# Chapter NR 445

# CONTROL OF HAZARDOUS POLLUTANTS



**Note:** Corrections made under s. 13.93 (2m) (b) 7., Stats., Register, January, 1997, No. 493.

## Subchapter I — General Provisions

**NR 445.01 Applicability; purpose. (1)** APPLICABILITY. (a) This chapter applies to all stationary air contaminant sources which may emit hazardous contaminants and to their owners and operators.

**Note:** Owners and operators of sources of emissions of hazardous air contaminants associated with agricultural waste should refer to s. NR 445.08 (6) (d) prior to undertaking any activities under this chapter.

(b) The emission limitations and control requirements in this chapter do not apply to hazardous air contaminants emitted by the emissions units, operations or activities that are regulated by an emission standard promulgated under section 112 of the Clean Air Act (42 USC 7412). Hazardous air contaminants "regulated by an emission standard promulgated under section 112 of the Act" means the hazardous air contaminants that are regulated by section 112 by the name of the contaminant, by virtue of regulation of another substance as a surrogate for the contaminant, or by virtue of regulation of a species or category of hazardous air contaminants that includes the contaminant.

**Note:** An example of regulated "by virtue of regulation of another substance as a surrogate" would be using the measurement of one contaminant to represent the emission rate of another, harder to measure contaminant. Examples of regulated "by virtue of the regulation of a species or category" would be the use of terms such as "volatile organic HAP" or "total HAP" emission in lieu of specifically naming individual hazardous air contaminants.

**(2)** PURPOSE. This chapter is adopted under ss. 285.11, 285.13, 285.17 and 285.27, Stats., to establish emission limitations for hazardous contaminants from stationary sources.

**History:** Cr. Register, September, 1986, No. 369, eff. 10−1−86; am. (1), Register, September, 1988, No. 393, eff. 10−1−88; am. (1), Register, May, 1992, No. 437, eff. 6−1−92; renum. (1) to (1) (a), cr. (1) (b), Register, December, 1994, No. 468, eff. 1−1−95; am. (1), Register, December, 1995, No. 480, eff. 1−1−96**;** am. (1) (a), Register, January, 1997, No. 493, eff. 2−1−97; CR 02−097: am. (1) (a) and (2), r. and recr. (1) (b) Register June 2004 No. 582, eff. 7−1−04.

**NR 445.02 Definitions.** The definitions contained in ch. NR 400 apply to the terms used in this chapter. In addition, the following definitions apply to the terms used in this chapter:

**(1)** "Agricultural waste" means livestock manure, wastewater contaminated with livestock manure, animal waste byproducts and litter and bedding material contaminated, derived or mixed with livestock manure.

**(1m)** "Best available control technology" or "BACT" means an emission limit for a hazardous air contaminant based on the maximum degree of reduction practically achievable as specified by the department on an individual case−by−case basis taking into account energy, economic and environmental impacts and other costs related to the source.

**(2)** "Certified control device" means a control device that is certified by either the California air resources board or the United States environmental protection agency.

**(3)** "Compression ignition internal combustion engine" or "CI engine" means an engine that has operating characteristics significantly similar to the theoretical diesel combustion cycle. The absence of a throttle to regulate intake air flow for controlling power during normal operation is indicative of a compression ignition engine. Combustion of the fuel in the engine proper is indicative of an internal combustion engine.

**(4)** "Downwash minimization stack height" means a stack height equal to (H+1.5D) where H is the height of the structure and D is the lesser of the structure height or structure cross−wind horizontal dimension in the immediate vicinity of the stack.

**(5)** "Due diligence" means one of the following:

(a) A reasonable search and inquiry conducted by the owner or operator to identify and quantify emissions of hazardous air contaminants at the facility and determine which, if any, are subject to regulation under the provisions in subch. II and provisions identified in s. NR 445.06 (1) (a) to (e). The search and inquiry is reasonable if it entails an investigation of all facility operations that the owner or operator determines are likely to cause emissions of any hazardous air contaminant based on a substance listed in this chapter being any of the following:

1. Listed on an approved material safety data sheet or otherwise brought into the facility.

2. Reasonably expected to be created through a combustion process or a manufacturing process.

3. Contained in or created through the treatment or disposal of raw materials or waste.

(b) A review by the owner or operator of a source of incidental emissions of the criteria listed in s. NR 445.11 to determine whether the source is subject to regulation under s. NR 445.07 and those provisions identified in s. NR 445.06 (1) (a) to (e).

**Note:** Changes in methods of operations, process modifications and material substitution are examples that may be likely to cause changes in emissions of hazardous air contaminants.

**(6)** "Essential service" means an activity to provide any of the following:

(a) Nuclear power plant emergency backup power generation.

(b) Combustion turbine startup.

(c) Safety or asset protection in an emergency situation.

**Note:** Examples include activities to provide emergency heating, ventilation, lighting, flood relief or spills response.

**(7)** "Hazardous air contaminant" means any air contaminant for which no ambient air quality standard is set in ch. NR 404 and which the department determines may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness, or may pose a significant

threat to human health or the environment. The term hazardous air contaminant includes the substances listed in Tables A, B and C in s. NR 445.07.

**(8)** "Indoor fugitive emissions" means an air contaminant present in a workplace which is emitted to the ambient air from general ventilation sources.

**(9)** "Lowest achievable emission rate" or "LAER" means the rate of emission of a hazardous air contaminant that reflects the more stringent of the following:

(a) The most stringent emission limitation for the hazardous air contaminant which is contained in the air pollution regulatory program of any state for this class or category of source, unless an applicant for a permit demonstrates that this limitation is not achievable.

(b) The most stringent emission limitation for the hazardous air contaminant which is achieved in practice by the class or category of source.

**(10)** "Manufactures" means the process of making, fabricating, finishing, constructing, forming or assembling a product from raw, unfinished, semifinished or finished materials engaged in by a manufacturer.

**Note:** Packing, bottling, labeling and packaging are all considered to be manufacturing activities.

**(11)** "Multipathway impact" means the impact determined through the use of a department approved air dispersion modeling and health effects risk screening analysis that incorporates multiple routes of exposures from the release of a hazardous air contaminant to the environment, including, inhalation and ingestion e.g., via soil, drinking water, or food.

**(12)** "On–road fuel oil" means any diesel fuel or distillate product that is used, intended for use or made available for use as a fuel in diesel motor vehicles or diesel motor vehicle engines.

**(13)** "Rebuilt" means to have removed components from a CI engine and to have substituted these components with similar components to such an extent that the fixed capital cost of the substituted components over any 12 consecutive month period exceeds 50% of the fixed capital cost that would be required to purchase a comparable entirely new CI engine.

**(14)** "Reference concentration" means a verified reference concentration developed by the United States environmental protection agency which is an estimate of an exposure of the human population, including sensitive subgroups, to a hazardous air contaminant that is likely to be without an appreciable risk of deleterious effects during a lifetime. A reference concentration is based on continuous inhalation exposures to the hazardous air contaminant and is expressed in units of micrograms per cubic meter ($\mu g/m^3$).

**(15)** "Refuse derived fuel" means municipal solid waste which has undergone a process to, at a minimum, remove hazardous waste, minimize metals, glass and other non–combustible material; and has been processed for use as a fuel. Refuse derived fuel does not include tires, tire fragments, waste oils, waste solvents, and other material not normally contained in household solid waste.

**(16)** "Treats" or "treatment" means any method, technique or process, including thermal destruction, that changes the physical, chemical or biological character or composition of a hazardous air contaminant so as to render the contaminant less hazardous, safer for transport or management, amenable to recovery, convertible to another useable material or reduced in volume.

**(17)** "Unit risk factor" means the upper–bound excess lifetime cancer risk estimated to result from continuous exposure to a hazardous air contaminant concentration of 1 microgram per cubic meter in the air. A unit risk factor is expressed in units of cubic meters per microgram ($m^3/\mu g$).

**Note:** The interpretation of unit risk would be as follows: a unit risk factor = $1.5 \times 10^{-6}$ $m^3/\mu g$ applied to a concentration of a hazardous air contaminant of 1 $\mu g/m^3$ would result in an expectation of 1.5 excess tumors to develop per 1,000,000 people exposed daily for a lifetime.

**(18)** "Virgin fossil fuel" means any solid, refined liquid or refined gaseous fossil fuel with a Btu content greater than 7,000 Btu/lb which is not blended with reprocessed or recycled fuels. Group 1 virgin fossil fuels consist of natural gas, liquid petroleum gas, distillate fuel oil, gasoline and diesel fuel. Group 2 virgin fossil fuels consist of coal and residual fuel oil.

**History:** Renum. from NR 154.01 (19), (28e) and (116e), cr. (intro.), Register, September, 1986, No. 369, eff. 10–1–86; renum. (1) to (3) to be (2), (3) and (9), cr. (1), (4) to (8), (10) and (11), Register, September, 1988, No. 393, eff. 10–1–88; (9m) renum. from NR 400.02 (77), Register, December, 1988, No. 396, eff. 1–1–89; am. (9m), Register, May, 1992, No. 437, eff. 6–1–92; r. and recr. (2), Register, October, 1992, No. 442, eff. 11–1–92; cr. (9g), Register, December, 1994, No. 468, eff. 1–1–95; am. (intro.), (2), (6) and (9m), Register, December, 1995, No. 480, eff. 1–1–96**;** am. (1), Register, January, 1997, No. 493, eff. 2–1–97**;** am. (intro.) and (1), Register, November, 1999, No. 527, eff. 12–1–99; CR 02–097: renum. (1), (2), (4) to (8), (9g), (10) and (11) to be NR 400.02 (27m), 447.02 (4) and 445.02 (1m), (4), (7) to (9), (14), (15) and (18), am. (1m), (7) and (9) (intro.) as renumbered, cr. (1) to (3), (5), (6), (10) to (13), (16) and (17) Register June 2004 No. 582, eff. 7–1–04; CR 07–076: am. (5) (a) (intro.) Register July 2008 No. 631, eff. 8–1–08; correction in (7) made under s. 13.92 (4) (b) 7., Stats., Register July 2008 No. 631.

**NR 445.03 General limitations.** No person may cause, allow or permit emissions into the ambient air of any hazardous substance in a quantity or concentration or for a duration that is injurious to human health, plant or animal life unless the purpose of that emission is for the control of plant or animal life. Hazardous substances include but are not limited to the hazardous air contaminants listed in Tables A to C of s. NR 445.07.

**History:** Renum. from NR 154.19 (1), Register, September, 1986, No. 369, eff. 10–1–86; am. Register, September, 1988, No. 393, eff. 10–1–88**;** am., Register, November, 1999, No. 527, eff. 12–1–99; CR 02–097: am. Register June 2004 No. 582, eff. 7–1–04.

**NR 445.04 Emission limits for sources last constructed or modified between October 1, 1988 and July 1, 2004. History:** Cr. Register, September, 1988, No. 393, eff. 10–1–88; am. (1) (intro.), (c) (intro.), Tables 3 and 4, renum. (4) to (6) to be (5) to (7) and am. (5), (6) (a), (b) 2., (c) and (7), cr. (4), (6) (d) and (e), Register, May, 1992, No. 437, eff. 6–1–92; cr. (4r), (5) (b), (c), (6) (b) 4., (f), (7) (b), (c), Table 5, renum. (5) to (5) (a) and am., (7) to (7) (a) and am., am. (6) (a), (b) 2., Register, December, No. 468, eff. 1–1–95; am. (1), (2), (3) (c) 6., (4), (4r) (b) 4., (6) (a) (intro.), (6) (b) 4. and Tables 2, 3 and 5, Register, December, 1995, No. 480, eff. 1–1–96**;** am. Table 5, Register, January, 1997, No. 493, eff. 2–1–97; CR 02–097: cr. (intro.), am. (1) (intro.) and (a) 2., (2) (intro.), (3) (a) and (b), (4) (intro.) and (a) 2., (4r) (a), (5) (a) and (b), and (6) (a), r. and recr. (7) Register June 2004 No. 582, eff. 7–1–04; CR 07–076: r. Register July 2008 No. 631, eff. 8–1–08.

**NR 445.05 Emission limits for sources constructed or last modified on or before October 1, 1988. History:** Cr. Register, September, 1988, No. 393, eff. 10–1–88; am. (4) (intro.) to (b), (5), (6) (intro.), (a) 1. (intro.), c., 2. (intro.), c., 3. (intro.), c., (b) 3., (c), (e), (f) 1. to 3. a., (g) 3. and (7) (b) 3., cr. (6) (am), (b) 1m. and (g) 1m., Register, May, 1992, No. 437, eff. 6–1–92; cr. (7) (c), Register, January, 1993, No. 445, eff. 2–1–93; cr. (4r), (5) (b), (c), (6) (bm), (d) 7., (e) 2., (8) (b) and (c), renum. (5) to (5) (a) and am., (6) (e) to (6) (e) 1. and am., (8) to (8) (a) and am., am. (6) (intro.), (c), (d) 1. and 5., (f) 1. and 3., (7) (c) 1. b., Register, December, 1994, No. 468, eff. 1–1–95; am. (1) (a) and (b), (2) (a) and (b), (3) (a), (c) 7., (4) (a) and (b), (4r) (b) 4. and (6) (bm) 4. (intro.), (c) and (e), Register, December, 1995, No. 480, eff. 1–1–96**;** am. (6) (a) 2. intro., 3. intro., (bm) 3. a., 4. a., (e) 2., (8) (c) 2., Register, January, 1997, No. 493, eff. 2–1–97**;** am. (1) (a) (intro.), 1., (4) (a) (intro.), 1., (6) (a) 1. (intro.), a., b., 2. (intro.), a., b., 3. (intro.), a., b., (b) (intro.), 1., 1m., 2., (d) 3., (f) 3. (intro.), a., (g) (intro.), 1., 1m., 2., (7) (b) (intro.), 1. and 2., Register, November, 1999, No. 527, eff. 12–1–99; CR 02–097: cr. (intro.), am. (1) (a) 2. and (4) (a) 2., r. (6) (g) and (7), r. and recr. (8) Register June 2004 No. 582, eff. 7–1–04; CR 07–076: r. Register July 2008 No. 631, eff. 8–1–08.

## Subchapter II — Emission Requirements, Review and Notifications for Stationary Sources of Hazardous Air Contaminants

**NR 445.06 Safe harbor. (1)** An owner or operator of a facility shall be deemed to be in compliance with this subchapter and the requirements in chs. NR 406, 407 and 438 listed in this subsection for any hazardous air contaminant listed in Table A, B or C of s. NR 445.07 if the owner or operator identifies the contaminant through due diligence and determines that the emissions of the identified contaminant are below the applicable regulatory threshold in this chapter or otherwise exempt from regulation, or the facility is meeting the applicable provisions in this subchapter. The requirements from chs. NR 406, 407 and 438 are the following:

(a) Section NR 406.04 (2) (f) and (3) (a).

(b) Section NR 407.03 (2) (d).

(c) Section NR 407.05 (4) (c) 1., 9. and 10.

(d) Section NR 407.09 (1) (c) 1. b.

(e) Section NR 438.03 (1).

**(2)** The owner or operator will not be deemed to be out of compliance with this subchapter or with the provisions identified in sub. (1) (a) to (e) for any hazardous air contaminant listed in Table A, B or C of s. NR 445.07 for the period of time prior to either of the determinations in par. (a) or (b) being made if the determination is submitted in writing to the department within 21 calendar days, and no later than 90 calendar days after the determination, the owner or operator certifies that the facility is in compliance with all applicable requirements for the hazardous air contaminant. The department may, in writing, extend the 90 calendar days for achieving compliance. The determinations are as follows:

(a) That a hazardous air contaminant that was not previously identified through due diligence is later determined to be emitted from the facility in an amount greater than the applicable emission threshold in any of the following:

1. Table A, B or C of s. NR 445.07.
2. Section NR 406.04 (2) (f) and (3) (a).
3. Section NR 407.03 (2) (d).
4. Table 2 of s. NR 407.05.
5. Table 1 of s. NR 438.03.

(b) That a hazardous air contaminant previously identified and quantified is determined to be emitted in a greater amount, and that amount is greater than the applicable emission threshold for any of the provisions identified in par. (a) 1. to 5.

**(3)** Notwithstanding sub. (2), the department retains the authority to order the owner or operator to achieve compliance with applicable requirements within a specific time period shorter than the 90 calendar days whenever compliance in the shorter period of time is feasible and necessary to protect public health and the environment.

**Note:** The address for submittal of information and requests for an extension from the deadline in sub. (2) is:

Wisconsin Department of Natural Resources
Bureau of Air Management
PO Box 7921
Madison WI 53707–7921
Attention: NR 445 Safe Harbor Determinations.

**History:** CR 02–097: cr. Register June 2004 No. 582, eff. 7–1–04; CR 05–055: am. (2) (a) 5. Register December 2005 No. 600, eff. 1–1–06.

**NR 445.07 Emission thresholds, standards, control requirements and exemptions. (1)** ALL SOURCES OF HAZARDOUS AIR CONTAMINANTS. Except as provided in sub. (5), the following requirements apply:

(a) No owner or operator of a source may cause, allow or permit emissions of a hazardous air contaminant listed in Table A in such quantity or concentration or for such duration as to cause an ambient air concentration of the contaminant off the source property that exceeds the concentration in column (g) of Table A for the contaminant.

**Note:** Owners and operators of facilities emitting less than 3 tons of volatile organic compounds and 5 tons particulate matter on an annual basis, or who engage in limited or no manufacturing activities, should refer to s. NR 445.11 prior to determining applicable requirements under this section.

(b) The owner or operator of a source may request approval of an alternative to the emission limitation in par. (a). The alternative emission limitation is 10% of the threshold limit value – time weighted average established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 2000, incorporated by reference in s. NR 484.11 (2) (c), for any contaminant with a 24–hour averaging period in column (h) of Table A. The department may approve the alternative emission limitation if both of the following criteria are met:

1. The hazardous air contaminant is emitted no more than 5 days in any consecutive 30–day period.

2. The department determines, after consultation with the department of health services, that the alternative emission limitation will not pose a threat to public health or welfare.

(c) The owner or operator of a source that emits a hazardous air contaminant for which a control requirement is identified in column (i) of Table A in a quantity greater than the amount listed in column (c), (d), (e) or (f) of Table A for the contaminant shall control emissions of the contaminant to the level identified in column (i) of the table. The control requirement shall be applied according to the procedure in s. NR 445.08 (2) (f).

**(2)** SOURCES OF HAZARDOUS AIR CONTAMINANTS FROM THE MANUFACTURE OR TREATMENT OF PESTICIDES, RODENTICIDES, INSECTICIDES, HERBICIDES OR FUNGICIDES. Except as provided in sub. (5) (c) and (d), in addition to the requirements of sub. (1), the owner or operator of a source that manufactures or treats pesticides, rodenticides, insecticides, herbicides or fungicides may not cause, allow or permit emissions of a hazardous air contaminant listed in Table B in a quantity or concentration or for a duration as to cause an ambient air concentration off the source property that exceeds the concentration in column (g) of Table B for the contaminant. For any hazardous air contaminant for which a control requirement is identified in column (i) of Table B that is emitted in an amount greater than the amount listed in column (c), (d), (e) or (f) of Table B for the contaminant, the owner or operator shall control emissions of the contaminant to the level identified in column (i) of the table. The control requirement shall be applied according to the procedure in s. NR 445.08 (2) (f).

**(3)** SOURCES OF HAZARDOUS AIR CONTAMINANTS FROM THE MANUFACTURE OR TREATMENT OF PHARMACEUTICALS. Except as provided in sub. (5) (c) and (d), in addition to meeting the requirements of sub. (1), the owner or operator of a source that manufactures or treats pharmaceuticals and that emits a hazardous air contaminant for which a control requirement is identified in column (i) of Table C in an amount greater than the amount listed in column (c), (d), (e) or (f) of Table C for the contaminant shall control emissions of the contaminant to the level identified in column (i) of the table. The control requirement shall be applied according to the procedure in s. NR 445.08 (2) (f).

**(4)** MUNICIPAL SOLID WASTE AND INFECTIOUS WASTE INCINERATORS. (a) Except as provided for in par. (b), the owner or operator of a source that combusts municipal solid waste, as defined in s. NR 500.03 (150), or infectious waste shall comply with sub. (1), and shall control emissions of hazardous air contaminants having a control requirement identified in column (i) in Table A, B or C to a level that is the lowest achievable emission rate. The control requirement shall be applied according to the procedure in s. NR 445.08 (2) (f).

(b) A source that combusts no infectious waste and that combusts no municipal solid waste other than refuse derived fuel in a boiler is not subject to this subsection unless 50% or more of the boiler's heat input is obtained from the refuse derived fuel.

**(5)** EXEMPT EMISSIONS. Emissions from all of the following are exempt from the requirements of sub. (1) and emissions identified in pars. (c) and (d) are also exempt from the requirements of subs. (2) and (3):

(a) The combustion of group 1 virgin fossil fuels.

(b) The combustion of group 2 virgin fossil fuels vented from a stack that has downwash minimization stack height or a height approved by the department.

(c) A laboratory.

