



State of Ohio Environmental Protection Agency

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**CERTIFIED MAIL**

**RE: FINAL PERMIT TO INSTALL  
CUYAHOGA COUNTY  
Application No: 13-04704  
Fac ID: 1318948576**

	TOXIC REVIEW
	PSD
	SYNTHETIC MINOR
	CEMS
	MACT
	NSPS
	NESHAPS
	NETTING
	MAJOR NON-ATTAINMENT
	MODELING SUBMITTED
	GASOLINE DISPENSING FACILITY

**DATE:** 4/12/2007

Kurtz Bros., Incorporated  
Brandon Smith  
6415 Granger Road  
Independence, OH 44131

Enclosed please find an Ohio EPA Permit to Install which will allow you to install the described source(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, I urge you to read it carefully.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00 which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission  
309 South Fourth Street, Room 222  
Columbus, OH 43215

Sincerely,

Michael W. Ahern, Manager  
Permit Issuance and Data Management Section  
Division of Air Pollution Control

CC: USEPA

CLAA



**Permit To Install  
Terms and Conditions**

**Issue Date: 4/12/2007  
Effective Date: 4/12/2007**

**FINAL PERMIT TO INSTALL 13-04704**

Application Number: 13-04704  
Facility ID: 1318948576  
Permit Fee: **\$1000**  
Name of Facility: Kurtz Bros., Incorporated  
Person to Contact: Brandon Smith  
Address: 6415 Granger Road  
Independence, OH 44131

Location of proposed air contaminant source(s) [emissions unit(s)]:  
**6415 Granger Road  
Independence, Ohio**

Description of proposed emissions unit(s):  
**Portable compost grinder.**

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Chris Korleski  
Director

## **Part I - GENERAL TERMS AND CONDITIONS**

### **A. Permit to Install General Terms and Conditions**

#### **1. Compliance Requirements**

The emissions unit(s) identified in this Permit to Install shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

#### **2. Reporting Requirements**

The permittee shall submit required reports in the following manner:

- a. Reports of any required monitoring and/or record keeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
- b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and record keeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted (i.e., postmarked) quarterly by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

#### **3. Records Retention Requirements**

Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

#### **4. Inspections and Information Requests**

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State air pollution laws and

regulations and the terms and conditions of this permit. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

**5. Scheduled Maintenance/Malfunction Reporting**

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s).

**6. Permit Transfers**

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

**7. Air Pollution Nuisance**

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

**8. Termination of Permit to Install**

This Permit to Install shall terminate within eighteen months of the effective date of the Permit to Install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

**9. Construction of New Sources(s)**

The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions

may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources cannot meet the requirements of this permit or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

**10. Public Disclosure**

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

**11. Applicability**

This Permit To Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate Permit To Install for the installation or modification of any other emissions unit(s) are required for any emissions unit for which a Permit To Install is required.

**12. Best Available Technology**

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

**13. Source Operation and Operating Permit Requirements After Completion of Construction**

This facility is permitted to operate each source described by this Permit to Install for a period of up to one year from the date the source commenced operation. This permission to operate is granted only if the facility complies with all requirements contained in this

permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the emissions unit(s) covered by this permit.

#### **14. Construction Compliance Certification**

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit to Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

#### **15. Fees**

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable Permit to Install fees within 30 days after the issuance of this Permit to Install.

### **B. Permit to Install Summary of Allowable Emissions**

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

#### SUMMARY (for informational purposes only) TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS

<u>Pollutant</u>	<u>Tons Per Year</u>
PE	1.36
NO <sub>x</sub>	19.31
SO <sub>2</sub>	<10
CO	<10
OC	<10

## **PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**

### **A. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

#### **Operations, Property, and/or Equipment - (F001) - 20 TPH portable - Bandit Beast 3680, compost, mulch and yardwaste grinder with 1.00 mm Btu/hour diesel generator.**

