# 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. III 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 irre-

versible 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 1 to 5 in s. NR 445.04 and 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.

**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.

## Subchapter II — Emission Requirements for Stationary Sources Prior to Demonstration of Compliance with Subchapter III

**NR 445.04 Emission limits for sources last constructed or modified between October 1, 1988 and July 1, 2004.** The following requirements apply to sources last constructed or modified between October 1, 1988, or January 1, 1995 for sources subject to sub. (4r), and July 1, 2004, prior to the applicable compliance dates for subch. III requirements specified in s. NR 445.08:

**(1)** TABLE 1 SUBSTANCES. Except as provided in par. (c) or s. NR 406.07 (2), no owner or operator of a stationary source on which construction or modification last commenced between October 1, 1988 and July 1, 2004, may cause, allow or permit emissions from a source of a hazardous air contaminant listed in Table 1 of this section in such quantity or duration as to cause ambient air concentrations off the source's property that exceed the limits in par. (a) or (b).

(a) *24–hour.* 1. Two and four tenths percent of the threshold limit value—time weighted average established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values and Biological Exposure Indices for 1987–1988, incorporated by reference in s. NR 484.11 (2) (a), for any consecutive 24–hour averaging period.

2. Ten percent of the threshold limit value—time weighted average established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values and Biological Exposure Indices for 1987–1988, incorporated by reference in s. NR 484.11 (2) (a), for any 24–hour averaging period if the hazardous air contaminant is emitted no more than 5 days in any consecutive 30–day period and if the department determines after complying with s. NR 445.15 (1) that the limits will not pose a threat to public health or welfare.

(b) *One–hour.* Ten percent of the threshold limit value—ceiling established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1987–1988, incorporated by reference in s. NR 484.11 (2) (a), for any one–hour averaging period.

(c) *Exemptions.* The following emissions are exempt from the emission limits of Table 1 substances:

1. Emissions from the combustion of group 1 virgin fossil fuels.

2. Emissions from the combustion of group 2 virgin fossil fuels vented from a stack which has downwash minimization stack height or a height approved by the department.

3. Emissions from a laboratory.

4. Indoor fugitive emissions.

**(2)** TABLE 2 SUBSTANCES. Except as provided in par. (c), no owner or operator of a stationary source that manufactures or processes pesticides, rodenticides, insecticides, herbicides or fungicides and on which construction or modification last commenced between October 1, 1988, and July 1, 2004, may cause, allow or permit emissions from the source of a hazardous air contaminant listed in Table 2 of this section in such quantity or duration as to cause ambient concentrations that exceed the limits in par. (a) or (b).

(a) *24−hour.* Two and four−tenths percent of the threshold limit value—time weighted average established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1987−1988, incorporated by reference in s. NR 484.11 (2) (a), for any 24−hour averaging period.

(b) *One−hour.* Ten percent of the threshold limit value—ceiling established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1987−1988, incorporated by reference in s. NR 484.11 (2) (a), for any one−hour averaging period.

(c) *Exemptions.* The following emissions are exempt from emission limits for Table 2 substances:

1. Emissions from a laboratory.

2. Indoor fugitive emissions.

**(3)** TABLE 3 SUBSTANCES. (a) *Group A.* Except as provided in par. (c), the owner or operator of any facility on which construction or modification last commenced between October 1, 1988 and July 1, 2004, and that emits any hazardous air contaminant listed in group A of Table 3 of this section in amounts greater than those listed in group A of Table 3 shall control emissions of those hazardous air contaminants to a level that is the lowest achievable emission rate. The lowest achievable emission rate shall be met by the emissions unit at the facility that emits the greatest amount of the hazardous air contaminant. If application of the lowest achievable emission rate to this emissions unit does not reduce facility emissions of the hazardous air contaminant to a level less than the rate listed in group A of Table 3 for the hazardous air contaminant, then the lowest achievable emission rate shall be met by other emissions units at the facility that emit decreasingly smaller amounts of the hazardous air contaminant until emissions from the facility are below the emission rate listed in group A of Table 3 or until all emissions units at the facility that emit at least 10% of the rate listed in group A of Table 3 for the hazardous air contaminant have met the lowest achievable emissions rate. If application of lowest achievable emissions rate to these emissions units does not result in the control of at least 50% of the potential emissions of the hazardous air contaminant from the facility, then the department may require application of lowest achievable emission rate on a reasonable array of smaller emissions units that emit the hazardous air contaminant.

(b) *Group B.* Except as provided in par. (c), the owner or operator of any facility on which construction or modification last commenced between October 1, 1988 and July 1, 2004, and that emits any hazardous air contaminant listed in group B of Table 3 of this section in amounts greater than those listed in group B of Table 3 shall control emissions of those hazardous air contaminants to a level that is the best available control technology. The best available control technology shall be met by the emissions unit at the facility that emits the greatest amount of the hazardous air contaminant. If application of the best available control technology to this emissions unit does not reduce facility emissions of the hazardous air contaminant to a level less than the rate listed in group B of Table 3 for the hazardous air contaminant, then best available control technology shall be met by other emissions units at the facility that emit decreasingly smaller amounts of the hazardous air contaminant until emissions from the facility are below the emission rate listed in group B of Table 3 or until all emissions units at the facility that emit at least 10% of the rate listed in group B of Table 3 for the hazardous air contaminant have met best available control technology. If application of best available control technology to these emissions units does not result in the control of at least 50% of the potential emissions of the hazardous air contaminant from the facility, then the department may require application of best available control technology on a reasonable array of smaller emissions units that emit the hazardous air contaminant.

(c) *Exemptions.* The following emissions are exempt from the emission limits for Table 3 substances:

1. Emissions from the combustion of group 1 virgin fossil fuels.

2. Emissions from the combustion of group 2 virgin fossil fuels vented from a stack which has downwash minimization stack height or a height approved by the department.

3. Emissions from a laboratory.

4. Emissions from any gasoline dispensing facility which meets the requirements of s. NR 420.04 (3) (b) to (i) and which dispenses less than 2 million gallons of gasoline a year or can otherwise demonstrate to the satisfaction of the department that it will not exceed an emission limitation for a Table 3 hazardous air contaminant.

5. Emissions from any gasoline dispensing facility which does not meet the requirements of s. NR 420.04 (3) (b) to (i) and which dispenses less than 1.25 million gallons of gasoline a year or can otherwise demonstrate to the satisfaction of the department that it will not exceed an emission limitation for a Table 3 hazardous air contaminant.

6. Indoor emissions which are exhausted to the ambient air through general building ventilation and which have a threshold limit value established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1987−1988, incorporated by reference in s. NR 484.11 (2) (a), and for which the source demonstrates to the department that it is in compliance with applicable occupational safety and health administration requirements.

**(4)** TABLE 4 SUBSTANCES. Except as provided in par. (c) or s. NR 406.07 (2), no owner or operator of a stationary source on which construction or modification last commenced between October 1, 1988 and July 1, 2004, may cause, allow or permit emissions from a source of a hazardous air contaminant listed in Table 4 of this section in such quantity or duration as to cause ambient air concentrations off the source's property that exceed the limits in par. (a) or (b).

(a) *24−hour.* 1. Two and four tenths percent of the threshold limit value—time weighted average established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values and Biological Exposure Indices for 1990−1991, incorporated by reference in s. NR 484.11 (2) (b), for any consecutive 24−hour averaging period.

2. Ten percent 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 1990−1991, incorporated by reference in s. NR 484.11 (2) (b), for any 24−hour averaging period if the hazardous air contaminant is emitted no more than 5 days in any consecutive

30–day period and if the department determines after complying with s. NR 445.15 (1) that the limits will not pose a threat to public health or welfare.

(b) *One–hour.* Ten percent of the threshold limit value—ceiling established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1990–1991, incorporated by reference in s. NR 484.11 (2) (b), for any one–hour averaging period.

(c) *Exemptions.* The following emissions are exempt from the emission limits of Table 4 substances:

1. Emissions from the combustion of group 1 virgin fossil fuels.

2. Emissions from the combustion of group 2 virgin fossil fuels vented from a stack which has downwash minimization stack height or a height approved by the department.

3. Emissions from a laboratory.

4. Indoor fugitive emissions.

**(4r)** TABLE 5 SUBSTANCES. (a) *Annual limitations.* Except as provided in par. (b) or s. NR 406.07 (2), no owner or operator of a stationary source on which construction or modification last commenced between January 1, 1995 and July 1, 2004, may cause, allow or permit emissions from the constructed or modified source of a hazardous air contaminant listed in Table 5 of this section in such quantity or duration as to cause ambient air concentrations off the source's property that exceed the reference concentration shown in Table 5 of this section on an annual basis.

**Note:** For the purposes of this subsection a source shall be considered as a modified source and required to achieve compliance with the provisions of this subsection only for those hazardous air contaminants not previously emitted or those hazardous air contaminants where there would be an allowed increase in emissions as a result of the modification.

(b) *Exemptions.* All of the following emissions are exempt from the emission limitations for the hazardous air contaminants listed in Table 5 of this section:

1. Emissions from the combustion of group 1 virgin fossil fuels.

2. Emissions from the combustion of group 2 virgin fossil fuels vented from a stack which has downwash minimization stack height or a height approved by the department.

3. Emissions from a laboratory.

4. Indoor emissions which are exhausted to the ambient air through general building ventilation and which have a threshold limit value established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values and Biological Exposure Indices for 1990–1991, incorporated by reference in s. NR 484.11 (2) (b), and for which the source is in compliance with applicable occupational safety and health administration requirements.