(d) 1. Indoor fugitive sources that emit any hazardous air contaminant with a concentration having a 1–hour or 24–hour average time period in column (h) in Table A, B or C.

2. Indoor fugitive sources that emit any hazardous air contaminant with a control requirement in column (i) or a concentration having an annual time period in column (h) in Table A, B or C that meet all of the following requirements:

a. The contaminant is exhausted to the ambient air through general building ventilation.

b. The contaminant has a threshold limit value established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 2000, incorporated by reference in s. NR 484.11 (2) (c).

c. The owner or operator of the source demonstrates to the department that the source is in compliance with applicable occupational safety and health administration requirements.

(e) Gasoline dispensing for any hazardous air contaminant with a control requirement in column (i) of Table A provided that one of the following applies:

1. The gasoline dispensing facility meets the requirements of s. NR 420.04 (3) (b) to (i) and dispenses less than 2 million gallons of gasoline in any 12 consecutive month period.

2. The gasoline dispensing facility dispenses less than 1.25 million gallons of gasoline in any 12 consecutive month period.

(f) Combustion of wood in combustion units that operate with good combustion technology and that were constructed or last modified prior to October 1, 1988 for any hazardous air contaminant with a control requirement in column (i) of Table A. Good combustion technology means technology that provides for a minimization of hazardous air contaminants with control requirements in column (i). Good combustion technology will be determined on a case−by−case basis by the department, taking into account the type of fuel to be burned, the economic and environmental impacts of the combustion, and other costs related to the source. Good combustion technology may include consideration of factors such as temperature, residence time, carbon monoxide emissions, excess oxygen, and turbulence.

**Note:** See department draft memo dated July 7, 1999, Wood Combustion and Compliance with Chapter NR 445, for further information regarding the use of this exemption. The draft memo may obtained by contacting the Compliance and Enforcement Section of the Bureau of Air Management at 608−266−7718.

**(6)** USE REQUIREMENTS FOR TABLES A, B AND C. (a) The emission thresholds in columns (c) to (f) in Tables A, B and C for any hazardous air contaminant may only be used if emissions from the source are vented to the atmosphere in a manner that meets both of the following:

1. The emissions are from an unobstructed discharge point.

**Note:** Valves designed to open and close at the point of discharge are not considered to be obstructions if they are open at time of emission.

2. The emissions are from a stack that is within 10 degrees of vertical.

(b) For purposes of calculating non−exempt, potential to emit emissions for comparison with the threshold rates in column (c), (d), (e) or (f) in the tables the owner or operator of a source shall do all of the following:

1. Combine non−exempt, potential to emit emissions for each contaminant for all stacks within each of the 4 stack categories.

2. Compare each group of non−exempt, potential to emit emissions against the respective threshold found in column (c), (d), (e) or (f) in the table.

(c) For any group of non−exempt, potential to emit emissions that exceeds the respective threshold in column (c), (d), (e) or (f), consider all non−exempt, potential emissions from the source in determining compliance with the applicable standard or control requirement.