<b>Applicable Rules/Requirements</b>	<b>Applicable Emissions Limitations/Control Measures</b>
OAC rule 3745-17-07(A)	Visible particulate emission from the generator stack shall not exceed twenty percent opacity, as a six-minute average.
OAC rule 3745-17-07(B)(1)	Visible emissions of fugitive dust shall not exceed twenty percent opacity, as a three-minute average.
OAC rule 3745-17-08(B)	Reasonably available control measures that are sufficient to minimize or eliminate visible emissions of fugitive dust. (see A.2.a below).
OAC rule 3745-17-11(B)(5)(a)	0.31 lb mmBtu/ of particulate emissions of actual heat input for the diesel generator
OAC rule 3745-18-06(B)	See A.2.a below.
OAC rule 3745-31-05 (A)(3)	4.41 lbs/hour of NO <sub>x</sub> emissions and 19.31 tons/year for the diesel generator

### **2. Additional Terms and Conditions**

- 2.a The permittee shall employ reasonably available control measures for the material handling operation for the purpose of ensuring compliance with the applicable requirements. In accordance with the permittee's permit application, the permittee has committed to employing water spray bars at the hopper introduction point to ensure compliance. The permittee shall also minimize the vertical free fall distance and the horizontal distance of the processed material in order to minimize the generation of fugitive emissions. Nothing in this paragraph shall prohibit the permittee from employing other control measures to ensure compliance.
- 2.b For each phase of the material handling operation that is not adequately enclosed, the control measure(s) shall be implemented if the permittee determined, as a result of the inspection conducted pursuant to the monitoring section of this permit, that the control measure(s) is (are) necessary to ensure compliance with the applicable

requirements. Any required implementation of the control measure(s) is unnecessary.

- 2.c** The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the particulate, CO, SO<sub>2</sub> and OC emissions from this emissions unit since the uncontrolled potential to emit for each of these pollutants is less than ten tons per year (see Section F.3 below).
- 2.d** Stationary internal combustion engines which have rated heat input capacities equal to, or less than, ten mm Btu per hour total rate capacity are exempt from the sulfur dioxide limitation contained in paragraphs (D), (F) and (G) of OAC rule 3745-18-06 and from OAC rule 3745-18-24 for Cuyahoga County.
- 2.e** The portable grinding plant that is covered by this permit and subject to the requirements of OAC rules 3745-17-07 and 3745-17-08 are listed below:
  - Load in to hopper
  - 20 ton per hour grinder
  - 1.00 mm Btu diesel generator
- 2.f** Permanently and physically label this grinder 13-18-94-8576

**B. Operational Restrictions**

None

**C. Monitoring and/or Record keeping Requirements**

- 1.** Except as otherwise provided in this section, for material handling operations that are not adequately enclosed, the permittee shall perform daily inspections of such operation.
- 2.** The above mentioned inspections shall be performed during representative, normal operating conditions.
- 3.** The permittee may, upon receipt of written approval from the Cleveland Division of Air Quality (CDAQ), modify the above mentioned inspection frequencies if operating experience indicated that less frequent inspections would be sufficient to ensure compliance with the applicable requirements.
- 4.** The permittee shall maintain records of the following information:
  - a.** The date and reason any required inspection was not performed;
  - b.** The date of each inspection where it was determined by the permittee that it was necessary to implement the control measure(s);

- c. The dates the control measure(s) was (were) implemented; and
- d. On a calendar quarter basis, the total number of days the control measure(s) was (were) implemented.

The information in 4.d shall be kept separately for each material handling operation, and shall be updated on a calendar quarter basis within 30 days after the end of each calendar quarter.

- 5. The permittee shall maintain daily records of the following information:
  - a. The production rate of compost materials processed for each day;
  - b. The application of water and/or chemical additives;
  - c. The name of the equipment operator responsible for the treatment; and,
  - d. The general weather conditions for each day, with respect to temperature, precipitation, wind speed and wind direction.
- 6. For each day during which the permittee burns a fuel other than diesel fuel the permittee shall maintain a record of the type and quantity of fuel burned in this emission unit.