5. Emissions from sources required to meet national emission standards promulgated under 40 CFR part 63 prior to January 1, 1995.

6. Emissions from gasoline dispensing at any source which meets the requirements of s. NR 420.04 (3) (b) to (i) or which dispenses less than one million gallons a year.

(c) *Records.* The owner or operator of a source not subject to sub. (6) shall maintain the following records in writing at the source, as appropriate:

1. The hazardous air contaminants in Table 5 of this section the source is capable of emitting.

2. The allowable emissions for each hazardous air contaminant identified in subd. 1. for each emissions unit.

3. The methods used to calculate allowable emissions under subd. 2., including:

a. All calculations which show the dimensional units for all values used.

b. Emission factors used and reference to stack tests, mass balance calculations or EPA documents that the emission factor is based on.

4. Information to support exemption claims including fuels used, laboratory status or downwash minimization stack height calculations as appropriate.

**(5)** INCINERATORS. (a) Any owner or operator of a stationary source on which construction or modification last commenced between October 1, 1988 and July 1, 2004, and that combusts municipal solid waste as defined in s. NR 500.03 (150) or infectious waste shall comply with subs. (1) and (4) and shall control emissions of hazardous air contaminants listed in Table 3 of this section to a level that is the lowest achievable emission rate.

(b) Any owner or operator of a stationary source on which construction or modification last commenced between January 1, 1995 and July 1, 2004, and that combusts municipal solid waste as defined in s. NR 500.03 (150) or infectious waste shall comply with sub. (4r).

(c) A source which combusts refuse derived fuel in a boiler and obtains less than 50% of its heat input from the refuse derived fuel is not subject to this subsection.

**(6)** COMPLIANCE REQUIREMENTS. (a) *Compliance timing.* Except as provided for in pars. (d), (e) and (f), any source that commences construction or modification between October 1, 1988 and July 1, 2004, shall meet the emission limitations in this section upon startup.

(b) *Compliance determination.* For the purpose of determining compliance with this section:

1. The department shall allow credit for the emission reduction capability of in–place control devices.

2. The owner or operator of a source may demonstrate compliance with emission limitations of sub. (1), (2), (4), (4r) or (5) by demonstrating that the concentration of the substance in Table 1, 2, 4 or 5 in the stack is less than the ambient concentration allowed under sub. (1), (2), (4) or (4r).

3. The owner or operator of a source is not required to consider emissions resulting directly from naturally occurring constituents in windblown soil.

4. The owner or operator of a source 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 Tables 1 to 5 and the hazardous air contaminant listed in Table 1, 2, 4 or 5 constitutes 10,000 parts per million or more of the material or the hazardous air contaminant listed in Table 3 constitutes 1,000 parts per million or more of the material. If an approved material safety data sheet for a material is not classified as proprietary and does not list a hazardous air contaminant in Tables 1 to 5 at or above the amounts listed in this subdivision, that 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.

(c) *Subsequent requirements.* The owner or operator of a source which has achieved compliance with this section by installing emission control equipment may not be required to install additional control equipment to achieve compliance with this section 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 which requires substantial capital expenditures for process equipment which was made with prior department approval and which results in a reduction of emissions of hazardous air contaminants which is sufficient to comply with the limitations of this section may be

construed as installation of emission control equipment under this paragraph.

(d) *Compliance schedule for chromyl chloride, tert−butyl chromate, propylene oxide and anisidine.* The owner or operator of a stationary source on which construction or modification last commenced prior to June 1, 1992 and whose allowable emissions of chromyl chloride, tert−butyl chromate, propylene oxide or anisidine are equal to or greater than the emission rate listed in Table 3, shall meet the emission limitations in sub. (3) for these contaminants in accordance with s. NR 445.05 (6) (am) and (f) 1. and 3.

(e) *Compliance schedule for diisobutyl ketone, methylene bis(4−cyclohexylisocyanate), p−nitrochlorobenzene and xylidine.* The owner or operator of a stationary source on which construction or modification last commenced prior to June 1, 1992 and whose allowable emissions of diisobutyl ketone, methylene bis(4−cyclohexylisocyanate), p−nitrochlorobenzene and xylidine are equal to or greater than the emission rate listed in Table 4, shall meet the emission limitations in sub. (4) for these contaminants in accordance with s. NR 445.05 (6) (b) 1m., 2. and 3.

(f) *Compliance schedule for Table 5 substances.* The owner or operator of a stationary source on which construction or modification last commenced prior to January 1, 1995 and whose allowable emissions of any hazardous air contaminant listed in Table 5 of this section are equal to or greater than the emission rate listed in Table 5 for the respective stack height, shall meet the emission limitations in sub. (4r) for these contaminants in accordance with s. NR 445.05 (6) (bm).

**(7)** CONTINUING REQUIREMENTS FOR SOURCES ISSUED A VARIANCE UNDER THIS SUBSECTION. An owner or operator of a source which has been granted a variance from an emission limitation in sub. (3) (a), (4r) (a) or (5) as it existed prior to July 1, 2004, shall continue to comply with all provisions related to the approval until the time that one of the following are satisfied:

(a) The department modifies, extends or rescinds the variance in accord with the provisions of s. NR 445.12.

(b) The owner or operator demonstrates compliance with all of the applicable requirements in s. NR 445.07 and completes all necessary revisions to a permit in accord with the provisions in chs. NR 406 and 407, as applicable.

**Table 1**
**Hazardous Air Contaminants With Acceptable Ambient Concentrations**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| ACIDS | | | |
| Acetic acid | 64–19–7 | 2.083200 | 8.760000 |
| Hydrogen chloride | 7647–01–0 | 0.355200(c) | 1.368000(c) |
| Hydrogen fluoride | 7664–39–3 | 0.127200(c) | 0.480000(c) |
| Nitric acid | 7697–37–2 | 0.417600 | 1.752000 |
| Phosphoric acid | 7664–38–2 | 0.084000 | 0.336000 |
| Sulfuric acid | 7664–93–9 | 0.084000 | 0.336000 |
| CYANIDES | | | |
| Acetonitrile | 75–05–8 | 5.829600 | 24.480000 |
| Cyanides, (inorganics), as CN | 143–33–9, 151–50–8 | 0.417600 | 1.752000 |
| Hydrogen cyanide | 74–90–8 | 0.506400(c) | 1.944000(c) |
| Methyl acrylate | 96–33–3 | 2.916000 | 12.240000 |
| Methylacrylonitrile | 126–98–7 | 0.249600 | 1.032000 |
| INDUSTRIAL GASES | | | |
| Ammonia | 7664–41–7 | 1.500000 | 6.288000 |
| Arsine | 7784–42–1 | 0.016560 | 0.067200 |
| Bromine | 7726–95–6 | 0.057600 | 0.240000 |
| Chlorine | 7782–50–5 | 0.249600 | 1.032000 |
| Fluorine | 7782–41–4 | 0.165600 | 0.672000 |
| CHEMICAL INTERMEDIATES | | | |
| Acetaldehyde | 75–07–0 | 14.990400 | 62.952000 |
| Acrolein | 107–02–8 | 0.020880 | 0.086400 |
| Acrylamide | 79–06–1 | 0.024000 | 0.100800 |
| Acrylic acid | 79–10–7 | 2.498400 | 10.488000 |
| Allyl alcohol | 107–18–6 | 0.417600 | 1.752000 |
| Allyl chloride | 107–05–1 | 0.249600 | 1.032000 |
| Aniline | 62–53–3 | 0.832800 | 3.480000 |
| Benzyl chloride | 100–44–7 | 0.417600 | 1.752000 |
| n−Butyl acrylate | 141–32–2 | 4.581600 | 19.224000 |
| n−Butylamine | 109–73–9 | 0.760800(c) | 2.928000(c) |
| Cresol, all isomers | 1319–77–3 | 1.831200 | 7.680000 |