**Table A**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 1. | Acetaldehyde | 75–07–0 | 3.36 | 10.7 | 20.6 | 55.3 | 4,504 | 1 Hr | N/A |
| | | | 808 | 3,318 | 7,900 | 27,845 | N/A | Annual | BACT |
| 2. | Acetic acid | 64–19–7 | 1.32 | 5.12 | 10.3 | 39.8 | 589 | 24 Hr Avg | N/A |
| 3. | Acetic anhydride | 108–24–7 | 1.12 | 4.36 | 8.79 | 33.9 | 501 | 24 Hr Avg | N/A |
| 4. | Acetonitrile | 75–05–8 | 3.61 | 14 | 28.3 | 109 | 1,612 | 24 Hr Avg | N/A |
| 5. | Acetophenone | 98–86–2 | 2.64 | 10.3 | 20.7 | 79.7 | 1,179 | 24 Hr Avg | N/A |
| 6. | Acrolein | 107–02–8 | 0.0171 | 0.0545 | 0.105 | 0.281 | 22.9 | 1 Hr | N/A |
| 7. | Acrylamide | 79–06–1 | 0.00161 | 0.00626 | 0.0126 | 0.0486 | 0.72 | 24 Hr Avg | N/A |
| | | | 1.37 | 5.62 | 13.4 | 47.1 | N/A | Annual | BACT |
| 8. | Acrylic acid | 79–10–7 | 178 | 730 | 1,738 | 6,126 | 1 | Annual | N/A |
| | | | 0.317 | 1.23 | 2.48 | 9.56 | 141 | 24 Hr Avg | N/A |
| 9. | Acrylonitrile | 107–13–1 | 26.1 | 107 | 256 | 901 | N/A | Annual | BACT |
| 10. | Adipic acid | 124–04–9 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 11. | Adiponitrile | 111–69–3 | 0.475 | 1.85 | 3.72 | 14.3 | 212 | 24 Hr Avg | N/A |
| 12. | Aflatoxins | 1402–68–2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 13. | Allyl alcohol | 107–18–6 | 0.0638 | 0.248 | 0.5 | 1.93 | 28.5 | 24 Hr Avg | N/A |
| 14. | Allyl chloride | 107–05–1 | 0.168 | 0.653 | 1.32 | 5.07 | 75.1 | 24 Hr Avg | N/A |
| 15. | Allyl glycidyl ether | 106–92–3 | 0.251 | 0.974 | 1.97 | 7.57 | 112 | 24 Hr Avg | N/A |
| 16. | Aluminum alkyls and soluble salts, as Al | 7429–90–5 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 17. | Aluminum pyro powders, as Al | 7429–90–5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 18. | o–Aminoazotoluene (2–Aminoazotoluene) | 97–56–3 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| 19. | 4–Aminobiphenyl | 92–67–1 | 0.296 | 1.22 | 2.9 | 10.2 | N/A | Annual | LAER |
| 20. | Ammonia | 7664–41–7 | 17,769 | 73,000 | 173,810 | 612,587 | 100 | Annual | N/A |
| | | | 0.935 | 3.63 | 7.33 | 28.2 | 418 | 24 Hr Avg | N/A |
| 21. | Ammonium perfluorooctanoate | 3825–26–1 | 0.000537 | 0.00209 | 0.00421 | 0.0162 | 0.24 | 24 Hr Avg | N/A |
| 22. | Aniline | 62–53–3 | 0.409 | 1.59 | 3.21 | 12.4 | 183 | 24 Hr Avg | N/A |
| 23. | o–Anisidine and o–anisidine hydrochloride (mixtures and isomers) | 29191–52–4 | 44.4<br>0.0271 | 183<br>0.105 | 435<br>0.212 | 1,531<br>0.817 | N/A<br>12.1 | Annual<br>24 Hr Avg | BACT<br>N/A |
| 24. | Antimony and compounds, as Sb | 7440–36–0 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 25. | Antimony trioxide | 1309–64–4 | 35.5 | 146 | 348 | 1,225 | 0.2 | Annual | N/A |
| 26. | Arsenic, elemental and inorganic compounds, as As | 7440–38–2 | 0.413 | 1.7 | 4.04 | 14.2 | N/A | Annual | LAER |
| 27. | Arsine | 7784–42–1 | 0.00856 | 0.0333 | 0.0671 | 0.258 | 3.83 | 24 Hr Avg | N/A |
| | | | 8.88 | 36.5 | 86.9 | 306 | 0.05 | Annual | N/A |
| 28. | Asbestos, all forms | 1332–21–4 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 29. | Aziridine (Ethylenimine) | 151–56–4 | 0.0473 | 0.184 | 0.371 | 1.43 | 21.1 | 24 Hr Avg | N/A |
| 30. | Barium, soluble compounds, as Ba | 7440–39–3 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 31. | Benz(a)anthracene | 56–55–3 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| 32. | Benzene | 71–43–2 | 228 | 936 | 2,228 | 7,854 | N/A | Annual | LAER |
| 33. | Benzidine | 92–87–5 | 0.0265 | 0.109 | 0.259 | 0.914 | N/A | Annual | LAER |
| 34. | Benzo(b)fluoranthene | 205–99–2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 35. | Benzo(j)fluoranthene | 205–82–3 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 36. | Benzo(k)fluoranthene | 207–08–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 37. | Benzo(a)pyrene | 50–32–8 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| 38. | Benzotrichloride | 98–07–7 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 39. | Benzoyl chloride | 98–88–4 | 0.215 | 0.684 | 1.31 | 3.53 | 287 | 1 Hr | N/A |
| 40. | Benzoyl peroxide | 94–36–0 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 41. | Benzyl acetate | 140–11–4 | 3.3 | 12.8 | 25.9 | 99.6 | 1,474 | 24 Hr Avg | N/A |
| 42. | Benzyl chloride | 100–44–7 | 0.278 | 1.08 | 2.18 | 8.4 | 124 | 24 Hr Avg | N/A |
| 43. | Beryllium and beryllium compounds, as Be | 7440–41–7 | 0.74<br>3.55 | 3.04<br>14.6 | 7.24<br>34.8 | 25.5<br>123 | N/A<br>0.02 | Annual<br>Annual | BACT<br>N/A |
| 44. | Biphenyl | 92–52–4 | 0.0678 | 0.263 | 0.531 | 2.05 | 30.3 | 24 Hr Avg | N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 45. | Bis(2–chloroethyl)ether (Dichloroethyl ether) | 111–44–4 | 1.57 | 6.1 | 12.3 | 47.4 | 702 | 24 Hr Avg | N/A |
| 46. | Bis(2–dimethylaminoethyl) ether (DMAEE) | 3033–62–3 | 0.0176 | 0.0684 | 0.138 | 0.531 | 7.87 | 24 Hr Avg | N/A |
| 47. | Bis(2–ethyl hexyl) phthalate (Diethyl hexyl phthalate) | 117–81–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 48. | Bismuth telluride, as $Bi_2Te_3$: Se–doped | 1304–82–1 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 49. | Borates, tetra, sodium salts, decahydrate | 1303–96–4 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 50. | Borates, tetra, sodium salts, pentahydrate | 1303–96–4 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 51. | Boron tribromide | 10294–33–4 | 0.765 | 2.44 | 4.69 | 12.6 | 1,025 | 1 Hr | N/A |
| 52. | Boron trifluoride | 7637–07–2 | 0.207 | 0.66 | 1.27 | 3.4 | 277 | 1 Hr | N/A |
| 53. | Bromine | 7726–95–6 | 0.0351 | 0.136 | 0.275 | 1.06 | 15.7 | 24 Hr Avg | N/A |
| 54. | Bromine pentafluoride | 7789–30–2 | 0.0384 | 0.149 | 0.301 | 1.16 | 17.2 | 24 Hr Avg | N/A |
| 55. | Bromodichloromethane | 75–27–4 | 48 | 197 | 470 | 1,656 | N/A | Annual | BACT |
| 56. | Bromodiphenyls (Polybrominated biphenyls; PBBs) | 59536–65–1 | 0.207 | 0.849 | 2.02 | 7.12 | N/A | Annual | BACT |
| 57. | Bromoform | 75–25–2 | 0.278 | 1.08 | 2.18 | 8.38 | 124 | 24 Hr Avg | N/A |
| 58. | 1,3–Butadiene | 106–99–0 | 6.35 | 26.1 | 62.1 | 219 | N/A | Annual | BACT |
| 59. | 2–Butoxyethanol (Ethylene glycol monobutyl ether; EGBE; Butyl Cellosolve) | 111–76–2 | 2,309,939<br>5.19 | 9,490,000<br>20.2 | 22,595,238<br>40.7 | 79,636,364<br>157 | 13,000<br>2,320 | Annual<br>24 Hr Avg | N/A |
| 60. | n–Butyl acrylate | 141–32–2 | 0.563 | 2.19 | 4.41 | 17 | 252 | 24 Hr Avg | N/A |
| 61. | n–Butylamine | 109–73–9 | 1.12 | 3.56 | 6.84 | 18.4 | 1,496 | 1 Hr | N/A |
| 62. | n–butyl alcohol (n–Butanol) | 71–36–3 | 11.3 | 36 | 69.3 | 186 | 15,157 | 1 Hr | N/A |
| 63. | Butylated hydroxyanisole (BHA) | 25013–16–5 | 31,173 | 128,070 | 304,929 | 1,074,715 | N/A | Annual | BACT |
| 64. | Butyl Cellosolve (2–Butoxyethanol; ethylene glycol monobutyl ether; EGBE) | 111–76–2 | 2,309,939<br>5.19 | 9,490,000<br>20.2 | 22,595,238<br>40.7 | 79,636,364<br>157 | 13,000<br>2,320 | Annual<br>24 Hr Avg | N/A |
| 65. | tert–Butyl chromate, as Cr | 1189–85–1 | 0.00747 | 0.0238 | 0.0457 | 0.123 | 10 | 1 Hr | N/A |
| | | | 0.148 | 0.608 | 1.45 | 5.1 | N/A | Annual | LAER |
| 66. | n–Butyl glycidyl ether (BGE) | 2426–08–6 | 7.15 | 27.8 | 56.1 | 216 | 3,195 | 24 Hr Avg | N/A |
| 67. | n–Butyl lactate | 138–22–7 | 1.61 | 6.24 | 12.6 | 48.5 | 717 | 24 Hr Avg | N/A |
| 68. | o–sec–Butylphenol | 89–72–5 | 1.65 | 6.41 | 12.9 | 49.8 | 737 | 24 Hr Avg | N/A |
| 69. | p–tert–Butyltoluene | 98–51–1 | 0.326 | 1.26 | 2.55 | 9.83 | 145 | 24 Hr Avg | N/A |
| 70. | C.I. Basic Red 9 monohydrochloride | 569–61–9 | 25 | 103 | 245 | 863 | N/A | Annual | BACT |
| 71. | Cadmium and cadmium compounds, as Cd | 7440–43–9 | 0.987 | 4.06 | 9.66 | 34 | N/A | Annual | LAER |
| 72. | Calcium cyanamide | 156–62–7 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 73. | Calcium hydroxide | 1305–62–0 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 74. | Calcium oxide | 1305–78–8 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 75. | Camphor (synthetic) | 76–22–2 | 0.669 | 2.6 | 5.24 | 20.2 | 299 | 24 Hr Avg | N/A |
| 76. | Caprolactam (aerosol and vapor) | 105–60–2 | 1.24 | 4.83 | 9.74 | 37.5 | 555 | 24 Hr Avg | N/A |
| 77. | Carbon black | 1333–86–4 | 0.188 | 0.73 | 1.47 | 5.68 | 84 | 24 Hr Avg | N/A |
| 78. | Carbon disulfide | 75–15–0 | 124,381 | 511,000 | 1,216,667 | 4,288,112 | 700 | Annual | N/A |
| | | | 1.67 | 6.5 | 13.1 | 50.5 | 747 | 24 Hr Avg | N/A |
| 79. | Carbon tetrabromide | 558–13–4 | 0.0729 | 0.283 | 0.571 | 2.2 | 32.6 | 24 Hr Avg | N/A |
| 80. | Carbon tetrachloride | 56–23–5 | 118 | 487 | 1,159 | 4,084 | N/A | Annual | BACT |
| 81. | Carbonyl fluoride | 353–50–4 | 0.29 | 1.13 | 2.27 | 8.76 | 130 | 24 Hr Avg | N/A |
| 82. | Catechol (Pyrocatechol) | 120–80–9 | 1.21 | 4.7 | 9.48 | 36.5 | 540 | 24 Hr Avg | N/A |
| 83. | Cellosolve (2–Ethoxyethanol; EGEE) | 110–80–5 | 0.99<br>35,538 | 3.85<br>146,000 | 7.76<br>347,619 | 29.9<br>1,225,175 | 442<br>200 | 24 Hr Avg<br>Annual | N/A<br>N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 84. | Cellosolve acetate (2–Ethoxyethyl acetate; EGEEA) | 111–15–9 | 1.45 | 5.64 | 11.4 | 43.8 | 649 | 24 Hr Avg | N/A |
| 85. | Refractory ceramic fibers (respirable size) | | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 86. | Cesium hydroxide | 21351–79–1 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 87. | Chlordecone (Kepone) | 143–50–0 | 0.386 | 1.59 | 3.78 | 13.3 | N/A | Annual | BACT |
| 88. | Chlorendic acid | 115–28–6 | 68.3 | 281 | 668 | 2,356 | N/A | Annual | BACT |
| 89. | Chlorinated diphenyl oxide | 55720–99–5 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 90. | Chlorinated paraffins (C12; 60% chlorine) | 108171–26–2 | 71.1 | 292 | 695 | 2,450 | N/A | Annual | BACT |
| 91. | Chlorine | 7782–50–5 | 0.0779 | 0.303 | 0.611 | 2.35 | 34.8 | 24 Hr Avg | N/A |
| 92. | Chlorine dioxide | 10049–04–4 | 0.0148 | 0.0576 | 0.116 | 0.447 | 6.62 | 24 Hr Avg | N/A |
| 93. | Chlorine trifluoride | 7790–91–2 | 0.0282 | 0.0899 | 0.173 | 0.464 | 37.8 | 1 Hr | N/A |
| 94. | 2–Chloroacetophenone | 532–27–4 | 0.017 | 0.066 | 0.133 | 0.513 | 7.59 | 24 Hr Avg | N/A |
| 95. | Chlorobenzene (Monochlorobenzene) | 108–90–7 | 2.47 | 9.61 | 19.4 | 74.7 | 1,105 | 24 Hr Avg | N/A |
| 96. | o– Chlorobenzylidene malononitrile | 2698–41–1 | 0.0288 | 0.0917 | 0.176 | 0.473 | 38.6 | 1 Hr | N/A |
| 97. | 1–Chloro–1,1–difluoroethane (Hydrochlorofluorocarbon–142b; HCFC–142b; R–142b) | 75–68–3 | 8,884,381 | 36,500,000 | 86,904,762 | 306,293,706 | 50,000 | Annual | N/A |
| 98. | Chlorodifluoromethane (Hydrochlorofluorocarbon–22; HCFC–22; R–22) | 75–45–6 | 8,884,381 | 36,500,000 | 86,904,762 | 306,293,706 | 50,000 | Annual | N/A |
| 99. | Chlorodiphenyls (Polychlorinated biphenyls; PCBs) | 1336–36–3 | 0.0269<br>0.1 | 0.104<br>0.1 | 0.211<br>0.1 | 0.811<br>0.1 | 12<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 100. | 1–Chloro–2,3–epoxypropane (Epichlorohydrin) | 106–89–8 | 0.102<br>178 | 0.395<br>730 | 0.797<br>1,738 | 3.07<br>6,126 | 45.4<br>1 | 24 Hr Avg<br>Annual | N/A<br>N/A |
| | | | 1,481 | 6,083 | 14,484 | 51,049 | N/A | Annual | BACT |
| 101. | Chloroethane (Ethyl chloride) | 75–00–3 | 14.2<br>1,776,876 | 55.1<br>7,300,000 | 111<br>17,380,952 | 428<br>61,258,741 | 6,333<br>10,000 | 24 Hr Avg<br>Annual | N/A<br>N/A |
| 102. | Chloroform | 67–66–3 | 2.62 | 10.2 | 20.6 | 79.2 | 1,172 | 24 Hr Avg | N/A |
| | | | 77.3 | 317 | 756 | 2,663 | N/A | Annual | BACT |
| 103. | Chloromethane (Methyl chloride) | 74–87–3 | 5.55 | 21.5 | 43.5 | 167 | 2,478 | 24 Hr Avg | N/A |
| 104. | β–Chloroprene | 126–99–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| | | | 1.95 | 7.56 | 15.2 | 58.7 | 869 | 24 Hr Avg | N/A |
| 105. | o–Chlorostyrene | 2039–87–4 | 15.2 | 59.2 | 119 | 460 | 6,802 | 24 Hr Avg | N/A |
| 106. | o–Chlorotoluene | 95–49–8 | 13.9 | 54 | 109 | 420 | 6,213 | 24 Hr Avg | N/A |
| 107. | Chromium (metal) and compounds other than chromium (VI), as Cr | 7440–47–3 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 108. | Chromium (VI): chromic acid mists and dissolved Cr (VI) aerosols, as Cr | 7440–47–3 | 1.42<br>0.148 | 5.84<br>0.608 | 13.9<br>1.45 | 49<br>5.1 | 0.008<br>N/A | Annual<br>Annual | N/A<br>LAER |
| 109. | Chromium (VI): compounds and particulates, as Cr | 7440–47–3 | 17.8<br>0.148 | 73<br>0.608 | 174<br>1.45 | 613<br>5.1 | 0.1<br>N/A | Annual<br>Annual | N/A<br>LAER |
| 110. | Chromyl chloride, as Cr | 14977–61–8 | 0.148 | 0.608 | 1.45 | 5.1 | N/A | Annual | LAER |
| | | | 0.00851 | 0.0331 | 0.0667 | 0.257 | 3.8 | 24 Hr Avg | N/A |
| 111. | Cobalt, elemental, and inorganic compounds, as Co | 7440–48–4 | 0.00107 | 0.00417 | 0.00842 | 0.0324 | 0.48 | 24 Hr Avg | N/A |
| 112. | Coke oven emissions | | 2.87 | 11.8 | 28 | 98.8 | N/A | Annual | LAER |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 113. | Copper and compounds, dusts and mists, as Cu | 7440–50–8 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 114. | Copper and compounds, fume, as Cu | 7440–50–8 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 115. | p–Cresidine | 120–71–8 | 41.3 | 170 | 404 | 1,425 | N/A | Annual | BACT |
| 116. | Cresol (mixtures and isomers) | 1319–77–3 | 1.19 | 4.62 | 9.31 | 35.9 | 531 | 24 Hr Avg | N/A |
| 117. | Crotonaldehyde | 4170–30–3 | 0.0642 | 0.205 | 0.393 | 1.06 | 86 | 1 Hr | N/A |
| 118. | Cumene (Isopropyl benzene) | 98–82–8 | 13.2 | 51.3 | 103 | 399 | 5,899 | 24 Hr Avg | N/A |
| 119. | Cyanamide | 420–04–2 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 120. | Cyanides, (inorganics), as CN | 143–33–9 | 0.373 | 1.19 | 2.29 | 6.13 | 500 | 1 Hr | N/A |
| 121. | Cyanogen | 460–19–5 | 1.14 | 4.44 | 8.96 | 34.5 | 511 | 24 Hr Avg | N/A |
| 122. | Cyanogen chloride | 506–77–4 | 0.0563 | 0.179 | 0.345 | 0.926 | 75.4 | 1 Hr | N/A |
| 123. | Cyclohexanol | 108–93–0 | 11 | 42.7 | 86.2 | 332 | 4,916 | 24 Hr Avg | N/A |
| 124. | Cyclohexanone | 108–94–1 | 5.17 | 20.1 | 40.5 | 156 | 2,311 | 24 Hr Avg | N/A |
| 125. | Cyclohexylamine | 108–91–8 | 2.18 | 8.46 | 17.1 | 65.8 | 973 | 24 Hr Avg | N/A |
| 126. | Cyclonite | 121–82–4 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 127. | Cyclopentadiene | 542–92–7 | 10.9 | 42.3 | 85.4 | 329 | 4,866 | 24 Hr Avg | N/A |
| 128. | Danthron (1,8–Dihydroxyanthroquinone) | 117–10–2 | 80.8 | 332 | 790 | 2,784 | N/A | Annual | BACT |
| 129. | DBCP (1,2–Dibromo–3–chloropropane) | 96–12–8 | 0.935 | 3.84 | 9.15 | 32.2 | N/A | Annual | BACT |
| 130. | DDT (Dichlorodiphenyltrichloroethane) | 50–29–3 | 0.0537<br>18.3 | 0.209<br>75.3 | 0.421<br>179 | 1.62<br>632 | 24<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 131. | Diacetone alcohol | 123–42–2 | 12.8 | 49.6 | 100 | 385 | 5,701 | 24 Hr Avg | N/A |
| 132. | 2,4–Diaminoanisole sulfate | 39156–41–7 | 480 | 1,973 | 4,698 | 16,556 | N/A | Annual | BACT |
| 133. | 2,4–Diaminotoluene (Toluene–2,4–diamine) | 95–80–7 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| 134. | Diazomethane | 334–88–3 | 0.0185 | 0.0718 | 0.145 | 0.558 | 8.25 | 24 Hr Avg | N/A |
| 135. | Dibenz(a,h)acridine | 226–36–8 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| 136. | Dibenz(a,j)acridine | 224–42–0 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| 137. | Dibenz(a,h)anthracene | 53–70–3 | 1.48 | 6.08 | 14.5 | 51 | N/A | Annual | BACT |
| 138. | 7H–Dibenzo(c,g)carbazole | 194–59–2 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| 139. | Dibenzo(a,e)pyrene | 192–65–4 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| 140. | Dibenzo(a,h)pyrene | 189–64–0 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| 141. | Dibenzo(a,i)pyrene | 189–55–9 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| 142. | Dibenzo(a,l)pyrene | 191–30–0 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| 143. | Diborane | 19287–45–7 | 0.00608 | 0.0236 | 0.0477 | 0.184 | 2.72 | 24 Hr Avg | N/A |
| 144. | 1,2–Dibromo–3–chloropropane (DBCP) | 96–12–8 | 0.935 | 3.84 | 9.15 | 32.2 | N/A | Annual | BACT |
| 145. | 1,2–Dibromoethane (Ethylene dibromide; EDB) | 106–93–4 | 8.08 | 33.2 | 79 | 278 | N/A | Annual | BACT |
| 146. | 2–N–Dibutylaminoethanol | 102–81–8 | 0.19 | 0.74 | 1.49 | 5.75 | 85.1 | 24 Hr Avg | N/A |
| 147. | Dibutylphenyl phosphate | 2528–36–1 | 0.189 | 0.733 | 1.48 | 5.7 | 84.3 | 24 Hr Avg | N/A |
| 148. | Dibutyl phthalate (Di–n–butyl phthalate) | 84–74–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 149. | o–Dichlorobenzene (1,2–Dichlorobenzene) | 95–50–1 | 8.07 | 31.4 | 63.3 | 244 | 3,608 | 24 Hr Avg | N/A |
| 150. | p–Dichlorobenzene (1,4–Dichlorobenzene) | 106–46–7 | 162<br>142,150 | 664<br>584,000 | 1,580<br>1,390,476 | 5,569<br>4,900,699 | N/A<br>800 | Annual<br>Annual | BACT<br>N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| | | | 3.23 | 12.5 | 25.3 | 97.5 | 1,443 | 24 Hr Avg | N/A |
| 151. | 3,3'–Dichlorobenzidine | 91–94–1 | 5.23 | 21.5 | 51.1 | 180 | N/A | Annual | BACT |
| 152. | 1,3–Dichloro–5,5–dimethyl hydantoin | 118–52–5 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 153. | Dichlorodiphenyltrichloro-ethane (DDT) | 50–29–3 | 18.3<br>0.0537 | 75.3<br>0.209 | 179<br>0.421 | 632<br>1.62 | N/A<br>24 | Annual<br>24 Hr Avg | BACT<br>N/A |
| 154. | 1,1–Dichloroethane (Ethylidene dichloride) | 75–34–3 | 21.7 | 84.5 | 170 | 656 | 9,715 | 24 Hr Avg | N/A |
| 155. | 1,2–Dichloroethane (Ethylene dichloride; EDC) | 107–06–2 | 68.3<br>2.17 | 281<br>8.45 | 668<br>17 | 2,356<br>65.6 | N/A<br>971 | Annual<br>24 Hr Avg | BACT<br>N/A |
| 156. | Dichloroethyl ether (Bis(2–chloroethyl)ether) | 111–44–4 | 1.57 | 6.1 | 12.3 | 47.4 | 702 | 24 Hr Avg | N/A |
| 157. | 1,1–Dichloroethylene (Vinylidene chloride) | 75–35–4 | 1.06 | 4.14 | 8.35 | 32.2 | 476 | 24 Hr Avg | N/A |
| 158. | 1,2–Dichloroethylene | 540–59–0 | 42.6 | 166 | 334 | 1,286 | 19,033 | 24 Hr Avg | N/A |
| 158m. | Dichloromethane (Methylene chloride) | 75–09–2 | 9.33<br>3,781 | 36.2<br>15,532 | 73.1<br>36,981 | 282<br>130,338 | 4,168<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 159. | 1,1–Dichloro–1–nitroethane | 594–72–9 | 0.633 | 2.46 | 4.96 | 19.1 | 283 | 24 Hr Avg | N/A |
| 160. | 1,2–Dichloropropane (Propylene dichloride) | 78–87–5 | 18.6<br>711 | 72.3<br>2,920 | 146<br>6,952 | 562<br>24,503 | 8,318<br>4 | 24 Hr Avg<br>Annual | N/A<br>N/A |
| 161. | Dicyclopentadiene | 77–73–6 | 1.45 | 5.64 | 11.4 | 43.8 | 649 | 24 Hr Avg | N/A |
| 162. | Diethanolamine | 111–42–2 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 163. | Diethylamine | 109–89–7 | 0.803 | 3.12 | 6.3 | 24.3 | 359 | 24 Hr Avg | N/A |
| 164. | 2–Diethylaminoethanol | 100–37–8 | 0.515 | 2 | 4.04 | 15.5 | 230 | 24 Hr Avg | N/A |
| 165. | Diethylene triamine | 111–40–0 | 0.227 | 0.881 | 1.78 | 6.84 | 101 | 24 Hr Avg | N/A |
| 166. | Diethyl hexyl phthalate (Bis(2–ethyl hexyl) phthalate; Di–sec–octyl phthalate; DEHP) | 117–81–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 167. | Diethyl phthalate | 84–66–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 168. | Diethyl sulfate | 64–67–5 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 169. | 1,4–Diethylene oxide (1,4–Dioxane) | 123–91–1 | 3.87<br>231 | 15<br>948 | 30.3<br>2,257 | 117<br>7,956 | 1,730<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 170. | 1,1–Difluoroethane | 75–37–6 | 7,107,505 | 29,200,000 | 69,523,810 | 245,034,965 | 40,000 | Annual | N/A |
| 171. | Diglycidyl ether (DGE) | 2238–07–5 | 0.0286 | 0.111 | 0.224 | 0.863 | 12.8 | 24 Hr Avg | N/A |
| 172. | Diglycidyl resorcinol ether | 101–90–6 | 3.63 | 14.9 | 35.5 | 125 | N/A | Annual | BACT |
| 173. | 1,8–Dihydroxyanthroquinone (Danthron) | 117–10–2 | 80.8 | 332 | 790 | 2,784 | N/A | Annual | BACT |
| 174. | Diisobutyl ketone | 108–83–8 | 7.81 | 30.4 | 61.2 | 236 | 3,490 | 24 Hr Avg | N/A |
| 175. | Diisopropylamine | 108–18–9 | 1.11 | 4.32 | 8.71 | 33.6 | 497 | 24 Hr Avg | N/A |
| 176. | N,N–Dimethyl acetamide | 127–19–5 | 1.91 | 7.44 | 15 | 57.8 | 855 | 24 Hr Avg | N/A |
| 177. | Dimethylamine | 124–40–3 | 0.495 | 1.92 | 3.88 | 14.9 | 221 | 24 Hr Avg | N/A |
| 178. | 4–Dimethylaminoazobenzene | 60–11–7 | 1.37 | 5.62 | 13.4 | 47.1 | N/A | Annual | BACT |
| 179. | Dimethylaniline (N,N–Dimethylaniline) | 121–69–7 | 1.33 | 5.17 | 10.4 | 40.2 | 595 | 24 Hr Avg | N/A |
| 180. | Dimethyl benzene (Xylene (mixtures and isomers); Xylol) | 1330–20–7 | 23.3 | 90.6 | 183 | 704 | 10,421 | 24 Hr Avg | N/A |
| 181. | 3,3'–Dimethylbenzidine (o–Tolidine) | 119–93–7 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 182 | Dimethyl carbamoyl chloride | 79–44–7 | 0.48 | 1.97 | 4.7 | 16.6 | N/A | Annual | BACT |
| 183. | Dimethylethoxysilane | 14857–34–2 | 0.114 | 0.445 | 0.897 | 3.46 | 51.1 | 24 Hr Avg | N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 184. | N,N–Dimethylformamide | 68–12–2 | 1.61 | 6.24 | 12.6 | 48.5 | 717 | 24 Hr Avg | N/A |
| | | | 5,331 | 21,900 | 52,143 | 183,776 | 30 | Annual | N/A |
| 185. | 1,1–Dimethylhydrazine | 57–14–7 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 186. | Dimethylphthalate | 131–11–3 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 187. | Dimethyl sulfate | 77–78–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| | | | 0.0277 | 0.108 | 0.217 | 0.836 | 12.4 | 24 Hr Avg | N/A |
| 188. | Dinitolmide | 148–01–6 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 189. | Dinitrobenzene (mixtures and isomers) | 528–29–0 | 0.0554 | 0.215 | 0.434 | 1.67 | 24.8 | 24 Hr Avg | N/A |
| 190. | Dinitrotoluene (mixtures and isomers) | 25321–14–6 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 191. | 1,4–Dioxane (1,4–Diethylene oxide) | 123–91–1 | 231<br>3.87 | 948<br>15 | 2,257<br>30.3 | 7,956<br>117 | N/A<br>1,730 | Annual<br>24 Hr Avg | BACT<br>N/A |
| 192. | Dioxins and Furans, chlorinated (2,3,7,8–Tetrachlorodibenzo–p–dioxin), as equivalents | 1746–01–6 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | N/A | Annual | LAER |
| 193. | Direct Black 38 (benzidine–based dye) | 1937–37–7 | 0.846 | 3.48 | 8.28 | 29.2 | N/A | Annual | BACT |
| 194. | Direct Blue 6 (benzidine–based dye) | 2602–46–2 | 0.846 | 3.48 | 8.28 | 29.2 | N/A | Annual | BACT |
| 195. | Disperse Blue 1 | 2475–45–8 | 1,367 | 5,615 | 13,370 | 47,122 | N/A | Annual | BACT |
| 196. | Disulfiram | 97–77–8 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 197. | Divinyl benzene (mixtures and isomers) | 1321–74–0 | 2.86 | 11.1 | 22.4 | 86.3 | 1,278 | 24 Hr Avg | N/A |
| 198. | EGBE (2–Butoxyethanol; Ethylene glycol monobutyl ether; Butyl cellosolve) | 111–76–2 | 2,309,939<br>5.19 | 9,490,000<br>20.2 | 22,595,238<br>40.7 | 79,636,364<br>157 | 13,000<br>2,320 | Annual<br>24 Hr Avg | N/A |
| 199. | EGEE (2–Ethoxyethanol; Ethylene glycol monoethyl ether; Cellosolve) | 110–80–5 | 0.99<br>35,538 | 3.85<br>146,000 | 7.76<br>347,619 | 29.9<br>1,225,175 | 442<br>200 | 24 Hr Avg<br>Annual | N/A<br>N/A |
| 200. | EGEEA (2–Ethoxyethyl acetate; Ethylene glycol monoethyl ether acetate; Cellosolve acetate) | 111–15–9 | 1.45 | 5.64 | 11.4 | 43.8 | 649 | 24 Hr Avg | N/A |
| 201. | EGME (2–Methoxyethanol; Methyl Cellosolve) | 109–86–4 | 0.836 | 3.25 | 6.55 | 25.2 | 373 | 24 Hr Avg | N/A |
| 202. | EGMEA (2–Methoxyethyl acetate; Methyl Cellosolve acetate) | 110–49–6 | 1.3 | 5.04 | 10.2 | 39.2 | 580 | 24 Hr Avg | N/A |
| 203. | Epichlorohydrin (1–Chloro–2,3–epoxypropane) | 106–89–8 | 178<br>0.102<br>1,481 | 730<br>0.395<br>6,083 | 1,738<br>0.797<br>14,484 | 6,126<br>3.07<br>51,049 | 1<br>45.4<br>N/A | Annual<br>24 Hr Avg<br>Annual | N/A<br>N/A<br>BACT |
| 204. | 1,2–Epoxybutane (1,2–Butylene oxide) | 106–88–7 | 3,554 | 14,600 | 34,762 | 122,517 | 20 | Annual | N/A |
| 205. | Erionite (Zeolites) | 66733–21–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 206. | Ethanamine (Ethylamine) | 75–04–7 | 0.495 | 1.92 | 3.88 | 14.9 | 221 | 24 Hr Avg | N/A |
| 207. | Ethanolamine | 141–43–5 | 0.403 | 1.56 | 3.16 | 12.2 | 180 | 24 Hr Avg | N/A |
| 208. | 2–Ethoxyethanol (Ethylene glycol monoethyl ether; EGEE; Cellosolve) | 110–80–5 | 35,538<br>0.99 | 146,000<br>3.85 | 347,619<br>7.76 | 1,225,175<br>29.9 | 200<br>442 | Annual<br>24 Hr Avg | N/A<br>N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 209. | 2–Ethoxyethyl acetate (Ethylene glycol monoethyl ether acetate; EGEEA; Cellosolve acetate) | 111–15–9 | 1.45 | 5.64 | 11.4 | 43.8 | 649 | 24 Hr Avg | N/A |
| 210. | Ethyl acrylate | 140–88–5 | 1.1 | 4.27 | 8.62 | 33.2 | 491 | 24 Hr Avg | N/A |
| 211. | Ethylamine (Ethanamine) | 75–04–7 | 0.495 | 1.92 | 3.88 | 14.9 | 221 | 24 Hr Avg | N/A |
| 212. | Ethyl amyl ketone | 541–85–5 | 7.04 | 27.4 | 55.2 | 213 | 3,146 | 24 Hr Avg | N/A |
| 213. | Ethyl benzene | 100–41–4 | 23.3 | 90.6 | 183 | 704 | 10,421 | 24 Hr Avg | N/A |
| | | | 177,688 | 730,000 | 1,738,095 | 6,125,874 | 1,000 | Annual | N/A |
| 214. | Ethyl bromide | 74–96–4 | 1.2 | 4.65 | 9.38 | 36.1 | 535 | 24 Hr Avg | N/A |
| 215. | Ethyl tert–butyl ether (ETBE) | 637–92–3 | 1.12 | 4.36 | 8.8 | 33.9 | 501 | 24 Hr Avg | N/A |
| 216. | Ethyl butyl ketone | 106–35–4 | 12.5 | 48.7 | 98.3 | 379 | 5,604 | 24 Hr Avg | N/A |
| 217. | Ethyl carbamate (Urethane) | 51–79–6 | 6.13 | 25.2 | 59.9 | 211 | N/A | Annual | BACT |
| 218. | Ethyl chloride (Chloroethane) | 75–00–3 | 1,776,876<br>14.2 | 7,300,000<br>55.1 | 17,380,952<br>111 | 61,258,741<br>428 | 10,000<br>6,333 | Annual<br>24 Hr Avg | N/A<br>N/A |
| 219. | Ethyl cyanoacrylate | 7085–85–0 | 0.055 | 0.214 | 0.431 | 1.66 | 24.6 | 24 Hr Avg | N/A |
| 220. | Ethylene chlorohydrin | 107–07–3 | 0.246 | 0.783 | 1.51 | 4.04 | 329 | 1 Hr | N/A |
| 221. | Ethylenediamine | 107–15–3 | 1.32 | 5.13 | 10.3 | 39.9 | 590 | 24 Hr Avg | N/A |
| 222. | Ethylene dibromide (EDB; 1,2–Dibromoethane) | 106–93–4 | 8.08 | 33.2 | 79 | 278 | N/A | Annual | BACT |
| 223. | Ethylene dichloride (EDC; 1,2–Dichloroethane) | 107–06–2 | 2.17<br>68.3 | 8.45<br>281 | 17<br>668 | 65.6<br>2,356 | 971<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 224. | Ethylene glycol monobutyl ether (2–Butoxyethanol; EGBE; Butyl cellosolve) | 111–76–2 | 2,309,939<br>5.19 | 9,490,000<br>20.2 | 22,595,238<br>40.7 | 79,636,364<br>157 | 13,000<br>2,320 | Annual<br>24 Hr Avg | N/A<br>N/A |
| 225. | Ethylene glycol monoethyl ether (2–Ethoxyethanol; EGEE; Cellosolve) | 110–80–5 | 35,538<br>0.99 | 146,000<br>3.85 | 347,619<br>7.76 | 1,225,175<br>29.9 | 200<br>442 | Annual<br>24 Hr Avg | N/A<br>N/A |
| 226. | Ethylene glycol monoethyl ether acetate (2–Ethoxyethyl acetate; EGEEA; Cellosolve acetate) | 111–15–9 | 1.45 | 5.64 | 11.4 | 43.8 | 649 | 24 Hr Avg | N/A |
| 227. | Ethylene glycol vapor and aerosol | 107–21–1 | 7.47 | 23.8 | 45.7 | 123 | 10,000 | 1 Hr | N/A |
| 228. | Ethylene oxide | 75–21–8 | 20.2 | 83 | 198 | 696 | N/A | Annual | LAER |
| 229. | Ethylene thiourea | 96–45–7 | 137 | 562 | 1,337 | 4,712 | N/A | Annual | BACT |
| 230. | Ethylenimine (Aziridine) | 151–56–4 | 0.0473 | 0.184 | 0.371 | 1.43 | 21.1 | 24 Hr Avg | N/A |
| 231. | Ethylidene dichloride (1,1–Dichloroethane) | 75–34–3 | 21.7 | 84.5 | 170 | 656 | 9,715 | 24 Hr Avg | N/A |
| 232. | Ethylidene norbornene | 16219–75–3 | 1.84 | 5.85 | 11.2 | 30.2 | 2,458 | 1 Hr | N/A |
| 233. | N–Ethylmorpholine | 100–74–3 | 1.27 | 4.92 | 9.92 | 38.2 | 565 | 24 Hr Avg | N/A |
| 234. | Ethyl silicate | 78–10–4 | 4.58 | 17.8 | 35.9 | 138 | 2,045 | 24 Hr Avg | N/A |
| 235. | Fenamiphos | 22224–92–6 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 236. | Flour dust (inhalable fraction) | | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 237. | Fluorides, (inorganics), as F | | 0.134 | 0.522 | 1.05 | 4.05 | 60 | 24 Hr Avg | N/A |
| 238. | Fluorine | 7782–41–4 | 0.0835 | 0.324 | 0.654 | 2.52 | 37.3 | 24 Hr Avg | N/A |