**D. Reporting Requirements**

- 1. The permittee shall submit quarterly deviation reports to the CDAQ that identify any of the following occurrences:
  - a. Each day during which an inspection was not performed by the required frequency; and
  - b. Each instance when a control measure, that was to be performed as a result of an inspection was not implemented.

These deviation (excursion) reports shall be submitted in accordance with the general terms and conditions of this permit.

- 2. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than diesel was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
- 3. The owner or operator of any affected facility shall submit written reports of the results of all performance tests conducted to demonstrate compliance with the limit for fugitive opacity contained in this permit using Method 9.

**E. Testing Requirements**

1. Compliance with the emission limitation(s) in Section A.1 of these terms and conditions shall be determined in accordance with the following method(s):

a. Emission Limitation:

Visible emissions of fugitive dust shall not exceed twenty percent opacity as a three minute average.

Applicable Compliance Method

Compliance shall be determined by visible emission observations performed in accordance with USEPA Reference Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1) with the following additions per 40 CFR Part 60 Subpart OOO:

- i. The minimum distance between the observer and the emission source shall be 4.57 meters (15 feet).
- ii. The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources (e.g. road dust). The required observer position relative to the sun (Method 9, Section 2.1) must be followed.
- iii. For affected facilities using wet dust suppression for particulate matter control, a visible mist is sometimes generated by the spray. The water mist must not be confused with particulate matter emissions and is not to be considered a visible emission. When a water mist of this nature is present, the observation of emissions is to be made at a point in the plume where the mist is no longer visible.

b. Emission Limitation:

4.41 lbs/hour of NO<sub>x</sub> emissions from the 1.00 mm Btu/hr diesel generator.

Applicable Compliance Method

Compliance with the hourly NO<sub>x</sub> emission limitation shall be determined by multiplying the emission factor taken from the U.S. EPA reference document AP-42, 5th edition Compilation of Air Pollution Emission Factors Section 3.3, Table 3.3-1 (4.41 lb/mm Btu), by the input capacity (1.00 mm Btu/hr).

c. Emission Limitation:

19.31 tons/year of NO<sub>x</sub> emissions from the 1.00 mm Btu/hr diesel generator.

Applicable Compliance Method

The ton/year limitation was developed by multiplying the lb/hour by 8760 hours/year and dividing by 2000 lbs/ton. Therefore, provided compliance is shown with the hourly limitations, compliance will also be shown with the annual limitation.

- d. Emission Limitation:  
Visible particulate emissions from the generator stack shall not exceed twenty percent opacity as a six minute average.

Applicable Compliance Method

Compliance shall be determined by visible emission observations performed in accordance with USEPA Reference Method 9.

- e. Emission Limitation:  
0.31 lb PE/mm Btu from the diesel generator.

Applicable Compliance Method

Compliance with the hourly PE limitation shall be determined from the emission factor taken from the U.S. EPA reference document AP-42, 5th edition Compilation of Air Pollution Emission Factors Section 3.3, Table 3.3-1 (0.31 lb/mm Btu). If required, compliance shall be determined using Method 5 of 40 CFR Part 60, Appendix A.

**F. Miscellaneous Requirements**

1. Pursuant to OAC rule 3745-31-03(A)(1)(p), the permittee of a portable source may relocate within the State of Ohio without first obtaining a permit to install (PTI) providing certain criteria are met. The portable source shall meet one of the two following scenarios in order to qualify for this PTI exemption for the new location:
- a. The following determinations have been documented, pursuant to OAC rule 3745-31-03(A)(1)(p)(i):
- i. The portable source is equipped with the best available technology for such portable source;
  - ii. The portable source is operating pursuant to a currently effective permit to install, permit to operate (PTO), or registration status;
  - iii. The applicant has provided proper notice of the intent to relocate the portable source to the (1.) Ohio EPA District Office or local air agency responsible for the permit(s) for the source and (2.) the appropriate Ohio EPA District Office or local air agency having jurisdiction over the new site within a minimum of 30 days prior to the scheduled relocation; and
  - iv. In the judgement of the Ohio EPA District Office or local air agency having jurisdiction over the new site, the proposed site is acceptable under OAC rule 3745-15-07.