**Table 1 (continued)**
**Hazardous Air Contaminants With Acceptable Ambient Concentrations**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| Crotonaldehyde | 123–73–9 | 0.672000 | 2.088000 |
| Cyclohexylamine | 108–91–8 | 3.3312 | 13.968000 |
| Diethanolamine | 111–42–2 | 1.250400 | 5.232000 |
| Diethylamine | 109–89–7 | 2.498400 | 10.488000 |
| Dinitrobenzene | 528–29–0, 99–65–0, 100–25–4 | 0.084000 | 0.336000 |
| Methylamine | 74–89–5 | 0.998400 | 4.176000 |
| Methyl chloride | 74–87–3 | 8.745600 | 36.720000 |
| Methyl isocyanate | 624–83–9 | 0.004080 | 0.017040 |
| p–Nitroaniline | 100–01–6 | 0.249600 | 1.032000 |
| Nitrobenzene | 98–95–3 | 0.417600 | 1.752000 |
| Phenol | 108–95–2 | 1.581600 | 6.624000 |
| Phosphine | 7803–51–2 | 0.033600 | 0.139200 |
| Propargyl alcohol | 107–19–7 | 0.165600 | 0.672000 |
| 1,2,4–Trichlorobenzene | 120–82–1 | 2.025600(c) | 7.848000(c) |
| PLASTICIZING COMPOUNDS | | | |
| Dimethylphthalate | 131–11–3 | 0.417600 | 1.752000 |
| Isophorone diisocyanate | 4098–71–9 | 0.007440 | 0.031200 |
| Methylene bisphenyl isocyanate (MDI) | 101–68–8 | 0.010080(c) | 0.038400(c) |
| Toluene–2,4–diisocyanate (TDI) | 584–84–9 | 0.003360 | 0.013920 |
| METALS AND COMPOUNDS | | | |
| Aluminum alkyls | 7429–90–5 | 0.165600 | 0.672000 |
| Antimony & compounds, as Sb | 7440–36–0 | 0.040800 | 0.170400 |
| Barium soluble compounds, as Ba | 7440–39–3 | 0.040800 | 0.170400 |
| METALS AND COMPOUNDS (Continued) | | | |
| Chromium (III) compounds, as Cr | 7440–47–3 | 0.040800 | 0.170400 |
| Chromium (VI) compounds, as Cr, water soluble | 7440–47–3 | 0.004080 | 0.017040 |
| Manganese, as Mn, dust and compounds | 7439–96–5 | 0.254400(c) | 0.984000(c) |
| Mercury alkyl compounds | 7439–97–6 | 0.000840 | 0.003360 |
| Mercury, all forms except alkyl, vapor | 7439–97–6 | 0.004080 | 0.017040 |
| Mercury aryl & inorganic compounds | 7439–97–6 | 0.008400 | 0.033600 |
| Tin organic compounds, as Sn | 7440–31–5 | 0.008400 | 0.033600 |
| MONOMERS | | | |
| Methyl methacrylate | 80–62–6 | 34.144800 | 143.400000 |
| Phenylhydrazine | 100–63–0 | 0.87456 | 3.67200 |
| Styrene, monomer | 100–42–5 | 17.906400 | 75.192000 |
| Vinyl cyclohexene dioxide | 106–87–6 | 1.50000 | 6.288000 |
| FUMIGANTS | | | |
| p–Dichlorobenzene | 106–46–7 | 15.62400 | 65.7000 |
| SOLVENTS | | | |
| Carbon disulfide | 75–15–0 | 2.498400 | 10.488000 |
| Chlorobenzene (Monochlorobenzene) | 108–90–7 | 29.148000 | 122.400000 |
| Cyclohexanone | 108–94–1 | 8.328000 | 34.968000 |
| o–Dichlorobenzene | 95–50–1 | 15.192000(c) | 58.944000(c) |
| 1,1–Dichloroethane | 75–34–3 | 67.456800 | 283.296000 |
| 1,2–Dichloroethylene | 540–59–0 | 65.791200 | 276.312000 |
| Diethyl phthalate | 84–66–2 | 0.417600 | 1.752000 |
| Dimethylamine | 124–40–3 | 1.500000 | 6.288000 |
| Dimethylaniline (N,N–Dimethylaniline) | 121–69–7 | 2.083200 | 8.736000 |
| 2–Ethoxyethanol (EGEE) | 110–80–5 | 0.748800 | 3.144000 |
| Ethyl acrylate | 140–88–5 | 1.665600 | 6.984000 |
| Ethyl benzene | 100–41–4 | 36.228000 | 152.136000 |

**Table 1 (continued)**
**Hazardous Air Contaminants With Acceptable Ambient Concentrations**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| Ethylene chlorohydrin | 107–07–3 | 0.151200(c) | 0.576000(c) |
| Ethylenediamine | 107–15–3 | 2.083200 | 8.736000 |
| Ethylene glycol vapor | 107–21–1 | 6.331200(c) | 24.552000(c) |
| Furfural | 98–01–1 | 0.667200 | 2.784000 |
| n–Hexane | 110–54–3 | 14.990400 | 62.952000 |
| Isobutyl alcohol | 78–83–1 | 12.492000 | 52.464000 |
| Isophorone | 78–59–1 | 1.267200(c) | 4.896000(c) |
| 2–Methoxyethanol (EGME) | 109–86–4 | 1.332000 | 5.592000 |
| N–Methyl aniline | 100–61–8 | 0.165600 | 0.672000 |
| Methyl n–butyl ketone | 591–78–6 | 1.665600 | 6.984000 |
| Methylene chloride | 75–09–2 | 29.148000 | 122.400000 |
| Methyl hydrazine | 60–34–4 | 0.076800(c) | 0.288(c) |
| Methyl isobutyl ketone | 108–10–1 | 17.073600 | 71.688000 |
| Perchloroethylene | 127–18–4 | 27.900000 | 117.168000 |
| Pyridine | 110–86–1 | 1.2504 | 5.232000 |
| 1,1,2,2–Tetrachloroethane | 79–34–5 | 0.583200 | 2.448000 |
| Tetrahydrofuran | 109–99–9 | 49.135200 | 206.352000 |
| Toluene (Toluol) | 108–88–3 | 31.231200 | 131.160000 |
| 1,1,2–Trichloroethane | 79–00–5 | 3.748800 | 15.744000 |
| Trichloroethylene | 79–01–6 | 22.485600 | 94.416000 |
| Xylene (Xylol) | 1330–20–7 | 36.228000 | 152.136000 |
| GENERAL USE CHEMICALS | | | |
| n–Butyl alcohol | 71–36–3 | 7.596000(c) | 29.472000(c) |
| Chlorine dioxide | 10049–04–4 | 0.024000 | 0.100800 |
| Fluorides, (inorganics), as F | | 0.208800 | 0.864000 |
| Naphthalene | 91–20–3 | 4.164000 | 17.472000 |
| Pentachlorophenol | 87–86–5 | 0.040800 | 0.170400 |
| Selenium and compounds, as Se | 7782–49–2 | 0.016560 | 0.067200 |
| SUPPLEMENTAL LIST OF CHEMICALS | | | |
| Biphenyl | 92–52–4 | 0.124800 | 0.504000 |
| 1,3–Butadiene | 106–99–0 | 4.16400 | 17.472000 |
| Dichloroethyl ether | 111–44–4 | 2.498400 | 10.488000 |
| Diglycidyl ether (DGE) | 2238–07–5 | 0.040800 | 0.170400 |

*The notation (c) indicates those contaminants with ceiling limits which are emission rates averaged over a one–hour period. Those contaminants without such a notation are emission rates per hour averaged over a 24 hour period.

**Table 2**
**Hazardous Air Contaminants Which Are Pesticides, Rodenticides, Insecticides, Herbicides or Fungicides with Acceptable Ambient Concentrations**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| Aldrin | 309–00–2 | 0.020880 | 0.086400 |
| Amitrole | 61–82–5 | 0.016560 | 0.067200 |
| ANTU | 86–88–4 | 0.024000 | 0.100800 |
| Atrazine | 1912–24–9 | 0.417600 | 1.752000 |
| Azinphos–methyl | 86–50–0 | 0.016560 | 0.067200 |
| Benomyl | 17804–35–2 | 0.832800 | 3.480000 |
| Bromacil | 314–40–9 | 0.832800 | 3.480000 |
| Captafol | 2425–06–1 | 0.008400 | 0.033600 |
| Captan | 133–06–2 | 0.417600 | 1.752000 |

**Table 2 (continued)**
**Hazardous Air Contaminants Which Are Pesticides, Rodenticides, Insecticides, Herbicides or Fungicides with Acceptable Ambient Concentrations**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| Carbaryl | 63–25–2 | 0.417600 | 1.752000 |
| Carbofuran | 1563–66–2 | 0.008400 | 0.033600 |
| Chlordane | 57–74–9 | 0.040800 | 0.170400 |
| Chlorinated camphene | 8001–35–2 | 0.040800 | 0.170400 |
| 1–Chloro–1–nitropropane | 600–25–9 | 0.832800 | 3.480000 |
| Chloropicrin (Trichloronitromethane) | 76–06–2 | 0.057600 | 0.240000 |
| Chlorpyrifos | 2921–88–2 | 0.016560 | 0.067200 |
| Crufomate | 299–86–5 | 0.417600 | 1.752000 |
| Cyhexatin | 13121–70–5 | 0.417600 | 1.752000 |
| Demeton | 8065–48–3 | 0.008400 | 0.033600 |
| Diazinon | 333–41–5 | 0.008400 | 0.033600 |
| Dibutyl phthalate | 84–74–2 | 0.417600 | 1.752000 |
| Dichloropropene | 542–75–6 | 0.417600 | 1.752000 |
| 2,2–Dichloropropionic acid | 75–99–0 | 0.499200 | 2.088000 |
| Dichlorvos | 62–73–7 | 0.084000 | 0.336000 |
| Dicrotophos | 141–66–2 | 0.020880 | 0.086400 |
| Dieldrin | 60–57–1 | 0.020880 | 0.086400 |
| Dinitro–o–cresol | 534–52–1 | 0.016560 | 0.067200 |
| Dioxathion | 78–34–2 | 0.016560 | 0.067200 |
| Diquat | 85–00–7 | 0.040800 | 0.170400 |
| Disulfoton | 298–04–4 | 0.008400 | 0.033600 |
| Endosulfan | 115–29–7 | 0.008400 | 0.033600 |
| Endrin | 72–20–8 | 0.008400 | 0.033600 |
| EPN | 2104–64–5 | 0.040800 | 0.170400 |
| Ethion | 563–12–2 | 0.033600 | 0.139200 |
| Fensulfothion | 115–90–2 | 0.008400 | 0.033600 |
| Fenthion | 55–38–9 | 0.016560 | 0.067200 |
| Fonofos | 944–22–9 | 0.008400 | 0.033600 |
| Heptachlor | 76–44–8 | 0.040800 | 0.170400 |
| Hexachlorobutadiene | 87–68–3 | 0.010520 | 0.048000 |
| Hexachlorocyclopentadiene | 77–47–4 | 0.008400 | 0.033600 |
| Methomyl | 16752–77–5 | 0.208800 | 0.864000 |
| Methyl bromide | 74–83–9 | 1.665600 | 6.984000 |
| Methyl demeton | 8022–00–2 | 0.040800 | 0.170400 |
| Methyl parathion | 298–00–0 | 0.016560 | 0.067200 |
| Mevinphos (Phosdrin) | 7786–34–7 | 0.008400 | 0.033600 |
| Monocrotophos | 6923–22–4 | 0.020880 | 0.086400 |
| Naled | 300–76–5 | 0.249600 | 1.032000 |
| Paraquat (respirable sizes) | 4685–14–7, 1910–42–5 | 0.008400 | 0.033600 |
| Parathion | 56–38–2 | 0.008400 | 0.033600 |
| Phenothiazine | 92–84–2 | 0.417600 | 1.752000 |
| Phorate | 298–02–2 | 0.004080 | 0.017040 |
| Pindone | 83–26–1 | 0.008400 | 0.033600 |
| Propoxur | 114–26–1 | 0.040800 | 0.170400 |
| Pyrethrum | 8003–34–7 | 0.417600 | 1.752000 |
| Quinone | 106–51–4 | 0.033600 | 0.139200 |
| Rotenone (commercial) | 83–79–4 | 0.417600 | 1.752000 |
| Sodium fluoroacetate | 62–74–8 | 0.004080 | 0.017040 |
| Stibine (Antimony hydride) | 7803–52–3 | 0.040800 | 0.170400 |
| Strychnine | 57–24–9 | 0.012480 | 0.050400 |