| 239. | Formaldehyde | 50–00–0 | 137 | 562 | 1,337 | 4,712 | N/A | Annual | BACT |
| 240. | Formamide | 75–12–7 | 0.99 | 3.84 | 7.76 | 29.9 | 442 | 24 Hr Avg | N/A |
| 241. | Formic acid | 64–18–6 | 0.506 | 1.96 | 3.96 | 15.3 | 226 | 24 Hr Avg | N/A |
| 242. | Furan | 110–00–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 243. | Furfural | 98–01–1 | 0.422 | 1.64 | 3.31 | 12.7 | 189 | 24 Hr Avg | N/A |
| 244. | Furfuryl alcohol | 98–00–0 | 2.16 | 8.37 | 16.9 | 65.1 | 963 | 24 Hr Avg | N/A |
| 245. | Germanium tetrahydride | 7782–65–2 | 0.0337 | 0.131 | 0.264 | 1.02 | 15 | 24 Hr Avg | N/A |
| 246. | Glutaraldehyde | 111–30–8 | 0.0153 | 0.0487 | 0.0936 | 0.251 | 20.5 | 1 Hr | N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 247. | Glycidol | 556–52–5 | 0.325 | 1.26 | 2.55 | 9.83 | 145 | 24 Hr Avg | N/A |
| | | | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 248. | Graphite (all forms except graphite fiber) | 7782–42–5 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 249. | Hexachlorobenzene (HCB) | 118–74–1 | 0.000107 | 0.000417 | 0.000842 | 0.00324 | 0.048 | 24 Hr Avg | N/A |
| | | | 3.86 | 15.9 | 37.8 | 133 | N/A | Annual | BACT |
| 250. | Hexachloroethane | 67–72–1 | 0.52 | 2.02 | 4.08 | 15.7 | 232 | 24 Hr Avg | N/A |
| | | | 444 | 1,825 | 4,345 | 15,315 | N/A | Annual | BACT |
| 251. | Hexachloronaphthalene | 1335–87–1 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 252. | Hexamethyl phosphoramide | 680–31–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 253. | Hexamethylene–1,6–diiso-cyanate (HDI) | 822–06–0 | 1.78<br>0.00185 | 7.3<br>0.00718 | 17.4<br>0.0145 | 61.3<br>0.0558 | 0.01<br>0.826 | Annual<br>24 Hr Avg | N/A<br>N/A |
| 254. | n–Hexane | 110–54–3 | 35,538 | 146,000 | 347,619 | 1,225,175 | 200 | Annual | N/A |
| | | | 9.47 | 36.8 | 74.2 | 286 | 4,230 | 24 Hr Avg | N/A |
| 255. | 1,6– Hexanediamine | 124–09–4 | 0.128 | 0.496 | 1 | 3.85 | 57 | 24 Hr Avg | N/A |
| 256. | 1–Hexene | 592–41–6 | 5.55 | 21.6 | 43.5 | 167 | 2,478 | 24 Hr Avg | N/A |
| 257. | Hexone (Methyl isobutyl ketone; MIBK) | 108–10–1 | 11 | 42.7 | 86.2 | 332 | 4,916 | 24 Hr Avg | N/A |
| 258. | sec–Hexyl acetate | 108–84–9 | 15.8 | 61.5 | 124 | 478 | 7,078 | 24 Hr Avg | N/A |
| 259. | Hexylene glycol | 107–41–5 | 9.02 | 28.7 | 55.2 | 148 | 12,083 | 1 Hr | N/A |
| 260. | Hydrazine and hydrazine sulfate | 302–01–2 | 0.363<br>0.000704 | 1.49<br>0.00274 | 3.55<br>0.00552 | 12.5<br>0.0213 | N/A<br>0.315 | Annual<br>24 Hr Avg | BACT<br>N/A |
| 261. | Hydrochloric acid (Hydro-gen chloride; Muriatic acid) | 7647–01–0 | 0.557<br>3,554 | 1.77<br>14,600 | 3.41<br>34,762 | 9.15<br>122,517 | 746<br>20 | 1 Hr<br>Annual | N/A<br>N/A |
| 262. | Hydrogenated terphenyls | 61788–32–7 | 0.265 | 1.03 | 2.08 | 7.99 | 118 | 24 Hr Avg | N/A |
| 263 | Hydrogen bromide | 10035–10–6 | 0.741 | 2.36 | 4.54 | 12.2 | 993 | 1 Hr | N/A |
| 264. | Hydrogen chloride (Hydro-chloric acid; Muriatic acid) | 7647–01–0 | 3,554<br>0.557 | 14,600<br>1.77 | 34,762<br>3.41 | 122,517<br>9.15 | 20<br>746 | Annual<br>1 Hr | N/A<br>N/A |
| 265. | Hydrogen cyanide | 74–90–8 | 0.388 | 1.24 | 2.38 | 6.38 | 520 | 1 Hr | N/A |
| 266. | Hydrogen fluoride (Hydro-fluoric acid) | 7664–39–3 | 0.183 | 0.584 | 1.12 | 3.01 | 246 | 1 Hr | N/A |
| 267. | Hydrogen peroxide | 7722–84–1 | 0.0747 | 0.29 | 0.586 | 2.26 | 33.4 | 24 Hr Avg | N/A |
| 268. | Hydrogen sulfide | 7783–06–4 | 0.749 | 2.91 | 5.87 | 22.6 | 335 | 24 Hr Avg | N/A |
| 269. | Hydroquinone | 123–31–9 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 270. | 2–Hydroxypropyl acrylate | 999–61–1 | 0.143 | 0.555 | 1.12 | 4.32 | 63.9 | 24 Hr Avg | N/A |
| 271. | Indeno(1,2,3–cd)pyrene | 193–39–5 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| 272. | Indium | 7440–74–6 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 273. | Iodine | 7553–56–2 | 0.0775 | 0.247 | 0.475 | 1.27 | 104 | 1 Hr | N/A |
| 274. | Iodomethane (Methyl iodide) | 74–88–4 | 0.624 | 2.42 | 4.89 | 18.8 | 279 | 24 Hr Avg | N/A |
| 275. | Iron oxide dust and fume, as Fe | 1309–37–1 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 276. | Iron salts, soluble, as Fe | | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 277. | Isobutyl alcohol | 78–83–1 | 8.14 | 31.6 | 63.8 | 246 | 3,638 | 24 Hr Avg | N/A |
| 278. | Isooctyl alcohol | 26952–21–6 | 14.3 | 55.6 | 112 | 432 | 6,392 | 24 Hr Avg | N/A |
| 279. | Isophorone | 78–59–1 | 2.11 | 6.72 | 12.9 | 34.7 | 2,826 | 1 Hr | N/A |
| 280. | Isophorone diisocyanate | 4098–71–9 | 0.00244 | 0.00949 | 0.0191 | 0.0737 | 1.09 | 24 Hr Avg | N/A |
| 281. | Isoprene | 78–79–5 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 282. | 2–Isopropoxyethanol | 109–59–1 | 5.72 | 22.2 | 44.8 | 173 | 2,556 | 24 Hr Avg | N/A |
| 283. | Isopropylamine | 75–31–0 | 0.649 | 2.52 | 5.09 | 19.6 | 290 | 24 Hr Avg | N/A |
| 284. | Isopropyl benzene (Cumene) | 98–82–8 | 13.2 | 51.3 | 103 | 399 | 5,899 | 24 Hr Avg | N/A |
| 285. | Isopropyl glycidyl ether | 4016–14–2 | 12.8 | 49.6 | 100 | 385 | 5,702 | 24 Hr Avg | N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 286. | N–Isopropylaniline | 768–52–5 | 0.594 | 2.31 | 4.66 | 17.9 | 265 | 24 Hr Avg | N/A |
| 287. | Kaolin | 1332–58–7 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 288. | Kepone (Chlordecone) | 143–50–0 | 0.386 | 1.59 | 3.78 | 13.3 | N/A | Annual | BACT |
| 289. | Ketene | 463–51–4 | 0.0462 | 0.179 | 0.362 | 1.39 | 20.6 | 24 Hr Avg | N/A |
| 290. | Lead acetate, as Pb | 301–04–2 | 22.2 | 91.3 | 217 | 766 | N/A | Annual | BACT |
| 291. | Lead phosphate, as Pb | 7446–27–7 | 148 | 608 | 1,448 | 5,105 | N/A | Annual | BACT |
| 292. | Maleic anhydride | 108–31–6 | 0.0215 | 0.0837 | 0.169 | 0.65 | 9.63 | 24 Hr Avg | N/A |
| 293. | Manganese, elemental and inorganic compounds, as Mn | 7439–96–5 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 294. | Mercury, as Hg, alkyl compounds | 7439–97–6 | 0.000537 | 0.00209 | 0.00421 | 0.0162 | 0.24 | 24 Hr Avg | N/A |
| 295. | Mercury, as Hg, aryl compounds | 7439–97–6 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 296. | Mercury, as Hg, inorganic forms including metallic mercury | 7439–97–6 | 53.3 | 219 | 521 | 1,838 | 0.3 | Annual | N/A |
| | | | 0.00134 | 0.00522 | 0.0105 | 0.0405 | 0.6 | 24 Hr Avg | N/A |
| 297. | Mesityl oxide | 141–79–7 | 3.23 | 12.6 | 25.4 | 97.6 | 1,445 | 24 Hr Avg | N/A |
| 298. | Methacrylic acid | 79–41–4 | 3.78 | 14.7 | 29.7 | 114 | 1,690 | 24 Hr Avg | N/A |
| 299. | 2–Methoxyethanol (Methyl cellosolve; EGME) | 109–86–4 | 0.836 | 3.25 | 6.55 | 25.2 | 373 | 24 Hr Avg | N/A |
| 300. | 2–Methoxyethyl acetate (Methyl Cellosolve acetate; EGMEA) | 110–49–6 | 1.3 | 5.04 | 10.2 | 39.2 | 580 | 24 Hr Avg | N/A |
| 301. | 4–Methoxyphenol | 150–76–5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 302. | Methyl acrylate | 96–33–3 | 0.378 | 1.47 | 2.97 | 11.4 | 169 | 24 Hr Avg | N/A |
| 303. | Methylacrylonitrile | 126–98–7 | 0.147 | 0.573 | 1.16 | 4.45 | 65.9 | 24 Hr Avg | N/A |
| 304. | Methylamine | 74–89–5 | 0.341 | 1.33 | 2.67 | 10.3 | 152 | 24 Hr Avg | N/A |
| 305. | Methyl n–amyl ketone | 110–43–0 | 12.5 | 48.7 | 98.3 | 379 | 5,604 | 24 Hr Avg | N/A |
| 306. | N–Methyl aniline | 100–61–8 | 0.118 | 0.457 | 0.923 | 3.55 | 52.6 | 24 Hr Avg | N/A |
| 307. | 2–Methyl aziridine (Propylenimine; Propylene imine) | 75–55–8 | 0.251<br>2.43 | 0.975<br>10 | 1.97<br>23.8 | 7.57<br>83.9 | 112<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 308. | Methyl n–butyl ketone | 591–78–6 | 1.1 | 4.27 | 8.62 | 33.2 | 492 | 24 Hr Avg | N/A |
| 309. | Methyl cellosolve (2–Methoxyethanol; EGME) | 109–86–4 | 0.836 | 3.25 | 6.55 | 25.2 | 373 | 24 Hr Avg | N/A |
| 310. | Methyl cellosolve acetate (2–Methoxyethyl acetate; EGMEA) | 110–49–6 | 1.3 | 5.04 | 10.2 | 39.2 | 580 | 24 Hr Avg | N/A |
| 311. | Methyl chloride (Chloromethane) | 74–87–3 | 5.55 | 21.5 | 43.5 | 167 | 2,478 | 24 Hr Avg | N/A |
| 312. | 5–Methyl chrysene | 3697–24–3 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| 313. | Methyl 2–cyanoacrylate | 137–05–3 | 0.0488 | 0.19 | 0.383 | 1.47 | 21.8 | 24 Hr Avg | N/A |
| 314. | Methylcyclohexanol | 25639–42–3 | 12.5 | 48.7 | 98.3 | 379 | 5,604 | 24 Hr Avg | N/A |
| 315. | o–Methylcyclohexanone | 583–60–8 | 12.3 | 47.9 | 96.6 | 372 | 5,505 | 24 Hr Avg | N/A |
| 316. | Methylene bisphenyl isocyanate (Methylene diphenyl isocyanate; MDI) | 101–68–8 | 0.00275<br>107 | 0.0107<br>438 | 0.0215<br>1,043 | 0.083<br>3,676 | 1.23<br>0.6 | 24 Hr Avg<br>Annual | N/A<br>N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 317. | Methylene chloride (Dichloromethane) | 75–09–2 | 9.33<br>3,781 | 36.2<br>15,532 | 73.1<br>36,981 | 282<br>130,338 | 4,168<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 318. | 4,4'–Methylene bis(2–chloroaniline) (MOCA) | 101–14–4 | 4.13 | 17 | 40.4 | 142 | N/A | Annual | BACT |
| 319. | Methylene bis(4–cyclohexylisocyanate) | 5124–30–1 | 0.00288 | 0.0112 | 0.0226 | 0.087 | 1.29 | 24 Hr Avg | N/A |
| 320. | 4,4'–Methylenedianiline (and dihydrochloride) | 101–77–9 | 0.0436<br>3.86 | 0.169<br>15.9 | 0.341<br>37.8 | 1.31<br>133 | 19.5<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 321. | Methyl ethyl ketone peroxide | 1338–23–4 | 0.108 | 0.343 | 0.659 | 1.77 | 144 | 1 Hr | N/A |
| 322. | Methyl formate | 107–31–3 | 14.3 | 55.5 | 112 | 431 | 6,385 | 24 Hr Avg | N/A |
| 323. | Methyl hydrazine | 60–34–4 | 0.00101 | 0.00393 | 0.00793 | 0.0306 | 0.452 | 24 Hr Avg | N/A |
| 324. | Methyl iodide (Iodomethane) | 74–88–4 | 0.624 | 2.42 | 4.89 | 18.8 | 279 | 24 Hr Avg | N/A |
| 325. | Methyl isoamyl ketone | 110–12–3 | 12.5 | 48.7 | 98.3 | 379 | 5,605 | 24 Hr Avg | N/A |
| 326. | Methyl isobutyl carbinol | 108–11–2 | 5.61 | 21.8 | 44 | 169 | 2,507 | 24 Hr Avg | N/A |
| 327. | Methyl isobutyl ketone (MIBK; Hexone) | 108–10–1 | 11 | 42.7 | 86.2 | 332 | 4,916 | 24 Hr Avg | N/A |
| 328. | Methyl isocyanate | 624–83–9 | 0.00251 | 0.00974 | 0.0196 | 0.0757 | 1.12 | 24 Hr Avg | N/A |
| 329. | Methyl methacrylate | 80–62–6 | 124,381 | 511,000 | 1,216,667 | 4,288,112 | 700 | Annual | N/A |
| | | | 11 | 42.7 | 86.2 | 332 | 4,914 | 24 Hr Avg | N/A |
| 330. | α–Methyl styrene | 98–83–9 | 13 | 50.4 | 102 | 392 | 5,800 | 24 Hr Avg | N/A |
| 331. | Methyl tert–butyl ether (MTBE) | 1634–04–4 | 7.75<br>533,063 | 30.1<br>2,190,000 | 60.7<br>5,214,286 | 234<br>18,377,622 | 3,462<br>3,000 | 24 Hr Avg<br>Annual | N/A<br>N/A |
| 332. | MIBK (Methyl isobutyl ketone; Hexone) | 108–10–1 | 11 | 42.7 | 86.2 | 332 | 4,916 | 24 Hr Avg | N/A |
| 333. | Mirex | 2385–85–5 | 0.348 | 1.43 | 3.41 | 12 | N/A | Annual | BACT |
| 334. | Molybdenum, as Mo, metal and insoluble compounds | 7439–98–7 | 0.537 | 2.09 | 4.21 | 16.2 | 240 | 24 Hr Avg | N/A |
| 335. | Molybdenum, as Mo, soluble compounds | 7439–98–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 336. | Monochlorobenzene (Chlorobenzene) | 108–90–7 | 2.47 | 9.61 | 19.4 | 74.7 | 1,105 | 24 Hr Avg | N/A |
| 337. | Morpholine | 110–91–8 | 3.83 | 14.9 | 30 | 116 | 1,710 | 24 Hr Avg | N/A |
| 338. | MTBE (Methyl tert–butyl ether) | 1634–04–4 | 533,063<br>7.75 | 2,190,000<br>30.1 | 5,214,286<br>60.7 | 18,377,622<br>234 | 3,000<br>3,462 | Annual<br>24 Hr Avg | N/A<br>N/A |
| 339. | Muriatic acid (Hydrogen chloride; Hydrochloric acid) | 7647–01–0 | 3,554<br>0.557 | 14,600<br>1.77 | 34,762<br>3.41 | 122,517<br>9.15 | 20<br>746 | Annual<br>1 Hr | N/A<br>N/A |
| 340. | Mustard gas | 505–60–2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 341. | Naphthalene | 91–20–3 | 2.82 | 10.9 | 22.1 | 85 | 1,258 | 24 Hr Avg | N/A |
| 342. | 2–Naphthylamine | 91–59–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 343. | Nickel and compounds, as Ni | 7440–02–0 | 6.83 | 28.1 | 66.8 | 236 | N/A | Annual | BACT |
| 344. | Nickel carbonyl, as Ni | 13463–39–3 | 6.83 | 28.1 | 66.8 | 236 | N/A | Annual | BACT |
| | | | 0.0188 | 0.0729 | 0.147 | 0.566 | 8.38 | 24 Hr Avg | N/A |
| 345. | Nickel subsulfide, as Ni | 12035–72–2 | 3.7 | 15.2 | 36.2 | 128 | N/A | Annual | LAER |
| 346. | Nitric acid | 7697–37–2 | 0.277 | 1.08 | 2.17 | 8.36 | 124 | 24 Hr Avg | N/A |
| 347. | Nitrilotriacetic acid | 139–13–9 | 1,185 | 4,867 | 11,587 | 40,839 | N/A | Annual | BACT |
| 348. | p–Nitroaniline | 100–01–6 | 0.161 | 0.626 | 1.26 | 4.86 | 72 | 24 Hr Avg | N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 349. | Nitrobenzene | 98–95–3 | 0.27 | 1.05 | 2.12 | 8.17 | 121 | 24 Hr Avg | N/A |
| 350. | p–Nitrochlorobenzene | 100–00–5 | 0.0346 | 0.134 | 0.271 | 1.05 | 15.5 | 24 Hr Avg | N/A |
| 351. | Nitroethane | 79–24–3 | 16.5 | 64.1 | 129 | 498 | 7,369 | 24 Hr Avg | N/A |
| 352. | Nitrogen mustards (2,2'–Dichloro–N–methyl-diethylamine) | 51–75–2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 353. | Nitromethane | 75–52–5 | 2.68 | 10.4 | 21 | 81 | 1,198 | 24 Hr Avg | N/A |
| 354. | 1–Nitropropane | 108–03–2 | 4.89 | 19 | 38.4 | 148 | 2,186 | 24 Hr Avg | N/A |
| 355. | 2–Nitropropane | 79–46–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| | | | 1.96 | 7.6 | 15.3 | 59.1 | 875 | 24 Hr Avg | N/A |
| 356. | 1–Nitropyrene | 5522–43–0 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| 357. | N–Nitrosodi–n–butylamine | 924–16–3 | 1.11 | 4.56 | 10.9 | 38.3 | N/A | Annual | BACT |
| 358. | N–Nitrosodiethanolamine | 1116–54–7 | 2.22 | 9.13 | 21.7 | 76.6 | N/A | Annual | BACT |
| 359. | N–Nitrosodiethylamine | 55–18–5 | 0.0413 | 0.17 | 0.404 | 1.42 | N/A | Annual | BACT |
| 360. | N–Nitrosodimethylamine | 62–75–9 | 0.127 | 0.521 | 1.24 | 4.38 | N/A | Annual | BACT |
| 361. | N–Nitrosodi–n–propylamine | 621–64–7 | 0.888 | 3.65 | 8.69 | 30.6 | N/A | Annual | BACT |
| 362. | N–Nitroso–N–ethylurea | 759–73–9 | 0.231 | 0.948 | 2.26 | 7.96 | N/A | Annual | BACT |
| 363. | N–Nitroso–N–methylurea | 684–93–5 | 0.0523 | 0.215 | 0.511 | 1.8 | N/A | Annual | BACT |
| 364. | N–Nitrosomethylvinylamine | 4549–40–0 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 365. | N–Nitrosomorpholine | 59–89–2 | 0.935 | 3.84 | 9.15 | 32.2 | N/A | Annual | BACT |
| 366. | N'–Nitrosonornicotine | 16543–55–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 367. | N–Nitrosopiperidine | 100–75–4 | 0.658 | 2.7 | 6.44 | 22.7 | N/A | Annual | BACT |
| 368. | N–Nitrosopyrrolidine | 930–55–2 | 2.91 | 12 | 28.5 | 100 | N/A | Annual | BACT |
| 369. | N–Nitrososarcosine | 13256–22–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 370. | Nitrotoluene (mixtures and isomers) | 88–72–2 | 0.603 | 2.34 | 4.72 | 18.2 | 269 | 24 Hr Avg | N/A |
| 371. | Nitrous oxide | 10024–97–2 | 4.84 | 18.8 | 37.9 | 146 | 2,160 | 24 Hr Avg | N/A |
| 372. | Octachloronaphthalene | 2234–13–1 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 373. | Oxalic acid | 144–62–7 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 374. | p,p'–Oxybis(benzenesulfonyl hydrazide) | 80–51–3 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 375. | Pentachloronaphthalene | 1321–64–8 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 376. | Pentachloronitrobenzene (Quintobenzene; PCNB) | 82–68–8 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 377. | Pentachlorophenol (PCP) | 87–86–5 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 378. | Pentyl Acetate (mixtures and isomers) | 628–63–7 | 14.3 | 55.6 | 112 | 432 | 6,390 | 24 Hr Avg | N/A |
| 379. | Perchloroethylene (Tetrachloroethylene) | 127–18–4 | 301<br>9.11 | 1,237<br>35.4 | 2,946<br>71.4 | 10,383<br>275 | N/A<br>4,069 | Annual<br>24 Hr Avg | BACT<br>N/A |
| 380. | Perchloromethyl mercaptan | 594–42–3 | 0.0408 | 0.159 | 0.32 | 1.23 | 18.2 | 24 Hr Avg | N/A |
| 381. | Perfluoroisobutylene | 382–21–8 | 0.00611 | 0.0195 | 0.0374 | 0.1 | 8.18 | 1 Hr | N/A |
| 382. | Persulfates (ammonium, potassium, sodium) | 7727–54–0 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 383. | PGME (Propylene glycol monomethyl ether) | 107–98–2 | 355,375 | 1,460,000 | 3,476,190 | 12,251,748 | 2,000 | Annual | N/A |
| 384. | Phenol | 108–95–2 | 1.03 | 4.02 | 8.1 | 31.2 | 462 | 24 Hr Avg | N/A |
| 385. | Phenolphthalein | 77–09–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 386. | Phenylenediamine (mixtures and isomers) | 106–50–3 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 387. | Phenyl ether vapor | 101–84–8 | 0.374 | 1.45 | 2.93 | 11.3 | 167 | 24 Hr Avg | N/A |
| 388. | Phenyl glycidyl ether (PGE) | 122–60–1 | 0.033 | 0.128 | 0.259 | 0.996 | 14.7 | 24 Hr Avg | N/A |
| 389. | Phenylhydrazine | 100–63–0 | 0.0238 | 0.0923 | 0.186 | 0.717 | 10.6 | 24 Hr Avg | N/A |
| 390. | Phenyl mercaptan | 108–98–5 | 0.121 | 0.47 | 0.949 | 3.65 | 54.1 | 24 Hr Avg | N/A |
| 391. | Phosgene | 75–44–5 | 0.0217 | 0.0844 | 0.17 | 0.656 | 9.71 | 24 Hr Avg | N/A |
| 392. | Phosphine | 7803–51–2 | 0.0224 | 0.0871 | 0.176 | 0.677 | 10 | 24 Hr Avg | N/A |
| 393. | Phosphoric acid | 7664–38–2 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| | | | 1,777 | 7,300 | 17,381 | 61,259 | 10 | Annual | N/A |
| 394. | Phosphorus (yellow) | 7723–14–0 | 0.00544 | 0.0212 | 0.0427 | 0.164 | 2.43 | 24 Hr Avg | N/A |
| 395. | Phosphorus oxychloride | 10025–87–3 | 0.0337 | 0.131 | 0.264 | 1.02 | 15.1 | 24 Hr Avg | N/A |
| 396. | Phosphorus pentachloride | 10026–13–8 | 0.0457 | 0.178 | 0.359 | 1.38 | 20.4 | 24 Hr Avg | N/A |
| 397. | Phosphorus pentasulfide | 1314–80–3 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 398. | Phosphorus trichloride | 7719–12–2 | 0.0604 | 0.234 | 0.473 | 1.82 | 27 | 24 Hr Avg | N/A |
| 399. | Phthalic anhydride | 85–44–9 | 0.325 | 1.26 | 2.55 | 9.82 | 145 | 24 Hr Avg | N/A |
| 400. | Picric acid | 88–89–1 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 401. | Platinum (metal) | 7440–06–4 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 402. | Platinum, soluble salts, as Pt | 7440–06–4 | 0.000107 | 0.000417 | 0.000842 | 0.00324 | 0.048 | 24 Hr Avg | N/A |
| 403. | Polybrominated biphenyls (PBBs; Bromodiphenyls) | 59536–65–1 | 0.207 | 0.849 | 2.02 | 7.12 | N/A | Annual | BACT |
| 404. | Polychlorinated biphenyls (PCBs; Chlorodiphenyls; Arochlor) | 1336–36–3 | 0.0269<br>0.1 | 0.104<br>0.1 | 0.211<br>0.1 | 0.811<br>0.1 | 12<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 405. | Potassium hydroxide | 1310–58–3 | 0.149 | 0.476 | 0.914 | 2.45 | 200 | 1 Hr | N/A |
| 406. | 1,3–Propane sultone | 1120–71–4 | 2.58 | 10.6 | 25.2 | 88.8 | N/A | Annual | BACT |
| 407. | Propargyl alcohol | 107–19–7 | 0.123 | 0.479 | 0.965 | 3.72 | 55 | 24 Hr Avg | N/A |
| 408. | β–Propiolactone | 57–57–8 | 0.444 | 1.83 | 4.35 | 15.3 | N/A | Annual | BACT |
| | | | 0.0792 | 0.308 | 0.62 | 2.39 | 35.4 | 24 Hr Avg | N/A |
| 409. | Propionic acid | 79–09–4 | 1.63 | 6.32 | 12.8 | 49.1 | 727 | 24 Hr Avg | N/A |
| 410. | Propylene dichloride (1,2–Dichloropropane) | 78–87–5 | 711<br>18.6 | 2,920<br>72.3 | 6,952<br>146 | 24,503<br>562 | 4<br>8,318 | Annual<br>24 Hr Avg | N/A<br>N/A |
| 411. | Propylene glycol mono-methyl ether (PGME) | 107–98–2 | 355,375 | 1,460,000 | 3,476,190 | 12,251,748 | 2,000 | Annual | N/A |
| 412. | Propylene oxide | 75–56–9 | 5,331 | 21,900 | 52,143 | 183,776 | 30 | Annual | N/A |
| | | | 2.55 | 9.91 | 20 | 77 | 1,140 | 24 Hr Avg | N/A |
| | | | 480 | 1,973 | 4,698 | 16,556 | N/A | Annual | BACT |
| 413. | Propylenimine (2–Methyl aziridine; Propylene imine) | 75–55–8 | 0.251<br>2.43 | 0.975<br>10 | 1.97<br>23.8 | 7.57<br>83.9 | 112<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 414. | Pyridine | 110–86–1 | 0.77 | 2.99 | 6.04 | 23.2 | 344 | 24 Hr Avg | N/A |
| 415. | Pyrocatechol (Catechol) | 120–80–9 | 1.21 | 4.7 | 9.48 | 36.5 | 540 | 24 Hr Avg | N/A |
| 416. | Quintobenzene (Penta-chloronitrobenzene) | 82–68–8 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 417. | Resorcinol | 108–46–3 | 2.42 | 9.4 | 19 | 73 | 1,081 | 24 Hr Avg | N/A |
| 418. | Rhodium (metal) and insol-uble compounds, as Rh | 7440–16–6 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 419. | Rhodium, soluble com-pounds, as Rh | 7440–16–6 | 0.000537 | 0.00209 | 0.00421 | 0.0162 | 0.24 | 24 Hr Avg | N/A |
| 420. | Safrole | 94–59–7 | 28.2 | 116 | 276 | 972 | N/A | Annual | BACT |
| 421. | Selenium and compounds, as Se | 7782–49–2 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 422. | Silicon tetrahydride (Silane) | 7803–62–5 | 0.353 | 1.37 | 2.77 | 10.7 | 158 | 24 Hr Avg | N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 423. | Sodium azide, as sodium azide or hydrazoic acid vapor | 26628–22–8 | 0.0218 | 0.0696 | 0.134 | 0.359 | 29.3 | 1 Hr | N/A |
| 424. | Sodium bisulfite | 7631–90–5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 425. | Sodium hydroxide | 1310–73–2 | 0.149 | 0.476 | 0.914 | 2.45 | 200 | 1 Hr | N/A |
| 426. | Sodium metabisulfite | 7681–57–4 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 427. | Stoddard solvent (Mineral spirits) | 8052–41–3 | 30.8 | 119 | 241 | 929 | 13,742 | 24 Hr Avg | N/A |
| 428. | Strong inorganic acid mists containing sulfuric acid (>35% by weight) | 7664–93–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 429. | Styrene, monomer | 100–42–5 | 4.58 | 17.8 | 35.9 | 138 | 2,045 | 24 Hr Avg | N/A |
| | | | 177,688 | 730,000 | 1,738,095 | 6,125,874 | 1,000 | Annual | N/A |
| 430. | Sulfometuron methyl | 74222–97–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 431. | Sulfur monochloride | 10025–67–9 | 0.412 | 1.31 | 2.53 | 6.78 | 552 | 1 Hr | N/A |
| 432. | Sulfur tetrafluoride | 7783–60–0 | 0.033 | 0.105 | 0.202 | 0.542 | 44.2 | 1 Hr | N/A |
| 433. | Sulfuric acid | 7664–93–9 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 434. | Sulprofos | 35400–43–2 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 435. | Talc, containing no asbestos fibers | 14807–96–6 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 436. | Tantalum, metal and oxide dusts, as Ta | 7440–25–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 437. | TCDD (2,3,7,8–Tetrachloro-dibenzo–p–dioxin), as equivalents | 1746–01–6 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | N/A | Annual | LAER |
| 438. | Tellurium and compounds, except hydrogen telluride, as Te | 13494–80–9 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 439. | Terphenyls | 26140–60–3 | 0.373 | 1.19 | 2.29 | 6.13 | 500 | 1 Hr | N/A |
| 440. | 2,3,7,8–Tetrachlorodiben-zo–p–dioxin (Dioxin; 2,3,7,8–TCDD), as dioxin equivalents | 1746–01–6 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | N/A | Annual | LAER |
| 441. | 1,1,2,2–Tetrachloroethane | 79–34–5 | 0.369 | 1.43 | 2.89 | 11.1 | 165 | 24 Hr Avg | N/A |
| 442. | Tetrachloroethylene (Per-chloroethylene) | 127–18–4 | 9.11<br>301 | 35.4<br>1,237 | 71.4<br>2,946 | 275<br>10,383 | 4,069<br>N/A | 24 Hr Avg<br>Annual | N/A<br>BACT |
| 443. | Tetrachloronaphthalene | 1335–88–2 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 444. | 1,1,1,2–Tetrafluoroethane | 811–97–2 | 14,215,010 | 58,400,000 | 139,047,619 | 490,069,930 | 80,000 | Annual | N/A |
| 445. | Tetrafluoroethylene | 116–14–3 | 0.44 | 1.71 | 3.45 | 13.3 | 197 | 24 Hr Avg | N/A |
| | | | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 446. | Tetrahydrofuran | 109–99–9 | 31.7 | 123 | 248 | 956 | 14,155 | 24 Hr Avg | N/A |
| 447. | Tetranitromethane | 509–14–8 | 0.00215 | 0.00837 | 0.0169 | 0.065 | 0.962 | 24 Hr Avg | N/A |
| | | | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 448. | Thallium, elemental and soluble compounds, as Tl | 7440–28–0 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 449. | Thionyl chloride | 7719–09–7 | 0.363 | 1.16 | 2.23 | 5.97 | 487 | 1 Hr | N/A |
| 450. | Thiourea | 62–56–6 | 84.6 | 348 | 828 | 2,917 | N/A | Annual | BACT |
| 451. | Tin organic compounds, as Sn | 7440–31–5 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 452. | Tin, metal, oxides and inorganic compounds, except tin hydride, as Sn | 7440–31–5 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 453. | o–Tolidine (3,3'–Dimethyl-benzidine) | 119–93–7 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 454. | Toluene (Toluol) | 108–88–3 | 71,075 | 292,000 | 695,238 | 2,450,350 | 400 | Annual | N/A |
| | | | 10.1 | 39.3 | 79.3 | 306 | 4,522 | 24 Hr Avg | N/A |
| 455. | 2,4–/2,6–Toluene diisocya-nate (mixtures and isomers) (TDI) | 584–84–9 | 162<br>0.00191<br>12.4 | 664<br>0.00743<br>51.1 | 1,580<br>0.015<br>122 | 5,569<br>0.0578<br>429 | N/A<br>0.855<br>0.07 | Annual<br>24 Hr Avg<br>Annual | BACT<br>N/A<br>N/A |
| 456. | Toluene–2,4–diamine (2,4–Diaminotoluene) | 95–80–7 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| 457. | m– and p–Toluidine | 108–44–1 | 0.471 | 1.83 | 3.69 | 14.2 | 210 | 24 Hr Avg | N/A |
| 458. | o–Toluidine and o–toluidine hydrochloride and mixed isomers | 95–53–4 | 34.8<br>0.471 | 143<br>1.83 | 341<br>3.69 | 1,201<br>14.2 | N/A<br>210 | Annual<br>24 Hr Avg | BACT<br>N/A |
| 459. | Toluol (Toluene) | 108–88–3 | 71,075 | 292,000 | 695,238 | 2,450,350 | 400 | Annual | N/A |
| | | | 10.1 | 39.3 | 79.3 | 306 | 4,522 | 24 Hr Avg | N/A |
| 460. | Tributyl phosphate | 126–73–8 | 0.117 | 0.455 | 0.917 | 3.53 | 52.3 | 24 Hr Avg | N/A |
| 461. | 1,2,4–Trichlorobenzene | 120–82–1 | 2.77 | 8.82 | 17 | 45.5 | 3,711 | 1 Hr | N/A |
| 462. | 1,1,2–Trichloroethane | 79–00–5 | 2.93 | 11.4 | 23 | 88.5 | 1,310 | 24 Hr Avg | N/A |
| 463. | Trichloroethylene (Tri-chloroethene) | 79–01–6 | 888<br>14.4 | 3,650<br>56.1 | 8,690<br>113 | 30,629<br>436 | N/A<br>6,449 | Annual<br>24 Hr Avg | BACT<br>N/A |
| 464. | Trichloronaphthalene | 1321–65–9 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 465. | 2,4,6–Trichlorophenol | 88–06–2 | 573 | 2,355 | 5,607 | 19,761 | N/A | Annual | BACT |
| 466. | 1,2,3–Trichloropropane | 96–18–4 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| | | | 3.24 | 12.6 | 25.4 | 97.8 | 1,447 | 24 Hr Avg | N/A |
| 467. | Triethanolamine | 102–71–6 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 468. | Triethylamine | 121–44–8 | 0.222 | 0.864 | 1.74 | 6.71 | 99.3 | 24 Hr Avg | N/A |
| 469. | 1,3,5–Triglycidyl–s–triazi-netrione | 2451–62–9 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| 470. | Trimellitic anhydride | 552–30–7 | 0.00299 | 0.00951 | 0.0183 | 0.0491 | 4 | 1 Hr | N/A |
| 471. | Trimethyl benzene (mix-tures and isomers) | 25551–13–7 | 6.6 | 25.6 | 51.7 | 199 | 2,949 | 24 Hr Avg | N/A |
| 472. | Trimethylamine | 75–50–3 | 0.649 | 2.52 | 5.09 | 19.6 | 290 | 24 Hr Avg | N/A |
| 473. | 2,4,6–Trinitrotoluene (TNT) | 118–96–7 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 474. | Triorthocresyl phosphate | 78–30–8 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 475. | Triphenyl phosphate | 115–86–6 | 0.161 | 0.626 | 1.26 | 4.86 | 72 | 24 Hr Avg | N/A |
| 476. | Tris(2,3–dibromopropyl phosphate) | 126–72–7 | 2.69 | 11.1 | 26.3 | 92.8 | N/A | Annual | BACT |
| 477. | Tungsten, as W, metal and insoluble compounds | 7440–33–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 478. | Tungsten, as W, soluble compounds | 7440–33–7 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 479. | Uranium (natural), soluble and insoluble compounds, as U | 7440–61–1 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 480. | Urethane (Ethyl carbamate) | 51–79–6 | 6.13 | 25.2 | 59.9 | 211 | N/A | Annual | BACT |
| 481. | n–Valeraldehyde | 110–62–3 | 9.46 | 36.8 | 74.2 | 286 | 4,227 | 24 Hr Avg | N/A |
| 482. | Vanadium pentoxide, as $V_2O_5$, respirable dust and fume | 1314–62–1 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| 483. | Vinyl acetate | 108–05–4 | 35,538 | 146,000 | 347,619 | 1,225,175 | 200 | Annual | N/A |