- b. In the alternative, pursuant to OAC rule 3745-31-03(A)(1)(p)(ii), the permittee of a portable source may relocate within the State of Ohio without first obtaining a PTI, providing the following criteria of OAC rule 3745-31-05(E) are met:
- i. The portable source permittee possesses an Ohio EPA PTI, PTO or registration status;
  - ii. The portable source is equipped with best available technology;
  - iii. The portable source owner has identified the proposed site to Ohio EPA;
  - iv. Ohio EPA has determined that the portable source, at the proposed site, will have an acceptable environmental impact;
  - v. A public notice, consistent with OAC Chapter 3745-47, is published in the county where the proposed site is located;
  - vi. The owner of the proposed site has provided the portable source owner with approval or equivalent declaration that it is acceptable to the site owner to move the portable source to this proposed site; and
  - vii. The portable source owner has provided Ohio EPA with 15 days written notice of the relocation.

Any site approvals issued by the Ohio EPA, pursuant to OAC rule 3745-31-03(A)(1)(p)(ii), shall be valid for no longer than 3 years and are subject to renewal.

In order for the permitting Ohio EPA District Office or local air agency and the appropriate field office having jurisdiction over the new site to determine compliance with all of the above criteria, the permittee of the portable source must file a " Notice of Intent to Relocate" within the specified time frame (30 or 15 days), prior to the relocation of the portable source with the Ohio EPA District Office or local air agency responsible for the permits for the source and the appropriate Ohio EPA District Office or local air agency having jurisdiction over the new site. Upon receipt of the notice, the Ohio EPA District Office or local air agency responsible for the permits for the portable source, and/or appropriate Ohio EPA District Office or local air agency having jurisdiction over the new site, will evaluate the request in accordance with the above criteria.

Failure to submit said notification and to receive Ohio EPA approval prior to relocation of the portable source may result in fines and civil penalties.

Pursuant to OAC rule 3745-31-05(F), the Director may modify the site approval to add or delete certain portable sources or add or delete certain terms and conditions as appropriate.

2. When determining compliance with the fugitive emissions standard for any grinder at which a capture system is not used as described under 60.672(c) of 40 CFR Part 60, the duration of the Method 9 observations may be reduced from 3 hours (thirty 6 minute averages) to 1 hour (ten 6 minute averages) only if the following conditions apply:
  - a. There are no individual readings greater than 15 percent opacity; and
  - b. There are no more than 3 readings of 15 percent for the 1 hour period.
3. The potential to emit for this emissions unit was determined as follows:

**Aggregate Processing**

Given

20 tons/hour maximum input/processing rate capacity of equipment

2028 actual operating hours/year

Emission Factors taken from AP-42; 5th ed., Table 11.19.2-2 - 8/04

AP-42 Emission Factors

Loading for PM<sub>10</sub>, 0.000016 lb of PM<sub>10</sub>/ton processed

Crushing for PM, 0.0054 lb of PM/ton processed  
for PM<sub>10</sub>, 0.0024 lb of PM<sub>10</sub>/ton processed  
Controlled for PM, 0.0012 lb PM/ton processed  
Controlled for PM<sub>10</sub>, 0.00054 lb PM/ton processed

**PTE Uncontrolled Emissions**

Loading to hopper

PM, PM<sub>10</sub>

(20 tons/hour) (0.000016 lb of PM<sub>10</sub>/ton processed) = 0.0003 lb PM<sub>10</sub>/hour

(0.0003 lb of PM<sub>10</sub>/hour) (8760 hours/year) (1 ton/2000 lbs) = 0.0013 ton PM<sub>10</sub>/year

PM emissions may be estimated by multiplying PM<sub>10</sub> emissions by a factor of 2.1 as shown below.