**Table 2 (continued)**
**Hazardous Air Contaminants Which Are Pesticides, Rodenticides, Insecticides, Herbicides or Fungicides with Acceptable Ambient Concentrations**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| Sulfotep (TEDP) | 3689–24–5 | 0.016560 | 0.067200 |
| Sulfuryl fluoride | 2699–79–8 | 1.665600 | 6.984000 |
| TEPP | 107–49–3 | 0.004080 | 0.017040 |
| Thiram | 137–26–8 | 0.417600 | 1.752000 |
| Warfarin | 81–81–2 | 0.008400 | 0.033600 |

*The notation (c) indicates those contaminants with ceiling limits which are emission rates averaged over a one–hour period. Those contaminants without such a notation are emission rates per hour averaged over a 24 hour period.

**Table 3**
**Hazardous Air Contaminants Without Acceptable Ambient Concentrations Requiring Application of A. Lowest Achievable Emission Rate for Sources of Group A Hazardous Air Contaminants, B. Best Available Control Technology for Sources of Group B Hazardous Air Contaminants[1]**

| Contaminant | CAS Number | lbs/year[2] |
|---|---|---|
| GROUP A CONTAMINANTS | | |
| 4–Aminobiphenyl | 92–67–1 | 25.0 |
| Arsenic and inorganic compounds, as As | 7440–38–2 | 25.0 |
| Asbestos | 1332–21–4 | 25.0 |
| Benzene | 71–43–2 | 300.0 |
| Benzidine | 92–87–5 | 2.0 |
| Bis(chloromethyl) ether (BCME) and technical grade | 542–88–1 | 0.10 |
| tert–Butyl chromate, as Cr | 1189–85–1 | 0.10 |
| Chloromethyl methyl ether (CMME) | 107–30–2 | 0.10 |
| Chromium (VI), water insoluble compounds, as Cr | 7440–47–3 | 2.0 |
| Chromyl chloride, as Cr | 14977–61–8 | 0.10 |
| Coke oven emissions | | 25.0 |
| 2–Naphthylamine | 91–59–8 | 25.0 |
| Nickel subsulfide | 12035–72–2 | 25.0 |
| Vinyl chloride | 75–01–4 | 300.0 |
| *Pharmaceuticals (a total of all listed compounds)* | | 25.0 |
| Azathioprine | 446–86–6 | |
| N,N–Bis(2–chloroethyl)–2–naphthylamine (Chlornaphazine) | 494–03–1 | |
| 1,4–Butanedioldimethanesulphonate (Myleran) | 55–98–1 | |
| Chlorambucil | 305–03–3 | |
| Cyclophosphamide | 50–18–0 | |
| Diethylstilbestrol (DES) | 56–53–1 | |
| Melphalan | 148–82–3 | |
| Mustard gas | 505–60–2 | |
| GROUP B CONTAMINANTS | | |
| Acrylonitrile | 107–13–1 | 25.0 |
| Aflatoxins | 1402–68–2 | 25.0 |
| 2–Aminoanthraquinone | 117–79–3 | 250.0 |
| Anisidine | 29191–52–4 | 250.0 |
| o–Anisidine and o–anisidine hydrochloride | 90–04–0, 134–29–2 | 250.0 |
| Benzotrichloride | 98–07–7 | 250.0 |
| Beryllium and beryllium compounds, as Be | 7440–41–7 | 25.0 |
| Cadmium and cadmium compounds, as Cd | 7440–43–9 | 25.0 |
| Carbon tetrachloride | 56–23–5 | 25.0 |
| Chloroform | 67–66–3 | 250.0** |
| p–Cresidine | 120–71–8 | 250.0 |
| 2,4–Diaminoanisole sulfate | 39156–41–7 | 250.0 |
| 2,4–Diaminotoluene | 95–80–7 | 250.0 |

**Table 3 (continued)**
**Hazardous Air Contaminants Without Acceptable Ambient Concentrations Requiring Application of A. Lowest Achievable Emission Rate for Sources of Group A Hazardous Air Contaminants, B. Best Available Control Technology for Sources of Group B Hazardous Air Contaminants[1]**

| Contaminant | CAS Number | lbs/year[2] |
|---|---|---|
| 1,2–Dibromo–3–chloropropane (DBCP) | 96–12–8 | 250.0 |
| 1,2–Dibromoethane (EDB) | 106–93–4 | 250.0 |
| 3,3′–Dichlorobenzidine | 91–94–1 | 250.0 |
| 1,2–Dichloroethane (EDC) | 107–06–2 | 25.0 |
| Di(2–ethylhexyl)phthalate (DEHP) | 117–81–7 | 250.0 |
| Diethyl sulfate | 64–67–5 | 25.0 |
| 3,3′–Dimethoxybenzidine (o–Dianisidine) | 119–90–4 | 250.0 |
| 4–Dimethylaminoazobenzene | 60–11–7 | 250.0 |
| 3,3′–Dimethylbenzidine (o–Tolidine) | 119–93–7 | 250.0 |
| Dimethyl carbamoyl chloride | 79–44–7 | 250.0 |
| 1,1–Dimethylhydrazine | 57–14–7 | 250.0 |
| Dimethyl sulfate | 77–78–1 | 25.0 |
| 1,4–Dioxane | 123–91–1 | 250.0 |
| Epichlorohydrin | 106–89–8 | 300.0 |
| Ethylene oxide | 75–21–8 | 25.0 |
| Ethylene thiourea | 96–45–7 | 250.0 |
| Formaldehyde | 50–00–0 | 250.0** |
| Hexachlorobenzene (HCB) | 118–74–1 | 25.0 |
| Hexamethyl phosphoramide | 680–31–9 | 250.0 |
| Hydrazine and hydrazine sulfate | 302–01–2, 10034–93–2 | 250.0 |
| Hydrazobenzene | 122–66–7 | 250.0 |
| Lindane and other hexachlorocyclohexane isomers | 58–89–9 | 25.0 |
| 4,4′–Methylene bis(2–chloroaniline) (MOCA) | 101–14–4 | 250.0 |
| 4,4′–Methylenedianiline (and dihydrochloride) | 101–77–9, 13552–44–8 | 250.0 |
| Methyl iodide | 74–88–4 | 250.0 |
| Nickel compounds other than nickel subsulfide, as Ni | 7440–02–0 | 250.0 |
| 2–Nitropropane | 79–46–9 | 250.0 |
| Polychlorinated biphenyls (PCB) | 1336–36–3 | 0.10 |
| 1,3–Propane sultone | 1120–71–4 | 250.0 |
| β–Propiolactone | 57–57–8 | 250.0 |
| Propylene oxide | 75–56–9 | 250.0 |
| Propylenimine | 75–55–8 | 250.0 |
| 2,3,7,8–Tetrachlorodibenzo–p–dioxin | 1746–01–6 | 0.0001 |
| Thiourea | 62–56–6 | 250.0 |
| o–Toluidine | 95–53–4 | 25.0 |
| Urethane (Ethyl carbamate) | 51–79–6 | 250.0 |
| *Polycyclic Organic Matter (a total of all listed compounds)* | | 250.0 |
| Benz(a)anthracene | 56–55–3 | |
| Benzo(b)fluoranthene | 205–99–2 | |
| Benzo(a)pyrene | 50–32–8 | |
| Dibenz(a,h)acridine | 226–36–8 | |
| Dibenz(a,j)acridine | 224–42–0 | |
| Dibenz(a,h)anthracene | 53–70–3 | |
| 7H–Dibenzo(c,g)carbazole | 194–59–2 | |
| Dibenzo(a,h)pyrene | 189–64–0 | |
| Dibenzo(a,i)pyrene | 189–55–9 | |
| Indeno(1,2,3–cd)pyrene | 193–39–5 | |
| *Pharmaceuticals (a total of all listed compounds)* | | 250.0 |