**Table A (Continued)**
**Emission Thresholds, Standards and Control Requirements for All Sources of Hazardous Air Contaminants**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| | | | 1.89 | 7.35 | 14.8 | 57.1 | 845 | 24 Hr Avg | N/A |
| 484. | Vinyl bromide | 593–60–2 | 0.117 | 0.456 | 0.921 | 3.55 | 52.5 | 24 Hr Avg | N/A |
| 485. | Vinyl chloride | 75–01–4 | 17,769 | 73,000 | 173,810 | 612,587 | 100 | Annual | N/A |
| | | | 202 | 830 | 1,975 | 6,961 | N/A | Annual | LAER |
| 486. | Vinyl cyclohexene dioxide (4–Vinyl–1–cyclohexene diepoxide) | 106–87–6 | 2.43<br>0.0308 | 10<br>0.12 | 23.8<br>0.241 | 83.9<br>0.93 | N/A<br>13.8 | Annual<br>24 Hr Avg | BACT<br>N/A |
| 487. | 4–Vinyl cyclohexene | 100–40–3 | 0.0238 | 0.0923 | 0.186 | 0.717 | 10.6 | 24 Hr Avg | N/A |
| 488. | Vinyl fluoride | 75–02–5 | 0.101 | 0.393 | 0.793 | 3.05 | 45.2 | 24 Hr Avg | N/A |
| 489. | Vinylidene chloride (1,1–Dichloroethylene) | 75–35–4 | 1.06 | 4.14 | 8.35 | 32.2 | 476 | 24 Hr Avg | N/A |
| 490. | Vinyl toluene | 25013–15–4 | 13 | 50.4 | 102 | 392 | 5,800 | 24 Hr Avg | N/A |
| 491. | Xylene (mixtures and isomers) (Xylol; Dimethyl benzene) | 1330–20–7 | 23.3 | 90.6 | 183 | 704 | 10,421 | 24 Hr Avg | N/A |
| 492. | m–Xylene–α, α'–diamine | 1477–55–0 | 0.00747 | 0.0238 | 0.0457 | 0.123 | 10 | 1 Hr | N/A |
| 493. | Xylidine (mixtures and isomers) | 1300–73–8 | 0.133 | 0.517 | 1.04 | 4.02 | 59.5 | 24 Hr Avg | N/A |
| 494. | Yttrium metal and compounds, as Y | 7440–65–5 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 495. | Zeolites (Erionite) | 66733–21–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 496. | Zirconium and compounds, as Zr | 7440–67–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |

**Note:** The emission rates in columns (c) to (f) in Table A for any hazardous air contaminant may only be used if emissions are from an unobstructed vertical discharge point. Owners and operators of sources unable to use this table should refer to s. NR 445.08(2).

[1] For purposes of calculating non–exempt, potential to emit emissions for comparison with the threshold value in column (c), (d), (e) or (f) in the table the owner or operator of a source would:

– combine non–exempt, potential to emit emissions for each contaminant for all stacks within each of the 4 stack categories,

– compare each group of non–exempt, potential to emit emissions against the respective threshold found in column (c), (d), (e) or (f) in the table

– if any group exceeds it's respective threshold in column (c), (d), (e) or (f), consider all non–exempt, potential to emit emissions from the source in determining compliance with the applicable standard or control requirement.

**Table B**

**Emission Thresholds, Standards and Control Requirements for Manufacture or Treatment of Pesticides, Rodenticides, Insecticides, Herbicides or Fungicides**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 1. | Aldrin | 309–00–2 | 0.0134 | 0.0522 | 0.105 | 0.405 | 6 | 24 Hr Avg | N/A |
| 2. | Amitrole | 61–82–5 | 6.58 | 27 | 64.4 | 227 | N/A | Annual | BACT |
| | | | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 3. | Antimony hydride (Stibine) | 7803–52–3 | 0.0274 | 0.107 | 0.215 | 0.828 | 12.2 | 24 Hr Avg | N/A |
| 4. | ANTU | 86–88–4 | 0.0161 | 0.0626 | 0.126 | 0.486 | 7.2 | 24 Hr Avg | N/A |
| 5. | Atrazine | 1912–24–9 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 6. | Azinphos–methyl | 86–50–0 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 7. | Baygon (Propoxur) | 114–26–1 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 8. | Benomyl | 17804–35–2 | 0.537 | 2.09 | 4.21 | 16.2 | 240 | 24 Hr Avg | N/A |
| 9. | Bromacil | 314–40–9 | 0.537 | 2.09 | 4.21 | 16.2 | 240 | 24 Hr Avg | N/A |
| 10. | Bromomethane (Methyl bromide) | 74–83–9 | 888 | 3,650 | 8,690 | 30,629 | 5 | Annual | N/A |
| | | | 0.209 | 0.81 | 1.64 | 6.3 | 93.2 | 24 Hr Avg | N/A |
| 11. | Captafol | 2425–06–1 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 12. | Captan | 133–06–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 13. | Carbaryl | 63–25–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 14. | Carbofuran | 1563–66–2 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 15. | Chlordane | 57–74–9 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 16. | Chlorinated camphene (Toxaphene) | 8001–35–2 | 5.55 | 22.8 | 54.3 | 191 | N/A | Annual | BACT |
| | | | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 17. | 1–Chloro–1–nitropropane | 600–25–9 | 0.543 | 2.11 | 4.25 | 16.4 | 243 | 24 Hr Avg | N/A |
| 18. | Chloropicrin (Trichloro-nitromethane) | 76–06–2 | 0.0361 | 0.14 | 0.283 | 1.09 | 16.1 | 24 Hr Avg | N/A |
| 19. | Chlorpyrifos | 2921–88–2 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 20. | Crufomate | 299–86–5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 21. | Cyhexatin | 13121–70–5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 22. | Demeton | 8065–48–3 | 0.00568 | 0.0221 | 0.0445 | 0.171 | 2.54 | 24 Hr Avg | N/A |
| 23. | Diazinon | 333–41–5 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 24. | 1,3–Dichloropropene | 542–75–6 | 444 | 1,825 | 4,345 | 15,315 | N/A | Annual | BACT |
| | | | 0.244 | 0.947 | 1.91 | 7.36 | 109 | 24 Hr Avg | N/A |
| | | | 3,554 | 14,600 | 34,762 | 122,517 | 20 | Annual | N/A |
| 25. | 2,2–Dichloropropionic acid | 75–99–0 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 26. | Dichlorvos | 62–73–7 | 88.8 | 365 | 869 | 3,063 | 0.5 | Annual | N/A |
| | | | 0.0483 | 0.188 | 0.379 | 1.46 | 21.6 | 24 Hr Avg | N/A |
| 27. | Dicrotophos | 141–66–2 | 0.0134 | 0.0522 | 0.105 | 0.405 | 6 | 24 Hr Avg | N/A |
| 28. | Dieldrin | 60–57–1 | 0.0134 | 0.0522 | 0.105 | 0.405 | 6 | 24 Hr Avg | N/A |
| 29. | Dinitro–o–cresol (4,6–Dinitro–o–cresol) | 534–52–1 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 30. | Dioxathion | 78–34–2 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 31. | Diquat, respirable dust (various compounds) (Diquat dibromide) | 2764–72–9 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 32. | Diquat, total dust (various compounds) (Diquat dibromide) | 2764–72–9 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |

**Table B (continued)**

**Emission Thresholds, Standards and Control Requirements for Manufacture or Treatment of Pesticides, Rodenticides, Insecticides, Herbicides or Fungicides**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 33. | Disulfoton | 298–04–4 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 34. | Endosulfan | 115–29–7 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 35. | Endrin | 72–20–8 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 36. | EPN | 2104–64–5 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 37. | Ethion | 563–12–2 | 0.0215 | 0.0835 | 0.168 | 0.649 | 9.6 | 24 Hr Avg | N/A |
| 38. | Fensulfothion | 115–90–2 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 39. | Fenthion | 55–38–9 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 40. | Fonofos | 944–22–9 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 41. | Heptachlor and heptachlor epoxide | 76–44–8 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| 42. | Hexachlorobutadiene | 87–68–3 | 0.0115 | 0.0445 | 0.0898 | 0.346 | 5.12 | 24 Hr Avg | N/A |
| 43. | Hexachlorocyclohexane and isomers (Lindane and isomers) | 58–89–9 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| | | | 5.73 | 23.5 | 56.1 | 198 | N/A | Annual | BACT |
| 44. | Hexachlorocyclopentadiene | 77–47–4 | 0.00599 | 0.0233 | 0.047 | 0.181 | 2.68 | 24 Hr Avg | N/A |
| 45. | Lindane and other hexachlorocyclohexane isomers | 58–89–9 | 5.73 | 23.5 | 56.1 | 198 | N/A | Annual | BACT |
| | | | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 46. | Methomyl | 16752–77–5 | 0.134 | 0.522 | 1.05 | 4.05 | 60 | 24 Hr Avg | N/A |
| 47. | Methyl bromide (Bromomethane) | 74–83–9 | 888 | 3,650 | 8,690 | 30,629 | 5 | Annual | N/A |
| | | | 0.209 | 0.81 | 1.64 | 6.3 | 93.2 | 24 Hr Avg | N/A |
| 48. | Methyl demeton | 8022–00–2 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 49. | Methyl parathion | 298–00–0 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 50. | Metribuzin | 21087–64–9 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 51. | Mevinphos (Phosdrin) | 7786–34–7 | 0.00483 | 0.0188 | 0.0379 | 0.146 | 2.16 | 24 Hr Avg | N/A |
| 52. | Monocrotophos | 6923–22–4 | 0.0134 | 0.0522 | 0.105 | 0.405 | 6 | 24 Hr Avg | N/A |
| 53. | Naled | 300–76–5 | 0.161 | 0.626 | 1.26 | 4.86 | 72 | 24 Hr Avg | N/A |
| 54. | Paraquat (respirable sizes) (Paraquat chloride) | 1910–42–5 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 55. | Parathion | 56–38–2 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 56. | Phenothiazine | 92–84–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 57. | Phorate | 298–02–2 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| 58. | Pindone | 83–26–1 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 59. | Propoxur (Baygon) | 114–26–1 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 60. | Pyrethrum | 8003–34–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 61. | Quinone | 106–51–4 | 0.0237 | 0.0923 | 0.186 | 0.717 | 10.6 | 24 Hr Avg | N/A |
| 62. | Rotenone (commercial) | 83–79–4 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 63. | Sodium fluoroacetate | 62–74–8 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| 64. | Stibine (Antimony hydride) | 7803–52–3 | 0.0274 | 0.107 | 0.215 | 0.828 | 12.2 | 24 Hr Avg | N/A |
| 65. | Strychnine | 57–24–9 | 0.00806 | 0.0313 | 0.0632 | 0.243 | 3.6 | 24 Hr Avg | N/A |
| 66. | Sulfotep (TEDP) | 3689–24–5 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 67. | Sulfuryl fluoride | 2699–79–8 | 1.12 | 4.36 | 8.79 | 33.8 | 501 | 24 Hr Avg | N/A |
| 68. | TEPP | 107–49–3 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| 69. | Thiram | 137–26–8 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |

**Table B (continued)**

**Emission Thresholds, Standards and Control Requirements for Manufacture or Treatment of Pesticides, Rodenticides, Insecticides, Herbicides or Fungicides**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 70. | Toxaphene (Chlorinated camphene) | 8001–35–2 | 5.55 | 22.8 | 54.3 | 191 | N/A | Annual | BACT |
| | | | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 71. | Trichloronitromethane (Chloropicrin) | 76–06–2 | 0.0361 | 0.14 | 0.283 | 1.09 | 16.1 | 24 Hr Avg | N/A |
| 72. | Warfarin | 81–81–2 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |

**Note:** The emission rates in columns (c) to (f) in Table B for any hazardous air contaminant may only be used if emissions are from an unobstructed vertical discharge point. Owners and operators of sources unable to use this table should refer to s. NR 445.08 (2).

[1]For purposes of calculating non–exempt, potential to emit emissions for comparison with the threshold value in column (c), (d), (e) or (f) in the table the owner or operator of a source would:

–combine non–exempt, potential to emit emissions for each contaminant for all stacks within each of the 4 stack categories,

–compare each group of non–exempt, potential to emit emissions against the respective threshold found in column (c), (d), (e) or (f) in the table,

–if any group exceeds it's respective threshold in column (c), (d), (e) or (f), consider all non–exempt, potential to emit emissions from the source in determining compliance with the applicable or control requirement.

**Table C**

**Emission Thresholds and Control Requirements for Manufacture or Treatment of Pharmaceuticals**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 1. | Adriamycin | 23214–92–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 2. | Azathioprine | 446–86–6 | 3.48 | 14.3 | 34.1 | 120 | N/A | Annual | LAER |
| 3. | Bischloroethyl nitrosourea | 154–93–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 4. | N,N–Bis (2–chloro-ethyl)–2–naphthylamine (Chlornaphazine) | 494–03–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 5. | Bis(chloromethyl) ether (BCME) and technical grade | 542–88–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 6. | 1,4–Butanediol dimethane-sulphonate (Myleran; busulphan) | 55–98–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 7. | Chlorambucil | 305–03–3 | 0.0137 | 0.0562 | 0.134 | 0.471 | N/A | Annual | LAER |
| 8. | Chlornaphazine (N,N–Bis (2–chloroethyl)–2–naphthyl-amine) | 494–03–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 9. | 1–(2–Chloroethyl)–3–cyclo-hexyl–1–nitrosourea (CCNU) | 13010–47–4 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 10. | Chloromethyl methyl ether (CMME) | 107–30–2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 11. | Cyclophosphamide | 50–18–0 | 10.5 | 42.9 | 102 | 360 | N/A | Annual | LAER |
| 12. | Dacarbazine | 4342–03–4 | 0.127 | 0.521 | 1.24 | 4.38 | N/A | Annual | BACT |
| 13. | Diethylstilbestrol (DES) | 56–53–1 | 0.0178 | 0.073 | 0.174 | 0.613 | N/A | Annual | LAER |
| 14. | Estradiol (Oestradiol) | 50–28–2 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| 15. | Iron dextran complex | 9004–66–4 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 16. | Melphalan | 148–82–3 | 0.048 | 0.197 | 0.47 | 1.66 | N/A | Annual | LAER |
| 17. | Mestranol | 72–33–3 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |

**Table C (Continued)**
**Emission Thresholds and Control Requirements for Manufacture or Treatment of Pharmaceuticals**

| | Hazardous Air Contaminant | CAS Number | Thresholds for Emission Points[1] (expressed as lbs/hr or lbs/yr) | | | | Ambient Air Standard (per time period in column (h) expressed as micrograms per cubic meter) | Time Period for Standard and Threshold | Control Requirement |
|---|---|---|---|---|---|---|---|---|---|
| | | | Emissions from Stacks <25 ft | Emissions from Stacks 25 to <40 ft | Emissions from Stacks 40 to <75 ft | Emissions from Stacks ≥75 ft | | | |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) |
| 18. | N–Methyl–N'–nitro–N–nitrosoguanidine (MNNG) | 70–25–7 | 0.74 | 3.04 | 7.24 | 25.5 | N/A | Annual | BACT |
| 19. | Myleran (1,4–Butanediol dimethanesulphonate; Busulphan) | 55–98–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 20. | Oestradiol (Estradiol) | 50–28–2 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| 21. | Phenazopyridine and phenazopyridine hydrochloride | 136–40–3 | 36.3 | 149 | 355 | 1250 | N/A | Annual | BACT |
| 22. | Phenytoin and sodium salt of phenytoin | 57–41–0 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 23. | Procarbazine and procarbazine hydrochloride | 366–70–1 | 0.444 | 1.83 | 4.35 | 15.3 | N/A | Annual | BACT |
| 24. | Propylthiouracil | 51–52–5 | 6.13 | 25.2 | 59.9 | 211 | N/A | Annual | BACT |
| 25. | Streptozotocin | 18883–66–4 | 0.0573 | 0.235 | 0.561 | 1.98 | N/A | Annual | BACT |
| 26. | Thiotepa (Tris(1–aziridinyl)phosphine sulfide) | 52–24–4 | 0.523 | 2.15 | 5.11 | 18 | N/A | Annual | LAER |
| 27. | Tris(1–aziridinyl)phosphine sulfide (Thiotepa) | 52–24–4 | 0.523 | 2.15 | 5.11 | 18 | N/A | Annual | LAER |

**Note:** The emission rates in columns (c) to (f) in Table C for any hazardous air contaminant may only be used if emissions are from an unobstructed vertical discharge point. Owners and operators of sources unable to use this table should refer to s. NR 445.08(2).

[1]For purposes of calculating non–exempt, potential to emit emissions for comparison with the threshold value in column (c), (d), (e) or (f) in the table the owner or operator of a source would:

–combine non–exempt, potential to emit emissions for each contaminant for all stacks within each of the 4 stack categories,

–compare each group of non–exempt, potential to emit emissions against the respective threshold found in column (c), (d), (e) or (f) in the table

–if any group exceeds its respective threshold in column (c), (d), (e) or (f), consider all non–exempt, potential to emit emissions from the source in determining compliance with the applicable standard or control requirement

**History:** CR 02–097: cr. Register June 2004 No. 582, eff. 7–1–04; CR 07–076: am. Tables A, B and C Register July 2008 No. 631, eff. 8–1–08; correction in (1) (b) 2. made under s. 13.92 (4) (b) 6., Stats., Register August 2008 No. 632.

**NR 445.08 Compliance requirements. (1)** COMPLIANCE DETERMINATION. Determination of compliance shall be done while the source is operating under the conditions required by permit or order resulting in the greatest emissions of the hazardous air contaminant, or absent a permit or order, by using the maximum theoretical emissions from the source.

**(2)** COMPLIANCE METHODS. The owner or operator of a source shall achieve compliance with the emission limitations and control requirements in s. NR 445.07 (1), (2) or (3) for each hazardous air contaminant by doing one or any combination of the following. A source unable to meet the requirements of s. NR 445.07 (6) (a) and (b) may not use par. (a) by itself or in combination with other methods to achieve compliance under this subsection.

(a) Limiting non–exempt, potential to emit emissions from the source of each hazardous air contaminant to less than the applicable threshold in column (c), (d), (e) or (f) of Table A, B or C of s. NR 445.07.

(b) Limiting the quantity, concentration or duration of non–exempt, potential to emit emissions from the source of each hazardous air contaminant that has a standard expressed as an ambient air concentration in Table A or B of s. NR 445.07 so that the ambient air concentration off the source property is less than the concentration allowed under column (g) of the table.

(c) Limiting the quantity, concentration or duration of non–exempt, potential to emit emissions of each hazardous air contaminant with a control requirement in column (i) of Table A, B or C of s. NR 445.07 having a unit risk factor established by either the EPA or the California air resources board, so as not to cause an ambient air concentration off the source property that results in an inhalation impact greater than $1 \times 10^{-6}$. The inhalation impact is determined by the following equation:

inhalation impact = (inhalation impact concentration $_{\text{annual average}}$) x (unit risk factor)

where:

inhalation impact concentration $_{\text{annual average}}$ is the annual average concentration of a contaminant in micrograms per cubic meter ($\mu g/m^3$)

unit risk factor for the contaminant is the unit risk factor value established by either EPA or the California air resources board and is expressed in reciprocal micrograms per cubic meter $(\mu g/m^3)^{-1}$

(d) Altering the release height or dispersion characteristics of each hazardous air contaminant in Table A, B or C of s. NR 445.07 such that the alteration results in the source's ability to meet par. (a), (b) or (c) or sub. (3) (a) 1. or (b) 1.

(e) Limiting the concentration of each hazardous air contaminant that has a standard expressed as an ambient air concentration in Table A or B of s. NR 445.07 in the stack to less than the concentration allowed under column (g) of the table for that contaminant.

(f) Limiting emissions of the hazardous air contaminant through application of the control requirement identified in column (i) of Table A, B or C of s. NR 445.07. The control requirement shall be first applied to the emissions unit at the facility that emits the greatest actual annual amount of the hazardous air contaminant. If application of the control requirement to this emis-

sions unit does not reduce facility emissions of the hazardous air contaminant to a level less than the rate listed in column (c), (d), (e) or (f) of Table A, B or C of s. NR 445.07 for the contaminant, the control requirement shall be applied to other emissions units at the facility that emit progressively smaller amounts of the contaminant until emissions from the facility are below the emission rate listed in column (c), (d), (e) or (f) of Table A, B or C of s. NR 445.07 for the contaminant or until the control requirement has been applied to all emissions units at the facility that emit at least 10% of the rate listed in column (c), (d), (e) or (f) of Table A, B or C of s. NR 445.07 for the contaminant. If application of the control requirement to these emissions units does not result in the reduction of at least 50% of the potential emissions of the contaminant from the facility, the department may require application of the control requirement on a reasonable array of smaller emissions units that emit the contaminant.

**Note:** The term "control requirement" is used to represent the applicable level of emission reduction required for the hazardous air contaminant under review, in other words LAER or BACT. These reduction options include lower emitting processes or practices, material substitution, add–on controls, or any combination of the options.

**(3)** ALTERNATIVE METHODS OF COMPLIANCE. (a) The owner or operator of a source may use the following alternative method of complying with any control requirements in s. NR 445.07 (1) (c), (2) or (3) by doing both of the following:

1. Limiting the quantity, concentration or duration of potential to emit emissions of one or more hazardous air contaminants with a control requirement in column (i) of Table A, B or C of s. NR 445.07 having a unit risk factor established by either the EPA or the California air resources board so as not to cause an ambient air concentration off the source property that results in a cumulative inhalation impact from all of the contaminants greater than 1 x $10^{-5}$. The cumulative inhalation impact is determined by the following equation:

cumulative inhalation impact =

$$\sum_{i=1}^{n} (\text{inhalation impact}_{\text{annual average}})_i \times (\text{unit risk factor})_i$$

where:

inhalation impact $_{\text{annual average}}$ is the annual average concentration in micrograms per cubic meter ($\mu g/m^3$) of each contaminant

unit risk factor for the contaminant is the unit risk factor value established by either EPA or the California air resources board and is expressed in reciprocal micrograms per cubic meter $(\mu g/m^3)^{-1}$

i is a subscript denoting an individual hazardous air contaminant

n is the number of different hazardous air contaminants with a control requirement in column (i) of Table A, B or C of s. NR 445.07 having a unit risk factor established by either the EPA or the California air resources board, including those exempt under s. NR 445.07 (5), that are emitted at the facility.

2. For each hazardous air contaminant with a control requirement in column (i) of Table A, B or C of s. NR 445.07 not having a unit risk factor established by either the EPA or the California air resources board, limiting potential to emit emissions of the contaminant from the facility, including those exempt under s. NR 445.07 (5), to less than the relevant threshold in column (c), (d), (e) or (f) of Table A, B or C of s. NR 445.07.

(b) The owner or operator of a source may use the following alternative method of complying with any control requirements in s. NR 445.07 (4) by doing both of the following:

1. Limiting the quantity, concentration or duration of potential to emit emissions of one or more hazardous air contaminants with a control requirement in column (i) of Table A, B or C of s. NR 445.07 having a unit risk factor established by either the EPA or the California air resources board, including those exempt under s. NR 445.07 (5), so as not to cause a cumulative multipathway impact off the source property from all of the contaminants greater than 1 x $10^{-5}$.

2. For each hazardous air contaminant with a control requirement in column (i) of Table A, B or C of s. NR 445.07 not having a unit risk factor established by either the EPA or the California air resources board, limiting potential to emit emissions of the contaminant from the facility, including those exempt under s. NR 445.07 (5), to less than the relevant threshold in column (c), (d), (e) or (f) of Table A, B or C of s. NR 445.07.

**Note:** Unit risk factors for carcinogens can be obtained from the US EPA at the following website: http://www.epa.gov/iris. The US EPA unit risk factors should be consulted first. If no agreed upon unit risk factor is listed by the US EPA, then unit risk factors developed by the State of California should be consulted. The State of California's Air Resources Board and Office of Environmental and Health Hazard Assessment unit risk factors for carcinogens can be obtained from the following website: http://www.arb.ca.gov/toxics/healthval/heathval.htm.

(c) The owner or operator of a source of emissions of hazardous air contaminants associated with agricultural waste shall be deemed in compliance with all requirements, limitations and conditions in this chapter provided best management practices, as approved by the department, for the handling of agricultural waste are implemented at the source.

**Note:** NR 445 was not developed with the purpose of regulating emissions of hazardous air contaminants associated with agricultural waste or byproducts. The department believes that using best management practices is the preferred approach to regulate and control emissions from these types of sources. Accordingly, the department intends to participate in the development of best management practices to regulate and control emissions from such sources by July 31, 2011.

**(4)** ENFORCEABLE LIMITATIONS. Any limitation elected under this section shall be placed in a permit or general or special order.