PM emissions = (PM<sub>10</sub> emissions) (2.1)

(0.0003 lb of PM<sub>10</sub>/hour) (2.1) = 0.0006 lb PM/hour

(0.0013 ton PM<sub>10</sub>/year) (2.1) = 0.003 ton PM/year

**Crushing**

PM, PM<sub>10</sub>

(20 tons/hour) (0.0054 lb of PM/ton processed) = 0.11 lb PM/hour

(0.11 lb of PM/hour) (8760 hours/year) (1 ton/2000 lbs) = 0.48 ton PM/year

(20 tons/hour) (0.0024 lb of PM<sub>10</sub>/ton processed) = 0.05 lb PM<sub>10</sub>/hour  
 (0.05 lb of PM<sub>10</sub>/hour) (8760 hours/year) (1 ton/2000 lbs) = 0.22 ton PM<sub>10</sub>/year

### **File Formation**

PM, PM<sub>10</sub>

$$E = k (0.0032) [ (u/5)^{1.3} / (m/2)^{1.4} ]$$

Given

k = 0.74 (particle size multiplier, PM); 0.35 (particle size multiplier, PM<sub>10</sub>)

u = 10.8 mph; mean wind speed

m = 22% mulch, 14% yardwaste and 40% compost

### Mulch - PM

$$E = 0.74 (0.0032) [ (10.8 \text{ mph}/5)^{1.3} / (22.0/2)^{1.4} ]$$

$$E = 0.74 (0.0032) (2.72/28.7)$$

$$E = 0.74 (0.0032) (0.095)$$

$$E = 0.0002 \text{ lbs/ton}$$

(20 tons/hour) (0.0002 lbs PM/ton) = 0.004 lb of PM/hour

(0.004 lb of PM/hour) (8760 hours/year) (1 ton/2000 lbs) = 0.02 ton PM/year

### Mulch - PM<sub>10</sub>

$$E = 0.35 (0.0032) [ (10.8 \text{ mph}/5)^{1.3} / (22.0/2)^{1.4} ]$$

$$E = 0.35 (0.0032) (2.72/28.7)$$

$$E = 0.35 (0.0032) (0.095)$$

$$E = 0.0001 \text{ lbs/ton}$$

(20 tons/hour) (0.0001 lbs/ton) = 0.002 lb PM<sub>10</sub>/hour

(0.002 lb PM<sub>10</sub>/hour) (8760 hours/year) (1 ton/2000 lbs) = 0.009 ton PM<sub>10</sub>/year

### Yardwaste - PM

$$E = 0.74 (0.0032) [ (10.8 \text{ mph}/5)^{1.3} / (14.0/2)^{1.4} ]$$

$$E = 0.74 (0.0032) (2.72/15.25)$$

$$E = 0.74 (0.0032) (0.18)$$

$$E = 0.0004 \text{ lbs/ton}$$

(20 tons/hour) (0.0004 lbs PM/ton) = 0.008 lb of PM/hour

(0.008 lb of PM/hour) (8760 hours/year) (1 ton/2000 lbs) = 0.04 ton PM/year

### Yardwaste - PM<sub>10</sub>

$$E = 0.35 (0.0032) [ (10.8 \text{ mph}/5)^{1.3} / (14.0/2)^{1.4} ]$$

$$E = 0.35 (0.0032) (2.72/15.25)$$

$$E = 0.35 (0.0032) (0.18)$$

$$E = 0.0002 \text{ lbs/ton}$$

(20 tons/hour) (0.0002 lbs/ton) = 0.004 lb PM<sub>10</sub>/hour

(0.004 lb PM<sub>10</sub>/hour) (8760 hours/year) (1 ton/2000 lbs) = 0.02 ton PM<sub>10</sub>/year