**Table 3 (continued)**
**Hazardous Air Contaminants Without Acceptable Ambient Concentrations Requiring Application of A. Lowest Achievable Emission Rate for Sources of Group A Hazardous Air Contaminants, B. Best Available Control Technology for Sources of Group B Hazardous Air Contaminants[1]**

| Contaminant | CAS Number | lbs/year[2] |
|---|---|---|
| Adriamycin | 23214–92–8 | |
| Bischloroethyl nitrosourea | 154–93–8 | |
| 1–(2–Chloroethyl)–3–cyclohexyl–1–nitrosourea (CCNU) | 13010–47–4 | |
| Dacarbazine | 4342–03–4 | |
| Iron dextran complex | 9004–66–4 | |
| Mestranol | 72–33–3 | |
| Nitrogen mustard (2,2'–Dichloro–N–methyl–diethylamine) | 51–75–2 | |
| Oestradiol | 50–28–2 | |
| *Pharmaceuticals (a total of all listed compounds)* (Continued) | | |
| Oxymetholone | 434–07–1 | |
| Phenazopyridine and phenazopyridine hydrochloride | 94–78–0, 136–40–3 | |
| Phenytoin and sodium salt of phenytoin | 57–41–0, 630–93–3 | |
| Procarbazine and procarbazine hydrochloride | 671–16–9, 366–70–1 | |
| Propylthiouracil | 51–52–5 | |
| Reserpine | 50–55–5 | |
| Streptozotocin | 18883–66–4 | |
| Tris(1–aziridinyl)phosphine sulfide | 52–24–4 | |
| *Nitrosoamines (a total of all listed compounds)* | | 250.0 |
| N–Nitrosodi–n–butylamine | 924–16–3 | |
| N–Nitrosodiethanolamine | 1116–54–7 | |
| N–Nitrosodiethylamine | 55–18–5 | |
| N–Nitrosodimethylamine | 62–75–9 | |
| p–Nitrosodiphenylamine | 156–10–5 | |
| N–Nitrosodi–n–propylamine | 621–64–7 | |
| N–Nitroso–N–ethylurea | 759–73–9 | |
| N–Nitroso–N–methylurea | 684–93–5 | |
| N–Nitrosomethylvinylamine | 4549–40–0 | |
| N–Nitrosomorpholine | 59–89–2 | |
| N′–Nitrosonornicotine | 16543–55–8 | |
| N–Nitrosopiperidine | 100–75–4 | |
| N–Nitrosopyrrolidine | 930–55–2 | |
| N–Nitrososarcosine | 13256–22–9 | |

[1]List of Group A and Group B substances taken from Fourth Annual Report on Carcinogens—1985 National Toxicology Program (NTP), U.S. Public Health Service, pursuant to Public Law 95–622.
[2]U.S. Environmental Protection Agency Carcinogen Assessment Group (CAG) reported unit risk values as of January 1, 1988 were used in assigning the de minimis emission limit.
**For existing sources, see s. NR 445.05 (7).

**Table 4**
**Hazardous Air Contaminants with Acceptable Ambient Concentrations**
**(For existing sources, compliance with the concentrations in this table shall be achieved by April 1, 1993)**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| ACIDS | | | |
| Hydrogen bromide | 10035–10–6 | 0.506400(c) | 1.944(c) |
| Oxalic acid | 144–62–7 | 0.084000 | 0.336000 |
| INDUSTRIAL GASES | | | |
| Diborane | 19287–45–7 | 0.008400 | 0.033600 |
| Hydrogen sulfide | 7783–06–4 | 1.166400 | 4.896000 |

**Table 4 (continued)**
**Hazardous Air Contaminants with Acceptable Ambient Concentrations**
**(For existing sources, compliance with the concentrations in this table shall be achieved by April 1, 1993)**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| CHEMICAL INTERMEDIATES | | | |
| Acetic anhydride | 108–24–7 | 1.012800(c) | 3.936(c) |
| o–sec–Butylphenol | 89–72–5 | 2.498400 | 10.488000 |
| p–tert–Butyltoluene | 98–51–1 | 4.996800 | 20.976000 |
| Calcium cyanamide | 156–62–7 | 0.040800 | 0.170400 |
| Cyanamide | 420–04–2 | 0.165600 | 0.672000 |
| Diazomethane | 334–88–3 | 0.033600 | 0.139200 |
| 1,3–Dichloro–5,5–dimethyl hydantoin | 118–52–5 | 0.016560 | 0.067200 |
| 2–Diethylaminoethanol | 100–37–8 | 4.164000 | 17.472 |
| Dinitrotoluene | 25321–14–6 | 0.124800 | 0.504000 |
| Ethylamine (Ethanamine) | 75–04–7 | 1.500000 | 6.288000 |
| Ethylenimine | 151–56–4 | 0.084000 | 0.336000 |
| Glycidol | 556–52–5 | 6.247200 | 26.232000 |
| Hydrogen peroxide | 7722–84–1 | 0.124800 | 0.504000 |
| Hydroquinone | 123–31–9 | 0.165600 | 0.672000 |
| N–Isopropylaniline | 768–52–5 | 0.832800 | 3.480000 |
| Ketene | 463–51–4 | 0.074400 | 0.312000 |
| Maleic anhydride | 108–31–6 | 0.084000 | 0.336000 |
| 4–Methoxyphenol | 150–76–5 | 0.417600 | 1.752000 |
| Methyl 2–cyanoacrylate | 137–05–3 | 0.667200 | 2.784000 |
| p–Nitrochlorobenzene | 100–00–5 | 0.053240 | 0.220200 |
| Nitroethane | 79–24–3 | 25.816800 | 108.408 |
| Nitromethane | 75–52–5 | 20.820000 | 87.432 |
| Nitrotoluene | 88–72–2, 99–08–1, 99–99–0 | 0.916800 | 3.840000 |
| p–Phenylenediamine | 106–50–3 | 0.008400 | 0.033600 |
| Phenyl ether vapor | 101–84–8 | 0.583200 | 2.448000 |
| Phenyl glycidyl ether (PGE) | 122–60–1 | 0.499200 | 2.088000 |
| Phenyl mercaptan | 108–98–5 | 0.165600 | 0.672000 |
| Phosgene | 75–44–5 | 0.033600 | 0.139200 |
| Phosphorus (yellow) | 7723–14–0 | 0.008400 | 0.033600 |
| Phosphorus oxychloride | 10025–87–3 | 0.050400 | 0.211200 |
| Phosphorus pentasulfide | 1314–80–3 | 0.084000 | 0.336000 |
| Phosphorus trichloride | 7719–12–2 | 0.124800 | 0.504000 |
| Phthalic anhydride | 85–44–9 | 0.499200 | 2.088000 |
| Potassium hydroxide | 1310–58–3 | 0.100800(c) | 0.384(c) |
| Resorcinol | 108–46–3 | 3.748800 | 15.744000 |
| Sulfur tetrafluoride | 7783–60–0 | 0.020160(c) | 0.0768(c) |
| m–Toluidine | 108–44–1 | 0.748800 | 3.144000 |
| Trimellitic anhydride | 552–30–7 | 0.003360 | 0.013920 |
| Trimethyl benzene | 25551–13–7 | 10.411200 | 43.704000 |
| Vinyl acetate | 108–05–4 | 2.498400 | 10.488000 |
| Vinylidene chloride | 75–35–4 | 1.665600 | 6.984000 |
| FUMIGANTS | | | |
| Methyl formate | 107–31–3 | 20.820000 | 87.432000 |
| Perchloromethyl mercaptan | 594–42–3 | 0.067200 | 0.264000 |
| PLASTICIZING COMPOUNDS | | | |
| Camphor (synthetic) | 76–22–2 | 0.998400 | 4.176000 |
| Hydrogenated terphenyls | 61788–32–7 | 0.417600 | 1.752000 |
| Methylene bis(4–cyclohexylisocyanate) | 5124–30–1 | 0.00442 | 0.01846 |
| Methyl ethyl ketone peroxide | 1338–23–4 | 0.076800(c) | 0.288(c) |