**(5)** DETERMINATION OF HAZARDOUS AIR CONTAMINANT EMISSIONS AND CONCENTRATIONS. For the purpose of determining emissions and concentrations of hazardous air contaminants under this subchapter, the owner or operator of a source:

(a) May rely on information on an approved material safety data sheet if the approved material safety data sheet lists a hazardous air contaminant listed in Table A, B or C of s. NR 445.07 and for each hazardous air contaminant with a standard expressed as an ambient air concentration in column (g) of Table A, B or C constitutes 1% (10,000 parts per million) or more of the material, or for each hazardous air contaminant with a standard expressed as a control requirement in column (i) of Table A, B or C constitutes 0.1% (1,000 parts per million) or more of the material. If an approved material safety data sheet for a material does not list a hazardous air contaminant in Table A, B or C of s. NR 445.07 at or above the amounts listed in this paragraph, the material will be presumed not to result in emissions of a hazardous air contaminant unless a hazardous air contaminant is formed in processing the material.

(b) May rely upon mass balance or other use, consumption and analytical methodologies for calculating potential or theoretical emissions. However, the department may require that a stack test be conducted to affirm the accuracy of emission estimations.

(c) Is not required to consider emissions resulting directly from naturally occurring constituents in windblown soil.

(d) May rely on information generated by either the EPA screening or refined dispersion model to demonstrate either of the following:

1. Concentrations of each hazardous air contaminant will not exceed the ambient standard in column (g) of Table A or B of s. NR 445.07.

2. The source meets the provisions of sub. (2) (c), (3) (a) 1. or (b) 1.

**Note:** Contact the Permits and Stationary Source Modeling Section of the Bureau of Air Management, 608–266–7718 for additional information regarding procedures and protocols associated with US EPA screening and air dispersion models.

**(6)** COMPLIANCE DEADLINES, RECORDKEEPING AND REPORTING REQUIREMENTS. (a) Except as provided for agricultural waste in par. (d), the owner or operator of a source subject to an emission limitation or control requirement in s. NR 445.07 and constructed

or last modified on or after July 1, 2004, shall achieve compliance upon startup of the source.

(b) The owner or operator of a source constructed or last modified prior to July 1, 2004, with non−exempt, potential to emit emissions of a hazardous air contaminant less than or equal to the applicable threshold in column (c), (d), (e) or (f) of Table A, B or C of s. NR 445.07 shall maintain records in accordance with s. NR 439.04 (1) and (2) starting no later than June 30, 2007.

(c) Except as provided for agricultural waste in par. (d), the owner or operator of a source constructed or last modified prior to July 1, 2004, with non−exempt, potential to emit emissions of a hazardous air contaminant greater than the applicable threshold in column (c), (d), (e) or (f) of Table A, B or C of s. NR 445.07 or subject to s. NR 445.07 (4) shall do all of the following:

1. Submit information no later than December 31, 2005, in accordance with procedure in sub. (7) (a) adequate to describe how applicable control requirements in s. NR 445.07 (1) (c), (2), (3) or (4) or 445.09 (3) will be met.

2. Achieve compliance with applicable emission limitations and control requirements in accordance with s. NR 445.08 (1) and (2) no later than June 30, 2007.

3. Submit the required information in accordance with sub. (7).

(d) 1. The owner or operator of a source with emissions of hazardous air contaminants associated with agricultural waste and constructed or last modified on or after July 31, 2011, shall achieve compliance with any applicable requirements in s. NR 445.07 in accordance with either s. NR 445.08 (2) or (3) (c) for the agricultural waste upon startup of the source.

2. Emissions of hazardous air contaminants associated with agricultural waste from a source constructed or last modified prior to July 31, 2011, are exempt from the requirements in this chapter until July 31, 2011. Subsequently, the owner or operator of the source shall do both of the following if non−exempt, potential to emit emissions of a hazardous air contaminant from agricultural waste are greater than an applicable threshold in column (c), (d), (e) or (f) of Table A of s. NR 445.07:

a. Achieve compliance with applicable requirements in s. NR 445.07 in accordance with either s. NR 445.08 (2) or (3) (c) no later than July 31, 2011.

b. Submit the required information in accordance with sub. (7) (b).

**(7)** COMPLIANCE DEMONSTRATION AND NOTIFICATION REQUIREMENTS. The owner or operator of any source required to achieve compliance in accordance with the schedule in sub. (6) (c) shall demonstrate compliance by doing the following as applicable:

(a) Submit the information required under sub. (6) (c) 1. on the application form required for an operation permit, an amendment to an application, renewal of the operation permit, or for a significant revision under s. NR 407.13, as applicable.

(b) For all sources, submit all of the following information to the department:

1. The hazardous air contaminants in Table A, B and C of s. NR 445.07 the facility is capable of emitting in an amount greater than the threshold value listed for the contaminant in the applicable table.

2. The emission limitation applicable to each hazardous air contaminant identified under subd. 1.

3. The method or combination of methods used for achieving compliance under sub. (2) or (3) with the applicable standard for each hazardous air contaminant.

4. A description of the records that will be kept on site to verify continuous compliance for each hazardous air contaminant with its applicable standard.

5. A signed and dated statement by the responsible official stating that the information is accurate to the best of his or her knowledge and belief, and that all of the requirements of this subchapter have been met.

**Note:** Application forms for par. (a) may be obtained from, and submitted to, the regional offices and service centers of the department or:

Wisconsin Department of Natural Resources
Bureau of Air Management
PO Box 7921
Madison WI 53707−7921
Attention: Operation Permits.

The address for submittal of information under par. (b) is:

Wisconsin Department of Natural Resources
Bureau of Air Management
PO Box 7921
Madison WI 53707−7921
Attention: NR 445 Compliance Notifications.

**(8)** DEPARTMENT REVIEW. The department shall review information submitted to comply with sub. (6) (c) 1. to determine whether to approve, conditionally approve or disapprove the source's method to meet applicable control requirements.

**(9)** EXTENSIONS TO COMPLIANCE SCHEDULE. The department may, at the request of the owner or operator of a source, grant an extension of any applicable compliance deadline in sub. (6) (b) or (c) 1. or 2. or s. NR 445.09 (4) (a) or (b) for a period not to exceed 180 calendar days.

**(10)** SUBSEQUENT REQUIREMENTS. (a) Notwithstanding the compliance deadline in sub. (6) (c) 2., a source needing department approval under sub. (8) shall achieve final compliance with applicable control requirements by the later of:

1. June 30, 2007.

2. Eighteenth calendar month after the department's approval under sub. (8).

(b) The owner or operator of a source that achieved compliance with requirements of this chapter by installing emission control equipment prior to July 1, 2004 may not be required to install additional control equipment to achieve compliance with this chapter for a period of 10 years after the installation of the control equipment or the useful life of the control equipment as determined by the department, whichever is less. For the purposes of this paragraph, increasing stack height, other dilution measures or material reformulation may not be construed as installation of emission control equipment. Material reformulation that requires substantial capital expenditures for process equipment that was carried out with prior department approval and that results in a reduction of emissions of hazardous air contaminants that is sufficient to comply with the limitations of this chapter may be construed as installation of emission control equipment under this paragraph.

**History:** CR 02−097: cr. Register June 2004 No. 582, eff. 7−1−04; CR 07−076: am. (6) (d) 1., 2. (intro.), a. and (10) (b) Register July 2008 No. 631, eff. 8−1−08.

**NR 445.09 Fuel, control and compliance requirements for compression ignition internal combustion engines combusting fuel oil. (1)** APPLICABILITY. This section applies to any compression ignition internal combustion engine that is capable of combusting fuel oil, except for any of the following:

(a) An engine with rated brake power less than 100 horsepower.

(b) An engine used to provide an essential service.

(c) An engine used to power an emergency electric generator exempt under s. NR 406.04 (1) (w) or 407.03 (1) (u).

(d) An engine manufactured after July 1, 2004 installed to provide substitute power during maintenance or repair of a CI engine subject to sub. (3) (a), provided the substitute engine has a power rating equal to or less than the existing engine, operates less than 10 consecutive days per substitution and meets the fuel requirement in sub. (2).

(e) An engine that meets the fuel requirement in sub. (2) and is approved by US EPA to meet either of the following:

1. The Tier 2 particulate emission standard for nonroad engines as found in 40 CFR part 89 for an engine that meets either of the following:

a. Is purchased prior to January 1, 2011 and rated at 175 horsepower or greater.

b. Is purchased prior to January 1, 2012 and rated from 100 to less than 175 horsepower.

2. The Tier 4 particulate emission standard for nonroad engines as found in 40 CFR parts 1039, 1065 and 1068 for an engine that meets either of the following:

a. Is purchased on or after January 1, 2011 and rated at 175 horsepower or greater.

b. Is purchased on or after January 1, 2012 and rated from 100 to less than 175 horsepower.

**(2)** FUEL REQUIREMENTS. Beginning no later than July 15, 2006, the owner or operator of a CI engine shall only combust fuel oil with a sulfur content no greater than the sulfur content that is allowed for on–road use at the time the fuel was purchased, when firing the engine with fuel oil.

**Note:** Federal Diesel Fuel Programs and Regulations can be found at: http://www.epa.gov/otaq/regs/fuels/diesel/diesel.htm#regs. As of July 1, 2004, federal requirements state that beginning July 15, 2006, the sulfur content of diesel fuel at the terminal level will be 15 ppm or less.

**(3)** CONTROL REQUIREMENTS. (a) The owner or operator of a CI engine that stays, or that is intended to stay, in a single location for any 12 consecutive month period, and that combusts or intends to combust 10,000 gallons or more of fuel oil during that period of time, shall do one of the following as appropriate:

1. For an engine manufactured or last rebuilt prior to January 1, 1995, install, operate and maintain a control device that achieves at least 85% overall control of particulate matter emissions or a certified control device that has an overall level of particulate matter emission control that is great enough to ensure that one of the following emission rates is achieved:

a. 0.10 grams per brake horsepower–hour for engines rated from 100 to 750 horsepower.

b. 0.03 grams per brake horsepower–hour engines rated at greater than 750 horsepower.

2. For an engine manufactured or last rebuilt on or after January 1, 1995 and prior to July 1, 2006, install, operate and maintain a certified control device that has an overall level of control that is great enough to ensure that the applicable emission rate in subd. 1. a. or b. is achieved.

3. For an engine manufactured or last rebuilt on or after July 1, 2006 and prior to July 1, 2010, either control particulate matter emissions to a level that is the best available control technology or install, operate and maintain a certified control device that has an overall level of particulate matter emission control that is great enough to ensure that an emission rate of 0.03 grams per brake horsepower–hour is achieved.

4. For an engine manufactured or last rebuilt on or after July 1, 2010, either control particulate matter emissions to a level that is the best available control technology or install, operate and maintain a certified control device that has an overall level of particulate matter emission control that is great enough to ensure that an emission rate of 0.01 grams per brake horsepower–hour is achieved.

**Note:** Upon request the department will provide information on the availability of control technology to meet the requirements in par. (a). Contact the Bureau of Air Management, 608–266–7718, for additional information.

(b) Paragraph (a) notwithstanding, the department may approve the use of an alternative or equivalent control method to any certified control device specified in par. (a) 1., 2., 3. or 4.

(c) The owner or operator of a facility that conducts any testing involving the operation of an engine or group of engines subject to this section where the engine or engines combust, in the aggregate, 40,000 gallons or more of fuel oil in any 12 consecutive month period shall control particulate matter emissions from the facility from the engine or engines subject to this section to a level that is the best available control technology.

**(4)** COMPLIANCE DEMONSTRATION, NOTIFICATION REQUIREMENTS AND SCHEDULE. (a) 1. Except as provided for in subd. 3., an owner or operator complying with an emission rate requirement in sub. (3) (a) 1. or 2. shall achieve compliance and submit in writing to the department no later than June 30, 2007, all of the information in this subd. 1. a. to L. A copy of the information shall also be maintained at the location where the engine is operated.

a. Company name, contact name, phone number and address of the owner or operator of the engine.

b. The location of the engine.

c. The name of the engine manufacturer.

d. The make, model and serial number of the engine.

e. The date the engine was manufactured or last rebuilt.

f. The maximum rated horsepower of the engine.

g. The date the control device was first put into operation.

h. The name of the control device manufacturer.

i. The product or model name of the control device.

j. The manufacturer's performance warranty for the control device expressed as a particulate matter emission rate in grams per brake horsepower–hour.

k. The test method used by the manufacturer to determine the particulate matter emission rate in the manufacturer's performance warranty for the control device.

L. The certifying agency for the control device.

2. Except as provided for in subd. 3., an owner or operator complying with the 85% control requirement in sub. (3) (a) 1. shall achieve compliance and submit in writing to the department no later than June 30, 2007, the information in subd. 1. a. to i. and the results of an emission test conducted to demonstrate compliance with the requirement. A copy of the test results shall also be maintained at the location where the engine is operated.

3. Subdivisions 1. or 2. notwithstanding, an owner or operator of an engine manufactured or last rebuilt prior to July 1, 2004, may, in lieu of meeting the applicable control requirement in sub. (3) (a) 1. or 2., operate the engine until January 1, 2011 without a particulate matter control device, provided they do all of the following:

a. Submit in writing to the department no later than June 30, 2007, a statement relaying their intent to cease operating the engine before January 1, 2011 and the information in subd. 1. a. to f.

b. Cease operation of the engine no later than December 31, 2010.

c. Submit in writing to the department no later than January 31, 2011 a confirmation that the engine ceased operating on or before December 31, 2010.

(b) An owner or operator complying with an emission rate requirement in sub. (3) (a) 3. or 4. shall achieve compliance and submit all of the information in par. (a) 1. a. to L. in writing to the department no later than 10 calendar days after startup. A copy of the information shall also be maintained at the location where the engine is operated.

(c) An owner or operator complying with the best available control technology requirement in sub. (3) (a) 3. or 4., or a facility constructed or last modified after July 1, 2004, subject to sub. (3) (c), shall submit information describing how the best available control technology requirement will be met in a permit application in accordance with s. NR 406.03. Compliance with the best available control technology requirement shall be achieved and demonstrated in accordance with the permit.

**Note:** Section NR 406.03 requires that owners or operators receive a construction permit prior to commencing operation of the source.

(d) The owner or operator of a facility constructed or last modified before July 1, 2004, subject to sub. (3) (c) shall do both of the following:

1. Meet the schedule in s. NR 445.08 (6) (c) 1. and 2.

2. Submit information describing how the best available control technology requirement will be met on the application forms required for an operation permit, an amendment to an application, renewal of the operation permit, or for a significant revision under s. NR 407.13, as applicable.

(e) Any submission made under this subsection shall be signed by the responsible official designated by the owner or operator of source for this purpose, with a dated statement that the information submitted is accurate to the best of the responsible official's knowledge and belief and that all of the requirements of this section have been met.

**Note:** The address for submission of information under pars. (a) and (b) is:

Wisconsin Department of Natural Resources
Bureau of Air Management
PO Box 7921
Madison WI 53707−7921
Attention: Compression Ignition Engine Notification.

Application forms for pars. (c) and (d) may be obtained from, and submitted to:

Wisconsin Department of Natural Resources
Bureau of Air Management
PO Box 7921
Madison WI 53707−7921
Attention: Construction Permit (or) Attention: Operation Permit (as appropriate).

**(5)** TEST METHODS AND PROCEDURES. (a) An owner or operator choosing to comply with the 85% control requirement of sub. (3) (a) 1. shall, for each engine, comply with the requirements of ss. NR 439.06 and 439.07. The particulate matter emission reduction across a control device shall be determined by the following equation:

% reduction = 100 x (baseline emissions – controlled emissions)/(baseline emissions)

(b) Testing under par. (a) shall be conducted prior to the submission deadline in sub. (4) (a) 2. Subsequent testing and notification shall be conducted whenever the particulate matter emission control device used to achieve the 85% emission reduction is replaced. The department shall be notified of the results of subsequent tests in writing no later than 60 calendar days after the completion of the test.

**(6)** RECORDKEEPING. In addition to meeting the recordkeeping requirements of s. NR 439.04 (1) and (2), an owner or operator shall:

(a) Keep records of maintenance performed on any particulate matter emission control device used to comply with sub. (3).

(b) For any engine that stays or that is intended to stay in a single location for any 12 consecutive month period, keep the following records:

1. The amount of fuel oil combusted on a monthly basis for any engine not using a certified control device.

2. The power rating and days of operation of any CI engine used to substitute power under sub. (1) (d).

3. The cost of rebuilding any CI engine on a monthly basis.

**History:** CR 02−097: cr. Register June 2004 No. 582, eff. 7−1−04; CR 07−076: am. (1) (e) 1. (intro.) and 2. (intro.) Register July 2008 No. 631, eff. 8−1−08.

**NR 445.10 Control and compliance requirements for the handling and storage of coal. (1)** APPLICABILITY. This section applies to the owner or operator of any stationary source that handles or stores 1,000 tons or more of coal in any 12 consecutive month period.

**(2)** REQUIREMENTS FOR OUTDOOR FUGITIVE COAL DUST EMISSIONS. No later than June 30, 2007, the owner or operator of a source that handles coal or maintains a coal storage pile shall achieve compliance with this section by doing all of the following:

(a) Having the ability to control, in a timely manner, outdoor fugitive coal dust emissions in an effort to prevent emissions off the source property.

**Note:** Examples of measures that would meet the ability to control requirement include active measures such as the application of water or chemical dust suppressants, passive measures such as the use of enclosed delivery or handling systems or solid fencing, or access to third−parties to provide dust suppression, as appropriate. The intent of this section is to allow facilities that suppress dust using water to manage the amount of water applied to avoid potential boiler, handling, or other operational problems, as long as there is sufficient dust control so as not to cause excessive outdoor fugitive coal dust emissions.

(b) Developing and implementing a plan to control outdoor fugitive coal dust emissions in an effort to prevent emissions off the source property. The plan shall include all of the following:

1. Identification of all sources of outdoor fugitive coal dust emissions from coal handling and coal storage piles on the source property.

2. A description of the measures that can be taken to control, in a timely manner, outdoor fugitive coal dust emissions from all sources identified under subd. 1. under the following conditions:

a. Routine operations.

b. Periods of high activity.

c. Periods of increased probability of outdoor fugitive dust emissions.

d. When equipment used to control outdoor fugitive coal dust emissions malfunctions.

**Note:** Suppliers of coal may want to consult with users in development of the plan to ensure that use of the controls provided for in par. (a) does not result in operational problems at a source combusting coal.

Examples of periods of high activity include periods when the daily handling of coal is much greater than usual, such as when unloading a large number of coal shipments at the close of the shipping season. Examples of periods of increased probability of fugitive coal dust emissions include periods or a combination of periods of drought, freezing weather, or forecasts of high winds exceeding 25 miles per hour.

(c) Keeping records of actions taken to control outdoor fugitive coal dust emissions in accordance with s. NR 439.04 (2).

(d) Keeping a copy of the plan and records of all actions taken at the facility for inspection upon request.

**(3)** REQUIREMENTS FOR NON−FUGITIVE COAL DUST EMISSIONS TO THE AMBIENT AIR. No later than June 30, 2007, the owner or operator subject to this section shall, for any non−fugitive source of coal dust emissions exhausted through a fabric filter to the ambient air, do one of the following:

(a) Limit visible emissions from each source to 10% opacity.

(b) Limit the quantity, concentration or duration of potential to emit emissions of respirable coal dust from all sources so that ambient air concentration off the source property is less than 21.6 $\mu g/m^3$ for any 24 hour averaging period. The owner or operator may rely on information generated by either the EPA screening or refined dispersion model to demonstrate meeting the concentration in this paragraph.

**(4)** COMPLIANCE CERTIFICATION. No later than June 30, 2007, the owner or operator of a source subject to this section shall certify the source's compliance status. An owner or operator of a source that has requirements at least as stringent as the requirements in sub. (2) or (3) in a permit or order may so state in his or her certification.

**Note:** This is a one−time certification. Certification forms may be obtained from, and submitted to:

Wisconsin Department of Natural Resources
Bureau of Air Management
PO Box 7921
Madison WI 53707−7921
Attention: NR 445 Certification form for handling and storage of coal.

**History:** CR 02−097: cr. Register June 2004 No. 582, eff. 7−1−04.

**NR 445.11 Compliance requirements for sources of incidental emissions. (1)** The owner or operator of a facility described by a standard industrial classification code listed in Table D, as described in the Standard Industrial Classification Manual, 1987, incorporated by reference in s. NR 484.05 (1), or that has actual annual emissions of less than 5 tons of particulate matter and less than 3 tons of volatile organic compounds, shall

meet the requirements of subs. (2) to (4) if any of the following apply:

(a) The facility includes operation of one or more of the following processes:

1. A compression ignition internal combustion engine with rated brake power greater than 100 horsepower used as a power source.

2. Any expected source of chlorinated dioxins, furans or PCBs.

3. Sludge incineration.

4. Chrome electroplating.

5. Gasoline dispensing.

6. Manufacture or treatment of a pesticide, rodenticide, insecticide, herbicide or a fungicide resulting in an emission of a hazardous air contaminant listed in Table B of s. NR 445.07.

7. Manufacture or treatment of a pharmaceutical resulting in an emission of a hazardous air contaminant listed in Table C of s. NR 445.07.