Compost - PM

$$E = 0.74 (0.0032) [ (10.8 \text{ mph}/5)^{1.3} / (40.0/2)^{1.4} ]$$

$$E = 0.74 (0.0032) (2.72/66.29)$$

$$E = 0.74 (0.0032) (0.04)$$

$$E = 0.00009 \text{ lbs/ton}$$

$$(20 \text{ tons/hour}) (0.00009 \text{ lbs PM/ton}) = 0.002 \text{ lb of PM/hour}$$

$$(0.002 \text{ lb of PM/hour}) (8760 \text{ hours/year}) (1 \text{ ton}/2000 \text{ lbs}) = 0.009 \text{ ton PM/year}$$

Compost - PM<sub>10</sub>

$$E = 0.35 (0.0032) [ (10.8 \text{ mph}/5)^{1.3} / (40.0/2)^{1.4} ]$$

$$E = 0.35 (0.0032) (2.72/66.29)$$

$$E = 0.35 (0.0032) (0.04)$$

$$E = 0.00004 \text{ lbs/ton}$$

$$(20 \text{ tons/hour}) (0.00004 \text{ lbs/ton}) = 0.0008 \text{ lb PM}_{10}/\text{hour}$$

$$(0.0008 \text{ lb PM}_{10}/\text{hour}) (8760 \text{ hours/year}) (1 \text{ ton}/2000 \text{ lbs}) = 0.004 \text{ ton PM}_{10}/\text{year}$$

Potential Uncontrolled annual emissions from grinding operation:

$$0.12 \text{ lbs PE/hr} \quad 0.55 \text{ TPY PE}$$

$$0.06 \text{ lbs PM}_{10}/\text{hr} \quad 0.25 \text{ TPY PM}_{10}$$

Diesel Generator Emissions

diesel burning generator for crushers electricity

1.00 mm Btu/hr engine

Emission factors are taken from AP-42, 5<sup>th</sup> Edition, Section 3.3, Table 3.3-1

**(PM<sub>10</sub>) Potential to Emit (PTE)**

$$AP-42 \text{ Emission Factor} = 0.31 \text{ lb PM}_{10}/\text{mm Btu}$$

$$(1.00 \text{ mm Btu/hour}) (0.31 \text{ lb PM}_{10}/\text{mm Btu}) = 0.31 \text{ lb PM}_{10}/\text{hour}$$

$$(0.31 \text{ lb PM}_{10}/\text{hour}) (8760 \text{ hours/year}) (1 \text{ ton}/2000 \text{ lbs}) = 1.36 \text{ TPY PM}_{10}$$

**Carbon Monoxide (CO)(PTE)**

$$AP-42 \text{ Emission Factor} = 0.95 \text{ lb CO}/\text{mm Btu}$$

$$(1.00 \text{ mm Btu/hour}) (0.95 \text{ lb CO}/\text{mm Btu}) = 0.95 \text{ lb CO/hour}$$

$$(0.95 \text{ lb CO/hour}) (8760 \text{ hours/year}) (1 \text{ ton}/2000 \text{ lbs}) = 4.16 \text{ TPY CO}$$

**Sulfur Dioxide (SO<sub>2</sub>) (PTE)**

$$AP-42 \text{ Emission Factor} = 0.29 \text{ lb SO}_2/\text{mm Btu}$$

$$(1.00 \text{ mm Btu/hour}) (0.29 \text{ lb SO}_2/\text{mm Btu}) = 0.29 \text{ lb SO}_2/\text{hour}$$

$$(0.29 \text{ lb SO}_2/\text{hour}) (8760 \text{ hours/year}) (1 \text{ ton}/2000 \text{ lbs}) = 1.27 \text{ TPY SO}_2$$

**Organic Compounds (OC) (PTE)**

$$AP-42 \text{ Emission Factor} = 0.36 \text{ lb OC}/\text{mm Btu}$$

$$(1.00 \text{ mm Btu/hour}) (0.36 \text{ lb OC}/\text{mm Btu}) = 0.36 \text{ lb OC/hour}$$

$$(0.36 \text{ lb OC/hour}) (8760 \text{ hours/year}) (1 \text{ ton}/2000 \text{ lbs}) = 1.58 \text{ TPY OC}$$