**Table 4 (continued)**
**Hazardous Air Contaminants with Acceptable Ambient Concentrations**
**(For existing sources, compliance with the concentrations in this table shall be achieved by April 1, 1993)**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| Tributyl phosphate | 126–73–8 | 0.208800 | 0.864000 |
| Triorthocresyl phosphate | 78–30–8 | 0.008400 | 0.033600 |
| Triphenyl phosphate | 115–86–6 | 0.249600 | 1.032000 |
| METALS AND COMPOUNDS | | | |
| Aluminum pyro powders | 7429–90–5 | 0.417600 | 1.752000 |
| Aluminum soluble salts | 7429–90–5 | 0.165600 | 0.672000 |
| Borates, tetra, sodium salts, decahydrate | 1303–96–4 | 0.417600 | 1.752000 |
| Borates, tetra, sodium salts, pentahydrate | 1303–96–4 | 0.084000 | 0.336000 |
| Chromium (metal) | 7440–47–3 | 0.040800 | 0.170400 |
| Chromium (II) compounds, as Cr | 7440–47–3 | 0.040800 | 0.170400 |
| Cobalt, as Co, metal, dust | 7440–48–4 | 0.004080 | 0.017040 |
| Copper dust & mists, as Cu | 7440–50–8 | 0.084000 | 0.336000 |
| Indium | 7440–74–6 | 0.008400 | 0.033600 |
| Molybdenum, as Mo, soluble compounds | 7439–98–7 | 0.417600 | 1.752000 |
| Platinum (metal) | 7440–06–4 | 0.084000 | 0.336000 |
| Platinum, soluble salts, as Pt | 7440–06–4 | 0.000166 | 0.000672 |
| Rhodium (metal) | 7440–16–6 | 0.084000 | 0.336000 |
| Rhodium, soluble compounds, as Rh | 7440–16–6 | 0.000840 | 0.003360 |
| Tellurium and compounds, as Te | 13494–80–9 | 0.008400 | 0.033600 |
| Thallium, soluble compounds, as Tl | 7440–28–0 | 0.008400 | 0.033600 |
| Tin (metal) | 7440–31–5 | 0.165600 | 0.672000 |
| Tin oxide & inorganic compounds, except $SnH_4$, as Sn | 7440–31–5 | 0.165600 | 0.672000 |
| Tungsten—as W, insoluble compounds | 7440–33–7 | 0.417600 | 1.752000 |
| Tungsten—as W, soluble compounds | 7440–33–7 | 0.084000 | 0.336000 |
| Uranium (natural), soluble & insoluble compounds,as U | 7440–61–1 | 0.016560 | 0.067200 |
| Zirconium and compounds,as Zr | 7440–67–7 | 0.417600 | 1.752000 |
| MONOMERS | | | |
| Caprolactam vapor | 105–60–2 | 1.665600 | 6.984000 |
| Carbon tetrabromide | 558–13–4 | 0.117600 | 0.480000 |
| Carbonyl fluoride | 353–50–4 | 0.417600 | 1.752000 |
| β–Chloroprene | 126–99–8 | 3.748800 | 15.744000 |
| Cyclopentadiene | 542–92–7 | 16.656000 | 69.936000 |
| 2–N–Dibutylaminoethanol | 102–81–8 | 1.166400 | 4.896000 |
| Divinyl benzene | 1321–74–0 | 4.164000 | 17.472000 |
| 2–Hydroxypropyl acrylate | 999–61–1 | 0.249600 | 1.032000 |
| Isopropylamine | 75–31–0 | 0.998400 | 4.176000 |
| Methacrylic acid | 79–41–4 | 5.829600 | 24.480000 |
| o–Methylcyclohexanone | 583–60–8 | 19.154400 | 80.448000 |
| α–Methyl styrene | 98–83–9 | 19.987200 | 83.928000 |
| Sulfur monochloride | 10025–67–9 | 0.304800(c) | 1.176(c) |
| Xylidine | 1300–73–8 | 0.208200 | 0.870000 |
| SOLVENTS | | | |
| 2–Butoxyethanol (EGBE) | 111–76–2 | 9.993600 | 41.952000 |
| n–Butyl lactate | 138–22–7 | 2.083200 | 8.736000 |
| o–Chlorotoluene | 95–49–8 | 20.820000 | 87.432000 |
| Cumene | 98–82–8 | 20.404800 | 85.680000 |
| Cyclohexanol | 108–93–0 | 16.656000 | 69.936000 |
| Diacetone alcohol | 123–42–2 | 19.987200 | 83.928000 |

**Table 4 (continued)**
**Hazardous Air Contaminants with Acceptable Ambient Concentrations**
**(For existing sources, compliance with the concentrations in this table shall be achieved by April 1, 1993)**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| Diisobutyl ketone | 108–83–8 | 7.245000 | 30.42900 |
| Dimethyl acetamide | 127–19–5 | 2.916000 | 12.240000 |
| N,N–Dimethylformamide | 68–12–2 | 2.498400 | 10.488000 |
| 2–Ethoxyethyl acetate (EGEEA) | 111–15–9 | 2.248800 | 9.432000 |
| Ethyl amyl ketone | 541–85–5 | 10.826400 | 45.456000 |
| Ethyl butyl ketone | 106–35–4 | 19.154400 | 80.448000 |
| Furfuryl alcohol | 98–00–0 | 3.331200 | 13.968000 |
| sec–Hexyl acetate | 108–84–9 | 24.984000 | 104.928 |
| Hexylene glycol | 107–41–5 | 6.331200(c) | 24.552(c) |
| Isooctyl alcohol | 26952–21–6 | 22.485600 | 94.416000 |
| Isopropoxyethanol | 109–59–1 | 8.745600 | 36.720000 |
| Isopropyl glycidyl ether | 4016–14–2 | 19.987200 | 83.928000 |
| Mesityl oxide | 141–79–7 | 4.996800 | 20.976000 |
| 2–Methoxyethyl acetate (EGMEA) | 110–49–6 | 1.999200 | 8.376000 |
| Methyl n–amyl ketone | 110–43–0 | 19.572000 | 82.200000 |
| Methylcyclohexanol | 25639–42–3 | 19.572000 | 82.200000 |
| Methyl isoamyl ketone | 110–12–3 | 19.987200 | 83.928000 |
| Methyl isobutyl carbinol | 108–11–2 | 8.328000 | 34.968000 |
| Propylene dichloride | 78–87–5 | 29.148000 | 122.4 |
| Stoddard solvent (Mineral spirits) | 8052–41–3 | 43.723200 | 183.624 |
| 1,2,3–Trichloropropane | 96–18–4 | 24.984000 | 104.928 |
| Vinyl toluene | 25013–15–4 | 19.987200 | 83.928000 |
| m–Xylene–α,α'–diamine | 1477–55–0 | 0.005040(c) | 0.01944(c) |
| CHEMICAL WARFARE AGENTS | | | |
| Cyanogen chloride | 506–77–4 | 0.031200(c) | 0.12(c) |
| FLAVORS AND FRAGRANCES | | | |
| 1,1–Dichloro–1–nitroethane | 594–72–9 | 0.832800 | 3.480000 |
| n–Valeraldehyde | 110–62–3 | 14.575200 | 61.200000 |
| CATALYSTS AND REAGENTS | | | |
| Benzoyl peroxide | 94–36–0 | 0.417600 | 1.752000 |
| Boron tribromide | 10294–33–4 | 0.506400(c) | 1.944(c) |
| Boron trifluoride | 7637–07–2 | 0.151200(c) | 0.576(c) |
| Bromine pentafluoride | 7789–30–2 | 0.057600 | 0.240000 |
| Catechol (Pyrocatechol) | 120–80–9 | 1.665600 | 6.984000 |
| Cesium hydroxide | 21351–79–1 | 0.165600 | 0.672000 |
| Diisopropylamine | 108–18–9 | 1.665600 | 6.984000 |
| N–Ethylmorpholine | 100–74–3 | 1.915200 | 8.040000 |
| Phosphorus pentachloride | 10026–13–8 | 0.084000 | 0.336000 |
| Thionyl chloride | 7719–09–7 | 0.254400(c) | 0.984(c) |
| GENERAL USE CHEMICALS | | | |
| n–Butyl glycidyl ether (BGE) | 2426–08–6 | 11.244000 | 47.208000 |
| Calcium hydroxide | 1305–62–0 | 0.417600 | 1.752000 |
| Carbon black | 1333–86–4 | 0.290400 | 1.200000 |
| Chlorinated diphenyl oxide | 55720–99–5 | 0.040800 | 0.170400 |
| Chlorine trifluoride | 7790–91–2 | 0.020160(c) | 0.0768(c) |
| o–Chlorostyrene | 2039–87–4 | 23.736000 | 99.672000 |
| Diethylene triamine | 111–40–0 | 0.333600 | 1.392000 |
| Ethanolamine | 141–43–5 | 0.667200 | 2.784000 |
| Ethylidene norbornene | 16219–75–3 | 1.267200(c) | 4.896(c) |

**Table 4 (continued)**
**Hazardous Air Contaminants with Acceptable Ambient Concentrations**
**(For existing sources, compliance with the concentrations in this table shall be achieved by April 1, 1993)**

| Contaminant | CAS Number | Emission Rate in Pounds/Hour* with emission points < 25 ft. | Emission Rate in Pounds/Hour* with emission points ≥ 25 ft. |
|---|---|---|---|
| Ethyl silicate | 78–10–4 | 7.080000 | 29.736000 |
| Germanium tetrahydride | 7782–65–2 | 0.050400 | 0.211200 |
| Hexachloronaphthalene | 1335–87–1 | 0.016560 | 0.067200 |
| Iodine | 7553–56–2 | 0.050400(c) | 0.1944(c) |
| Iron salts, soluble, as Fe | | 0.084000 | 0.336000 |
| Morpholine | 110–91–8 | 5.829600 | 24.480000 |
| Octachloronaphthalene | 2234–13–1 | 0.008400 | 0.033600 |
| Pentachloronaphthalene | 1321–64–8 | 0.040800 | 0.170400 |
| Silicon tetrahydride (Silane) | 7803–62–5 | 0.583200 | 2.448000 |
| Sodium bisulfite | 7631–90–5 | 0.417600 | 1.752000 |
| Sodium hydroxide | 1310–73–2 | 0.100800(c) | 0.384(c) |
| Terphenyls | 26140–60–3 | 0.254400(c) | 0.984(c) |
| Tetrachloronaphthalene | 1335–88–2 | 0.165600 | 0.672000 |
| Trichloronaphthalene | 1321–65–9 | 0.417600 | 1.752000 |
| SUPPLEMENTAL LIST OF CHEMICALS | | | |
| Calcium oxide | 1305–78–8 | 0.165600 | 0.672 |
| Cyanogen | 460–19–5 | 1.665600 | 6.984000 |
| Dicyclopentadiene | 77–73–6 | 2.498400 | 10.488000 |

*The notation (c) indicates those contaminants with ceiling limits which are emission rates averaged over a one–hour period. Those contaminants without such a notation are emission rates per hour averaged over a 24 hour period.