8. Solid, hazardous or medical waste incineration.

(b) The presence of one or more of the substances in Table E at the facility is indicated by one of the following:

1. The substance is listed on an approved material safety data sheet or is otherwise brought into the facility.

2. The substance is reasonably expected to be created at the facility through a combustion process or manufacturing process, or through the treatment of raw materials or waste.

**(2)** (a) The owner or operator of a process identified under sub. (1) (a) 1. shall meet the applicable requirements in s. NR 445.09 for that process.

(b) The owner or operator of a process identified under sub. (1) (a) 2. to 5. shall meet the applicable requirements in s. NR 445.07 (1) for any hazardous air contaminants listed in Table A of s. NR 445.07 for that process.

**Note:** The department will develop a list of the hazardous air contaminants it has determined to be potentially emitted from the processes listed in sub. (1) (a) 2. to 5. This list may be obtained by calling the Environmental Analysis and Outreach Section of the Bureau of Air Management at 608–266–7718.

(c) The owner or operator of a process identified under sub. (1) (a) 6. shall meet the applicable requirements in s. NR 445.07 (2) for any hazardous air contaminants listed in Table B of s. NR 445.07 for that process.

(d) The owner or operator of a process identified under sub. (1) (a) 7. shall meet the applicable requirements in s. NR 445.07 (3) for any hazardous air contaminants listed in Table C of s. NR 445.07 for that process.

(e) The owner or operator of a process identified under sub. (1) (a) 8. shall meet the applicable requirements in s. NR 445.07 (4) for that process.

**(3)** The owner or operator of a facility meeting the criteria in sub. (1) (b) shall meet the applicable requirements in s. NR 445.07 (1) for any hazardous air contaminants listed in Table A of s. NR 445.07.

**(4)** The owner or operator subject to sub. (2) or (3) shall do both of the following:

(a) Achieve compliance using the procedures allowed under s. NR 445.08 (2), (3) (a) or (b) or 445.09 (4).

(b) Meet the applicable compliance schedule under s. NR 445.08 (6).

**Note:** Owners and operators of sources affected by this section should refer to chs. NR 406, 407 and 438 to determine whether there are applicable requirements in those chapters for hazardous air contaminants identified under this section.

**Table D**
**Standard Industrial Classifications for Sources of Incidental Emissions of Hazardous Air Contaminants**

| | 2–Digit SIC Code or Range | SIC Title |
|---|---|---|
| 1. | 01–09 | Agriculture, Forestry and Fishing |
| 2. | 15 | General Building Contractors |
| 3. | 17 | Special Trade Contractors |
| 4. | 40–45, 47 | Transportation |
| 5. | 48 | Communications |
| 6. | 50–51 | Wholesale Trade, except the following: Coal and Other Minerals and Ores (5052); Scrap and Waste Materials (5093); Chemicals and Allied Products (516); Petroleum and Petroleum Products (517) |
| 7. | 52–59 | Retail Trade |
| 8. | 60–69 | Finance, Insurance and Real Estate |
| 9. | 70–89 | Services, except the following: Laundry, Cleaning and Garment Services (721) ; Business Services, not elsewhere classified (7389); Automotive Repair Shops (753); Miscellaneous Repair Shops (769); General Medical and Surgical Hospitals (8062); Colleges, Universities and Professional Schools (822); Research, Development and Testing Services (873) |

**Note:** Conversion tables to match 1987 SIC codes to 1997 NAICS codes can be found at http://www.census.gov/epcd/www/drnaics.htm.

**Table E**
**Substances of Concern for Sources of Incidental Emissions of Hazardous Air Contaminants**

| | Substance | CAS Number |
|---|---|---|
| 1. | Acetaldehyde | 75–07–0 |
| 2. | Acrolein | 107–02–8 |
| 3. | Acrylamide | 79–06–1 |
| 4. | Acrylic acid | 79–10–7 |
| 5. | Acrylonitrile | 107–13–1 |
| 6. | Ammonia | 7664–41–7 |
| 7. | Arsenic, elemental and inorganic compounds, as As | 7440–38–2 |
| 8. | Arsine | 7784–42–1 |
| 9. | Benzene | 71–43–2 |
| 10. | Benzo(a)pyrene | 50–32–8 |
| 11. | Beryllium and beryllium compounds, as Be | 7440–41–7 |
| 12. | Bromine | 7726–95–6 |
| 13. | Bromine pentafluoride | 7789–30–2 |
| 14. | 1,3–Butadiene | 106–99–0 |
| 15. | Cadmium and cadmium compounds, as Cd | 7440–43–9 |
| 16. | Carbon tetrachloride | 56–23–5 |
| 17. | Chlorine | 7782–50–5 |
| 18. | Chlorine dioxide | 10049–04–4 |
| 19. | Chlorine trifluoride | 7790–91–2 |
| 20. | Chloroform | 67–66–3 |
| 21. | Chromium (VI): chromic acid mists and dissolved Cr (VI) aerosols, as Cr | 7440–47–3 |
| 22. | Chromium (VI): compounds and particulates | 7440–47–3 |
| 23. | Cobalt, elemental, and inorganic compounds, as Co | 7440–48–4 |
| 24. | Diborane | 19287–45–7 |
| 25. | 1,2–Dibromoethane (Ethylene dibromide; EDB) | 106–93–4 |
| 26. | 1,2–Dichloroethane (Ethylene dichloride; EDC) | 107–06–2 |
| 27. | Diglycidyl ether (DGE) | 2238–07–5 |
| 28. | Ethylene oxide | 75–21–8 |
| 29. | Fluorine | 7782–41–4 |
| 30. | Formaldehyde | 50–00–0 |
| 31. | Hexachlorobenzene (HCB) | 118–74–1 |
| 32. | Hexamethylene–1,6–diisocyanate (HDI) | 822–06–0 |
| 33. | Hydrazine and hydrazine sulfate | 302–01–2 |
| 34. | Hydrogen chloride (Hydrochloric acid; Muriatic acid) | 7647–01–0 |
| 35. | Hydrogen bromide | 10035–10–6 |
| 36. | Hydrogen cyanide | 74–90–8 |
| 37. | Hydrogen fluoride (Hydrofluoric acid) | 7664–39–3 |
| 38. | Hydrogen peroxide | 7722–84–1 |
| 39. | Hydrogen sulfide | 7783–06–4 |
| 40. | Indium | 7440–74–6 |
| 41. | Iodine | 7553–56–2 |
| 42. | Isophorone diisocyanate | 4098–71–9 |
| 43. | Lead Acetate, as Pb | 301–04–2 |
| 44. | Lead Phosphate, as Pb | 7446–27–7 |
| 45. | Maleic anhydride | 108–31–6 |
| 46. | Manganese, elemental and inorganic compounds, as Mn | 7439–96–5 |
| 47. | Mercury, as Hg, alkyl compounds | 7439–97–6 |
| 48. | Mercury, as Hg, aryl compounds | 7439–97–6 |
| 49. | Mercury, as Hg, inorganic forms including metallic mercury | 7439–97–6 |
| 50. | Methyl hydrazine | 60–34–4 |
| 51. | Methyl isocyanate | 624–83–9 |
| 52. | Methylene bisphenyl isocyanate (Methylene diphenyl isocyanate; MDI) | 101–68–8 |
| 53. | Methylene chloride (Dichloromethane) | 75–09–2 |
| 54. | Nickel and compounds, as Ni | 7440–02–0 |
| 55. | Nitric acid | 7697–37–2 |
| 56. | Octachloronaphthalene | 2234–13–1 |
| 57. | Oxalic acid | 144–62–7 |
| 58. | Pentachloronaphthalene | 1321–64–8 |
| 59. | Pentachlorophenol (PCP) | 87–86–5 |
| 60. | Perchloroethylene (Tetrachloroethylene) | 127–18–4 |
| 61. | Phenylenediamine (mixtures and isomers) | 106–50–3 |
| 62. | Phosphine | 7803–51–2 |
| 63. | Phosphoric acid | 7664–38–2 |

**Table E (Continued)**
**Substances of Concern for Sources of Incidental Emissions of Hazardous Air Contaminants**

| | Substance | CAS Number |
|---|---|---|
| 64. | Phosphorus (yellow) | 7723–14–0 |
| 65. | Phosphorus pentachloride | 10026–13–8 |
| 66. | Platinum, soluble salts, as Pt | 7440–06–4 |
| 67. | Propylene dichloride (1,2–Dichloropropane) | 78–87–5 |
| 68. | Rhodium, soluble compounds, as Rh | 7440–16–6 |
| 69. | Selenium and compounds, as Se | 7782–49–2 |
| 70. | Sulfuric acid | 7664–93–9 |
| 71. | Tellurium and compounds, except hydrogen telluride, as Te | 13494–80–9 |
| 72. | Tetrafluoroethylene | 116–14–3 |
| 73. | Thallium, elemental and soluble compounds, as Tl | 7440–28–0 |
| 74. | Tin organic compounds, as Sn | 7440–31–5 |
| 75. | 2,4–/2,6–Toluene diisocyanate (mixtures and isomers) (TDI) | 584–84–9 |
| 76. | Trichloroethylene (Trichloroethene) | 79–01–6 |
| 77. | Trimellitic anhydride | 552–30–7 |
| 78. | Triorthocresyl phosphate | 78–30–8 |
| 79. | Tungsten, as W, soluble compounds | 7440–33–7 |
| 80. | Vinyl chloride | 75–01–4 |
| 81. | n–Xylene–α, α'–diamine | 1477–55–0 |

**History:** CR 02–097: cr. Register June 2004 No. 582, eff. 7–1–04; CR 07–076: am. Tables D and E Register July 2008 No. 631, eff. 8–1–08; reprinted to insert line numbers per CR 07–076 Register August 2008 No. 632.

**NR 445.12 Variances. (1)** CRITERIA FOR APPROVAL. The owner or operator of a source subject to this chapter may apply for and the department may approve a variance from any of the provisions identified in pars. (a) and (b) if the applicant demonstrates to the satisfaction of the department that applicable provisions are met as follows:

(a) An applicant for a variance from the LAER control requirements in s. NR 445.07 (1) (c), (2), (3) or (4) shall demonstrate all of the following to the satisfaction of the department:

1. Compliance with the LAER control requirement for which the variance has been requested would be economically infeasible.

2. Residual emissions of the hazardous air contaminant in question would not cause significant harm to the environment or public health.

3. The source's emissions would be controlled to a level that is the best available control technology.

(b) An applicant for a variance from the emission limitation of s. NR 445.07 (1) (a) for a contaminant having a standard based on an annual time period shall demonstrate all of the following to the satisfaction of the department:

1. All direct or portable sources owned or operated in the state by the owner or operator of the air contaminant source for which a variance is requested are in, or are on a schedule for, compliance with all other applicable requirements of chs. NR 400 to 499.

2. The emission limitation from which variance is sought is technologically or economically infeasible to meet due to conditions or special circumstances at the source, including adverse environmental or energy impacts.

3. Residual emissions of the hazardous air contaminant would not cause significant harm to public health.

4. Good faith efforts have been made to comply with s. NR 445.07 (1) (a) and all reasonably available alternative operating procedures and interim control measures to minimize emissions of the hazardous air contaminant will be utilized during the duration of the variance.

**(2)** CONSULTATION. The department shall consult with the department of health services to determine that residual emissions would not cause significant harm under sub. (1) (a) 2. or (b) 3. prior to establishing an emission limitation in a permit or order under this section.

**(3)** APPLICATION FORMS. Application for a variance under this section shall be submitted on the application forms required for a construction permit, an operation permit, an amendment to an application, renewal of the operation permit, or for a significant revision under s. NR 407.13, as applicable.

**Note:** Application forms for sub. (3) may be obtained from, and submitted to, the regional and area offices of the department or:
Wisconsin Department of Natural Resources
Bureau of Air Management
PO Box 7921
Madison WI 53707–7921
Attention: NR 445 Variance Applications.

**(4)** NOTICE AND HEARING. The department shall publish a notice of, and hold a public hearing on, any preliminary determination to approve a variance request under this section.

**(5)** ACTION ON APPLICATIONS. The department shall grant, conditionally grant or deny a variance request within 90 business days after the close of the public comment period on the request.

**(6)** REVIEW AND REVISION. The department shall review any variance granted under this section on a 5 year basis. Following its review and after notice and an opportunity for a public hearing and public comment, the department may modify, extend or rescind the variance.

**History:** CR 02–097: cr. Register June 2004 No. 582, eff. 7–1–04; correction in (2) made under s. 13.92 (4) (b) 6., Stats., Register August 2008 No. 632.

**NR 445.13 Review of hazardous air contaminant requirements. (1)** PERIODIC REPORTS. The department, in consultation with the department of health services, shall prepare a periodic report for the natural resources board that reviews information related to listing, de–listing, and setting regulatory thresholds, standards and control requirements for hazardous air contaminants under this chapter. The report shall include all of the following:

(a) A review of available information about the likely sources of emissions of and an assessment of whether the criteria set forth in sub. (2) (b) are likely to apply to the hazardous air contaminants identified under this subsection.

(b) Recommendations on the need for rule modifications.

(c) Recommendations on the need for special studies.

**(2)** REVISION OF TABLE LISTS. (a) The department shall determine that a substance is a hazardous air contaminant that may be listed in Table A, B or C of s. NR 445.07 if the substance can, due

to inhalation, cause an adverse health effect and it meets one or more of the following conditions:

1. The substance is classified as a known carcinogen or reasonably anticipated to be carcinogenic by both the International Agency for Research on Cancer and the National Toxicology Program.

2. The substance has a threshold limit value established by the American Conference of Governmental Industrial Hygienists.

3. The substance has a reference concentration established by the United States environmental protection agency with an uncertainty factor of 300 or less.

(b) Except as provided for in pars. (c) and (d), the department shall list in Table A, B or C of s. NR 445.07 a substance determined under par. (a) to be a hazardous air contaminant if it also determines that none of the following apply to the contaminant:

1. The only critical inhalation effect listed for the substance by the American Conference of Governmental Industrial Hygienists is asphyxiation.

2. The substance possesses an explosive nature requiring safety procedures that preclude ambient concentrations that would present toxicity concerns.

3. The substance has a threshold limit value of greater than or equal to 100 parts per million.

4. The substance has a threshold limit value of greater than or equal to 10 milligrams per cubic meter.

(c) Paragraph (b) notwithstanding, the department may consider any of the following in determining whether to list a hazardous air contaminant in Table A, B or C of s. NR 445.07:

1. Other regulations that may provide adequate protection for public health or welfare.

2. That additional information is necessary to fully assess the need to list the hazardous air contaminant in Table A, B or C.

(d) Paragraph (b) notwithstanding, the department shall consider all of the following in determining whether to list a hazardous air contaminant in Table A, B or C of s. NR 445.07:

1. An evaluation of sources in Wisconsin that release, or are likely to release, the contaminant.

2. An evaluation of the expected population exposure to the contaminant and the related risks.

3. An evaluation of alternative control strategies, including emission limitations, that includes consideration of costs.

**(3)** REEVALUATION OF LISTING DECISION. The owner or operator of an affected source or other interested party may submit a written request to, and the department may, reevaluate a determination to list or not to list a substance as a hazardous air contaminant in this chapter. The request shall provide new or additional information for the department's consideration. In conducting a reevaluation, the department shall consider the criteria set forth in sub. (2) (b) and (c) and other information that it deems relevant.

**History:** CR 02–097: cr. Register June 2004 No. 582, eff. 7–1–04; correction in (1) (intro.) made under s. 13.92 (4) (b) 6., Stats., Register August 2008 No. 632.

**NR 445.14 Hazardous air contaminant studies.** **(1)** The department may conduct studies of individual substances or categories or sources of substances if it determines that unique complexities may warrant alternative approaches to those listed in this chapter, or if the department otherwise needs additional information to determine whether to list the contaminant in Table A, B or C of s. NR 445.07.

**Note:** Unique complexities may be the result of the nature of the emissions, the sources of emissions, the management of emissions or other factors. The studies will not include a re–evaluation of the classification of the substance as reported by the American Conference of Government Industrial Hygienists, the United States environmental protection agency, the International Agency for Research on Cancer, or the National Toxicology Program.

**(2)** The department staff shall, in consultation with affected industry, public health officials and other interested parties, undertake 2 separate studies of the emissions of amorphous and crystalline silica and wood dust. The studies shall evaluate the sources and amounts of emissions and alternative strategies for minimizing public health risks. The department staff shall report progress on the studies to the natural resources board by July 1, 2006.

**(3)** The department shall evaluate the listing of substances added to this chapter on July 1, 2004, using the criteria set forth in s. NR 445.13 (2) (d) prior to listing additional substances in Table A, B or C of s. NR 445.07.

**History:** CR 02–097: cr. Register June 2004 No. 582, eff. 7–1–04.

**NR 445.15 Additional provisions related to the control of hazardous air contaminants.** **(1)** The department staff shall consult with the department of health services prior to incorporating an alternative emission limit under s. NR 445.07 (1) (b) in an order or a permit.

**(2)** (a) If it is determined that emissions of a hazardous air contaminant from a facility do not comply with an applicable emission requirement for that contaminant, the owner or operator will not be out of compliance with respect to that contaminant if the owner or operator satisfies all of the following:

1. Exercised due diligence and followed the procedures and other provisions in this subchapter for identifying and quantifying hazardous air contaminants.

**Note:** Examples of procedures in this subchapter include stack thresholds, risk–based modeling and applicability criteria for sources of incidental emissions.

2. Based on the results of subd. 1., either concluded that no emission requirements applied to that contaminant or complied with all emission requirements that applied to that contaminant.

3. Within 21 calendar days of making the determination that a hazardous air contaminant does not comply with an applicable emission requirement for that contaminant, submits the determination in writing to the department.

4. By the later of the deadlines in s. NR 445.08 (6) or 90 calendar days after making the determination of noncompliance, certifies that the facility meets provisions applicable for the hazardous air contaminant.

(b) After receipt of a written request, the department may, in writing, extend the deadline for achieving compliance with the deadline in par. (a) 4.

**Note:** The address for submittal of information and requests for an extension from the deadline in par. (a) 4. is:

Wisconsin Department of Natural Resources
Bureau of Air Management
PO Box 7921
Madison WI 53707–7921
Attention: NR 445 Safe Harbor Determinations.

(c) Notwithstanding par. (a), the department retains the authority to order the owner or operator to come into compliance with applicable requirements within a specific time period shorter than the 90 calendar days whenever compliance in the shorter period of time is feasible and necessary to protect public health and the environment.

**(3)** The department shall review emissions reported under ch. NR 438 from sources of the contaminants listed in s. NR 410.04 (2) (b) 5. If the department determines that emissions are of such quantity, concentration or duration that a concentration greater than 2.4% of the contaminant's threshold limit value–time weighted average established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 2000, incorporated by reference in s. NR 484.11 (2) (c), is expected to occur off of the source's property, it may establish a limitation in a permit or order that will ensure the source does not cause concentrations off of the source's property that exceed 2.4% of the threshold limit value–time weighted average for any consecutive 24–hour averaging period.

**(4)** The department staff shall consult with the department of health services prior to establishing an emission limit, in a permit

or order, for any hazardous air contaminant that is not listed in Table A, B or C of s. NR 445.07.

**(5)** The department may establish emission limitations for hazardous air contaminants for sources in permits or general or special orders issued by the department.

**History:** CR 02–097: renum. from NR 445.06 (1) and (4) and NR 445.07 (5), am. (1) and (4), cr. (2) and (3) Register June 2004 No. 582, eff. 7–1–04; correction in (1) made under s. 13.92 (4) (b) 7., Stats., Register July 2008 No. 631; corrections in (1) and (4) made under s. 13.92 (4) (b) 6., Stats., Register August 2008 No. 632.

### NR 445.16 Notice of hazardous substance air spills.

Persons possessing or controlling a hazardous substance shall immediately notify the department of any hazardous emission not in conformity with a permit or allowed by the department under chs. NR 400 to 499. Notice shall be given as required by s. 292.11, Stats., and ch. NR 706.

**Note:** The owner or operator of a facility is responsible for determining whether a substance released (or spilled) is considered a hazardous substance as defined in s. 292.01 (5), Stats., and whether that hazardous substance was released to the environment. Section NR 706.05 (1) (a) contains language that assists in making such a determination. If the facility owner or operator determines that a release of a hazardous substance to the environment has occurred, the spills law, s. 292.11, Stats. and the rules contained in ch. NR 706 apply. Both ch. 292, Stats., and ch. NR 706 contain exemptions to the spill reporting requirements. In addition, s. NR 706.07 (2) (b) 1., 2., 3. and 4. contain language specifying when those exemptions do not apply, including impacts or threats to the environment, human health or safety. Other regulations, permits, and reporting requirements, including s. NR 439.03 (4) and ch. NR 438, may also apply to the hazardous substance release.

**History:** Renum. from NR 154.06 and am., Register, September, 1986, No. 369, eff. 10–1–86; renum. from NR 445.05, Register, September, 1988, No. 393, eff. 10–1–88; correction made under s. 13.93 (2m) (b) 7. Stats., Register, September, 1988, No. 393**;** am., Register, November, 1999, No. 527, eff. 12–1–99; CR 02–097: renum. from NR 445.08 Register June 2004 No. 582, eff. 7–1–04.