OF THE EMISSIONS ACTIVITY CATEGORY FORM FOR IRON PRODUCTION

## GENERAL INSTRUCTIONS:

This emissions activity category form is to be used for certain operations at iron production facilities. Typical emissions units to be included on this form are listed in item # 3. Other EAC forms may need to be completed for other emissions units at iron production facilities. For example, the following EAC forms must be completed for the associated emissions units:

| <u>EAC Form</u>            | <u>Emissions Units</u>  |
|----------------------------|---|
| Roadways and parking areas | All roadways and parking areas  |
| Storage piles              | All open storage piles  |
| Material handling          | Iron ore unloading (barge or rail)<br>Limestone unloading (barge or rail)<br>Iron ore handling and transfer<br>Limestone conveying and transfer<br>Coke handling and transfer<br>Blast furnace flue dust handling and transfer<br>Sinter handling and transfer<br>Slag handling |

Any other emissions unit at an iron production facility that is not specifically listed in item #3 and does not have an EAC form for it should be included in this form.

Paragraph (B)(6) of OAC rule 3745-17-01 defines "fugitive dust" as "...particulate matter which is emitted from any source by means other than a stack." Paragraph (B)(7) of the same rule defines "fugitive dust source" as "...any source which emits fugitive dust or which emitted fugitive dust prior to the installation of any control equipment that was installed on or after February 15, 1972." Emissions units at iron production facilities often emit particulate matter as described and, therefore, the requirements of OAC rules 3745-17-07 and 3745-17-08 may be applicable.

Provide complete responses to all applicable questions. If an item does not apply to the emissions unit, write in "Not Applicable" or "NA." If the answer is not known, write in "Not Known" or "NK." If you need assistance in understanding a question after reading the instructions below, contact your Ohio EPA District Office or Local Air Agency for assistance. Submittal of an incomplete application will delay application review and processing. In addition, the application may be returned as incomplete if all applicable questions are not answered appropriately.

## APPLICABLE REGULATIONS:

*The following State and Federal Regulations may be applicable to iron production. Note that there may be other regulations which apply to this emissions unit which are not included in this list.*

Federal: 40 CFR Part 63, (MACT) Subparts A (General Provisions), EEEEE (Iron Foundries), FFFFF (Integrated Iron and Steel Manufacturing)

State: 3745-31-02 (Permit to Install)  
3745-35-02 (Permit to Operate)  
3745-17-07 (Control of Visible Particulate Emissions from Stationary Sources)  
3745-17-08 (Restriction of Emission of Fugitive Dust)  
3745-17-11 (Restrictions on Particulate Emissions from Industrial Processes)  
3745-18-06 (Sulfur Dioxide General Emission Limit Provisions)  
3745-21-08 (Control of Carbon Monoxide Emissions from Stationary Sources)  
3745-23-06 (Control of Nitrogen Oxides Emissions from Stationary Sources)

If you would like a copy of these regulations, contact your Ohio EPA District Office or Local Air Agency. State regulations may also be viewed and downloaded from the Ohio EPA website at <http://www.epa.state.oh.us/dapc/regs/regs.html>. Federal regulations may be viewed and downloaded at <http://www.epa.gov/docs/epacfr40/chapt-I.info/subch-C.htm>.

### **CALCULATING EMISSIONS:**

USEPA has developed emission factors for many types of emissions units and published them in a document titled "Compilation of Air Pollutant Emission Factors, AP-42", available from the following website: <http://www.epa.gov/ttn/chief/ap42/index.html>. See Chapter 12.5 (Iron and Steel Production).

In addition, manufacturers of some types of emissions units and most types of control equipment develop emissions estimates or have stack test data which you can request. Stack testing of the emissions may be done. Emissions unit sampling test data may be either for this emissions unit or a similar one located at the facility or elsewhere. You may develop your own emission factors by mass balance or other knowledge of your process, if you can quantify inputs and outputs accurately. You may be able to do this on a small scale or over a short period of time, if it is not practical during regular production. If you have control equipment, you may be able to quantify the amount of pollutants collected over a known time period or production amount. Any emission factor calculation should include a reference to the origin of the emission factor or control efficiency.

### **SPECIFIC INSTRUCTIONS:**

1. Indicate whether this is an application for a new permit or an application for permit renewal. If applying for a permit renewal, provide the 4-character OEPA emissions unit identification number.
2. Provide the maximum number of hours per day and days per year the iron production process is expected to operate. The following are examples of why the maximum number of hours per day may be less than 24 or the maximum number of days per year may be less than 365 (this list is not all-inclusive):
  - The facility can only operate during daylight hours.
  - The process can only operate within a certain range of ambient temperatures.
  - The process is limited by another operation (i.e., a bottleneck).
3. Identify the emissions units at the facility by placing a check mark in the appropriate box adjacent to the respective emissions unit type. If there are other emissions units at the facility which were not specifically listed and do not have other applicable emissions activity category forms, please identify such emissions unit(s) in the section marked "Other (describe)".
4. Please provide the requested general blast furnace process data in the table. Indicate the blast furnace number or identification code (ID) of each furnace in the spaces provided. If there are more than three different types of blast furnaces at the facility, please make a duplicate copy of this form or

obtain an additional form from the OEPA. For each type of furnace, also indicate the number of identical furnaces, the manufacturer, blown-in capacity in tons per hour, and the maximum hourly and annual pig iron production rates in tons per hour and tons per year.

5. Please provide the sinter machine process data in the table in a manner similar to that described in item #4.
6. Please provide the blast furnace charging process data in the table in a manner similar to that described in item #4. Indicate the type of charging (skip car hoist, belt conveyor, etc.) for each blast furnace.
- 7-9. Please provide the requested process data in the table in a manner similar to that described in item #4.
10. For each operation identified elsewhere in this form, describe how the emissions are captured and estimate the percentage of emissions which are captured. Also describe how the emissions are controlled and estimate the percentage of reduction attained. Efficiencies may be determined, in order of preference, by testing, design, published estimation methods or best engineering judgement. For multiple methods, enter them in the blank separated by a slash (/) and do the same for the efficiency.