**Table 5**
**Hazardous Air Contaminants With Acceptable Ambient Concentrations Based on the U.S. Environmental Protection Agency's Reference Concentration Methodology**

| Contaminant | CAS Number | Emission Rate in lbs/yr with emission points < 25 ft. | Emission Rate in lbs/yr with emission points ≥ 25 ft. | Reference Concentration (micrograms per cubic meter) | Total Uncertainty Factor | Date of last revision to Wis. Adm. Code |
|---|---|---|---|---|---|---|
| Ammonia | 7664–41–7 | 21,039 | 91,264 | 100 | 30 | January 1, 1995 |
| Bromomethane | 74–83–9 | 631,174 | 2,737,907 | 3000 | 100 | January 1, 1995 |
| 1,2–Dichloropropane (PDC) | 78–87–5 | 842 | 3651 | 4 | 300 | January 1,1995 |
| 1,3–Dichloropropene | 542–75–6 | 4208 | 18,253 | 20 | 30 | January 1,1995 |
| Diesel engine emissions | | 1052[1] | 4563[1] | 5 | 30 | January 1, 1995 |
| N,N–Dimethylformamide | 68–12–2 | 6312 | 27,380 | 30 | 300 | January 1, 1995 |
| Epichlorohydrin | 106–89–8 | 210 | 913 | 1 | 300 | January 1, 1995 |
| Ethyl benzene | 100–41–4 | 210,391 | 912,636 | 1000 | 300 | January1, 1995 |
| Ethyl chloride | 75–00–3 | 2,103,914 | 9,126,358 | 10,000 | 300 | January 1,1995 |
| n–Hexane | 110–54–3 | 42,078 | 182,527 | 200 | 300 | January 1, 1995 |
| Mercury (inorganic) | 7439–97–6 | 63 | 274 | 0.3 | 30 | January 1,1995 |
| Methyl tert–butyl ether | 1634–04–4 | 631,174 | 2,737,907 | 3000 | 100 | January 1, 1995 |
| Propylene glycol monomethyl ether | 107–98–2 | 420,783 | 1,825,272 | 2000 | 300 | January 1, 1995 |
| Propylene oxide | 75–56–9 | 6312 | 27,380 | 30 | 100 | January 1,1995 |
| Styrene | 100–42–5 | 210,391 | 912,636 | 1000 | 30 | January 1, 1995 |
| Toluene | 108–88–3 | 84,157 | 365,054 | 400 | 300 | January 1, 1995 |
| Vinyl acetate | 108–05–4 | 42,078 | 182,527 | 200 | 30 | January 1,1995 |

[1]As measured by federal test procedures for particulate diesel engine emissions.

**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.

**NR 445.05 Emission limits for sources constructed or last modified on or before October 1, 1988.** The following requirements apply to sources constructed or last modified on or before October 1, 1988, or January 1, 1995 for sources subject to sub. (4r), prior to the applicable compliance dates for subch. III requirements specified in s. NR 445.08:

**(1)** TABLE 1 SUBSTANCES. Except as provided in par. (c), no owner or operator of a stationary source on which construction or modification last commenced on or before October 1, 1988 may cause, allow or permit emissions from the source of a hazardous air contaminant listed in Table 1 of s. NR 445.04 in such quantity or duration as to cause ambient air concentrations off the source's property which exceed the limits in par. (a) or (b).

(a) *24–hour.* One of the following:

1. Two and four tenths percent of the threshold limit value—time weighted average established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1987–1988, incorporated by reference in s. NR 484.11 (2) (a), for any consecutive 24–hour averaging period.

2. Ten percent of the threshold limit value—time weighted average established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values and Biological Exposure Indices for 1987–1988, incorporated by reference in s. NR 484.11 (2) (a), for any 24–hour averaging period if the hazardous air contaminant is emitted no more than 5 days in any consecutive 30–day period and if the department determines after complying with s. NR 445.15 (1) that the limits will not pose a threat to public health or welfare.

(b) *One–hour.* Ten percent of the threshold limit value—ceiling established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1987–1988, incorporated by reference in s. NR 484.11 (2) (a), for any one–hour averaging period.

(c) *Exemptions.* The following emissions are exempt from the emission limits of Table 1 substances:

1. Emissions from the combustion of group 1 virgin fossil fuels.

2. Emissions from the combustion of group 2 virgin fossil fuels vented from a stack which has downwash minimization stack height or a height approved by the department.

3. Emissions from a laboratory.

4. Indoor fugitive emissions.

**(2)** TABLE 2 SUBSTANCES. Except as provided in par. (c), no owner or operator of a stationary source on which construction or modification last commenced on or before October 1, 1988 and which manufactures or processes pesticides, rodenticides, insecticides, herbicides or fungicides may cause, allow or permit emissions from the source of a hazardous air contaminant listed in Table 2 of s. NR 445.04 in such quantity or duration as to cause ambient air concentrations which exceed the limits in par. (a) or (b).

(a) *24–hour.* Two and four–tenths percent of the threshold limit value—time weighted average established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1987–1988, incorporated by reference in s. NR 484.11 (2) (a), for any 24–hour averaging period.

(b) *One–hour.* Ten percent of the threshold limit value—ceiling established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1987–1988, incorporated by reference in s. NR 484.11 (2) (a), for any one–hour averaging period.

(c) *Exemptions.* The following emissions are exempt from emission limits for Table 2 substances:

1. Emissions from a laboratory.

2. Indoor fugitive emissions.

**(3)** TABLE 3 SUBSTANCES. (a) *Group A.* Except as provided in par. (c), the owner or operator of any facility on which construction or modification last commenced on or before October 1, 1988 and which emits any hazardous air contaminant listed in group A of Table 3 of s. NR 445.04 in amounts greater than those listed in group A of this table shall control emissions of those hazardous air contaminants to a level which is the lowest achievable emission rate. The lowest achievable emission rate shall be met by the emissions unit at the facility which emits the greatest amount of the hazardous air contaminant. If application of the lowest achievable emission rate to this emissions unit does not reduce facility emissions of the hazardous air contaminant to a level less than the rate listed in group A of Table 3 for the hazardous air contaminant, then the lowest achievable emission rate shall be met by other emissions units at the facility which emit decreasingly smaller amounts of the hazardous air contaminant until emissions from the facility are below the emission rate listed in group A of Table 3 or until all emissions units at the facility which emit at least 10% of the rate listed in group A of Table 3 for the hazardous air contaminant have met the lowest achievable emissions rate. If application of lowest achievable emissions rate to these emissions units does not result in the control of at least 50% of the potential emissions of the hazardous air contaminant from the facility, then the department may require application of lowest achievable emission rate on a reasonable array of smaller emissions units which emit the hazardous air contaminant.

(b) *Group B.* Except as provided in par. (c), the owner or operator of any facility on which construction or modification last commenced on or before October 1, 1988 and which emits any hazardous air contaminant listed in group B of Table 3 of s. NR 445.04 in amounts greater than those listed in group B of Table 3 of s. NR 445.04 shall control emissions of those hazardous air contaminants to a level which is the best available control technology. The best available control technology shall be met by the emissions unit at the facility which emits the greatest amount of the hazardous air contaminant. If application of the best available control technology to this emissions unit does not reduce facility emissions of the hazardous air contaminant to a level less than the rate listed in group B of Table 3 of s. NR 445.04 for the hazardous air contaminant, then best available control technology shall be met by other emissions units at the facility which emit decreasingly smaller amounts of the hazardous air contaminant until emissions from the facility are below the emission rate listed in group B of Table 3 of s. NR 445.04 or until all emissions units at the facility which emit at least 10% of the rate listed in group B of Table 3 of s. NR 445.04 for the hazardous air contaminant have met best available control technology. If application of best available control technology to these emissions units does not result in the control of at least 50% of the potential emissions of the hazardous air contaminant from the facility, then the department may require application of best available control technology on a reasonable array of smaller emissions units which emit the hazardous air contaminant.

(c) *Exemptions.* The following emissions are exempt from the emission limits for Table 3 of s. NR 445.04 substances:

1. Emissions from the combustion of group 1 virgin fossil fuels.

2. Emissions from the combustion of group 2 virgin fossil fuels vented from a stack which has downwash minimization stack height or a height approved by the department.

3. Emissions from a laboratory.

4. Emissions from any gasoline dispensing facility which meets the requirements of s. NR 420.04 (3) (b) to (i) and which in 1986 dispensed less than 2 million gallons of gasoline a year or can otherwise demonstrate to the satisfaction of the department that it did not exceed an emission limitation for a hazardous air contaminant contained in Table 3 of s. NR 445.04.

5. Emissions from any gasoline dispensing facility which does not meet the requirements of s. NR 420.04 (3) (b) to (i) and which in 1986 dispensed less than 1.25 million gallons of gasoline a year or can otherwise demonstrate to the satisfaction of the department that it did not exceed an emission limitation for a hazardous air contaminant in Table 3 of s. NR 445.04.

6. Emissions from the combustion of wood by combustion units which operate with good combustion technology. Good combustion technology means that technology which provides for a minimization of emissions of hazardous air contaminants listed on Table 3 of s. NR 445.04. Good combustion technology will be determined on an individual case–by–case basis by the department, taking into account the fuel to be burned, the economic and environmental impacts of the combustion, and other costs related to the source. Good combustion technology may include, but is not limited to, consideration of such factors as temperature, residence time, carbon monoxide emissions, excess oxygen, and turbulence.

7. Indoor emissions which are exhausted to the ambient air through general building ventilation and which have a threshold limit value established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1987–1988, incorporated by reference in s. NR 484.11 (2) (a), and for which the source demonstrates to the department that it is in compliance with applicable occupational safety and health administration requirements.

**(4)** TABLE 4 SUBSTANCES. Except as provided in par. (c), no owner or operator of a stationary source on which construction or modification last commenced on or before October 1, 1988 may cause, allow or permit emissions from the source of a hazardous air contaminant listed in Table 4 of s. NR 445.04 in such quantity or duration as to cause ambient air concentrations which exceed the limits in par. (a) or (b).

(a) *24–hour.* One of the following:

1. Two and four–tenths percent of the threshold limit value—time weighted average established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1990–1991, incorporated by reference in s. NR 484.11 (2) (b), for any consecutive 24–hour averaging period.

2. Ten percent 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 1990–1991, incorporated by reference in s. NR 484.11 (2) (b), for any 24–hour averaging period if the hazardous air contaminant is emitted no more than 5 days in any consecutive 30–day period and if the department determines under s. NR 445.15 (1) that the limits will not pose a threat to public health or welfare.

(b) *One–hour.* Ten percent of the threshold limit value—ceiling established by the American Conference of Governmental Industrial Hygienists in the Threshold Limit Values and Biological Exposure Indices for 1990–1991, incorporated by reference in s. NR 484.11 (2) (b), for any one–hour averaging period.

(c) *Exemptions.* The following emissions are exempt from the emission limits for the hazardous air contaminants listed in Table 4 of s. NR 445.04:

1. Emissions from the combustion of group 1 virgin fossil fuels.

2. Emissions from the combustion of group 2 virgin fossil fuels vented from a stack which has downwash minimization stack height or a height approved by the department.

3. Emissions from a laboratory.

4. Indoor fugitive emissions.

**(4r)** TABLE 5 SUBSTANCES. (a) *Annual limitations.* Except as provided in par. (b), no owner or operator of a stationary source on which construction or modification last commenced on or before January 1, 1995, may cause, allow or permit emissions from the source of a hazardous air contaminant listed in Table 5 of s. NR 445.04 in such quantity or duration as to cause ambient air concentrations off the source's property that exceed the reference concentration shown in Table 5 of s. NR 445.04 on an annual basis.

(b) *Exemptions.* All of the following emissions are exempt from the emission limitations for the hazardous air contaminants listed in Table 5 of s. NR 445.04:

1. Emissions from the combustion of group 1 virgin fossil fuels.

2. Emissions from the combustion of group 2 virgin fossil fuels vented from a stack which has downwash minimization stack height or a height approved by the department.

3. Emissions from a laboratory.

4. Indoor emissions which are exhausted to the ambient air through general building ventilation and which have a threshold limit value established by the American Conference of Governmental Industrial Hygienists, in the Threshold Limit Values and Biological Exposure Indices for 1990–1991, incorporated by reference in s. NR 484.11 (2) (b), and for which the source is in compliance with applicable occupational safety and health administration requirements.

5. Emissions from sources required to meet national emission standards promulgated under 40 CFR part 63 prior to January 1, 1995.

6. Emissions from gasoline dispensing at any source which meets the requirements of s. NR 420.04 (3) (b) to (i) or which dispenses less than one million gallons a year.

(c) *Records.* The owner or operator of a source not subject to sub. (6) shall maintain the following records in writing at the source, as appropriate:

1. The hazardous air contaminants in Table 5 of s. NR 445.04 the source is capable of emitting.

2. The allowable emissions for each hazardous air contaminant identified in subd. 1. for each emissions unit.

3. The methods used to calculate allowable emissions under subd. 2., including:

a. All calculations which show the dimensional units for all values used.

b. Emission factors used and reference to stack tests, mass balance calculations or EPA documents that the emission factor is based on.

4. Information to support exemption claims including fuels used, laboratory status or downwash minimization stack height calculations as appropriate.

**(5)** INCINERATORS. (a) Any owner or operator of a stationary source on which construction or modification last commenced on or before October 1, 1988 and which combusts municipal solid waste as defined in s. NR 500.03 (150) or infectious waste shall comply with subs. (1) and (4), and shall control emissions of hazardous air contaminants listed in Table 3 of s. NR 445.04 to a level which is the lowest achievable emission rate.

(b) Any owner or operator of a stationary source on which construction or modification last commenced on or before January 1, 1995 and which combusts municipal solid waste as defined in s. NR 500.03 (150) or infectious waste shall comply with sub. (4r).

(c) A source which combusts refuse derived fuel in a boiler and obtains less than 50% of its heat input from the refuse derived fuel is not subject to this subsection.

**(6)** COMPLIANCE REQUIREMENTS. Any source whose allowable emissions of any hazardous air contaminant in Table 1, 2, 3, 4 or 5 of s. NR 445.04 are equal to or greater than the emission rate listed in the table for the hazardous air contaminant for the respective stack height and any incinerator subject to sub. (5) shall achieve compliance with the emission limitations of this section according to the compliance schedules in this subsection. Any source whose allowable emissions of diisobutyl ketone, methylene bis(4−cyclohexylisocyanate), p−nitrochlorobenzene or xylidine is equal to or greater than the emission rate as listed in Table 4 for the respective stack height on June 1, 1992 shall achieve compliance with sub. (4) according to the compliance schedule in par. (b) 1m., 2. and 3.

(a) *Compliance schedule for Tables 1, 2 and 3.* 1. Except as provided for in par. (am), the owner or operator of any facility whose actual emissions of volatile organic compounds or particulate matter for calendar year 1986 exceeded 100 tons shall do all of the following:

a. Notify the department's bureau of air management in writing by January 1, 1989 which of the hazardous air contaminants in Tables 1 to 3 of s. NR 445.04 the source is capable of emitting and the allowable emissions of each hazardous air contaminant in the tables by the source.

b. Submit to the department by April 1, 1989 a compliance plan for achieving compliance with subs. (1) to (3).

c. Achieve final compliance with subs. (1) to (3) by April 1, 1990 if compliance consists of measures other than installation of emission control equipment (e.g., material substitution), or by April 1, 1991 if compliance requires installation of emission control equipment.

2. Except as provided for in par. (am), the owner or operator of any facility whose actual emissions for calendar year 1986 of volatile organic compounds and of particulate matter were less than 100 tons for each of the 2 air contaminants, but whose annual allowable emissions of any air contaminant for which an ambient air quality standard has been promulgated under section 109 of the Act (42 USC 7409) exceeds 100 tons, shall do all of the following:

a. Notify the department's bureau of air management in writing by June 1, 1989 which of the hazardous air contaminants in Tables 1 to 3 of s. NR 445.04 the source is capable of emitting and the allowable emissions of each substance in the tables by the source.

b. Submit to the department by October 1, 1989 a compliance plan for achieving compliance with subs. (1) to (3).

c. Achieve final compliance with subs. (1) to (3) by October 1, 1990 if compliance consists of measures other than installation of emission control equipment (e.g., material substitution), or by October 1, 1991 if compliance requires installation of emission control equipment.

3. Except as provided for in par. (am), the owner or operator of any facility whose annual allowable emissions of each air contaminant for which an ambient air quality standard has been promulgated under section 109 of the Act (42 USC 7409) is 100 tons or less shall do all of the following:

a. Notify the department's bureau of air management in writing by December 1, 1989 which of the hazardous air contaminants in Tables 1 to 3 of s. NR 445.04 the source is capable of emitting and the allowable emissions of each substance in the tables by the source.

b. Submit to the department by April 1, 1990 a compliance plan for achieving compliance with subs. (1) to (3).

c. Achieve final compliance with subs. (1) to (3) by April 1, 1991 if compliance consists of measures other than installation of emission control equipment (e.g., material substitution), or by April 1, 1992 if compliance requires installation of emission control equipment.

(am) *Compliance schedule for chromyl chloride, tert−butyl chromate, propylene oxide and anisidine.* The owner or operator of any stationary source which emits chromyl chloride, tert−butyl chromate, propylene oxide or anisidine shall comply with the following schedule for these contaminants:

1. Notify the department's bureau of air management in writing by September 1, 1992 which of the hazardous air contaminants the source is capable of emitting and the allowable emissions of each contaminant by the source.

2. Submit to the department by December 1, 1992 a compliance plan for achieving compliance with sub. (3) for these contaminants.

3. Achieve final compliance with sub. (3) for these contaminants by December 1, 1993 if compliance consists of measures other than installation of emission control equipment (e.g., material substitution), or by December 1, 1994 if compliance requires installation of control equipment.

(b) *Compliance schedule for Table 4.* The owner or operator of any source subject to sub. (4) shall do all of the following:

1. Notify the department's bureau of air management in writing by April 1, 1990 which of the hazardous air contaminants in Table 4 of s. NR 445.04 the source is capable of emitting and the allowable emissions of each hazardous air contaminant in the table by the source.

1m. Notify the department's bureau of air management in writing by January 1, 1992 which of diisobutyl ketone, methylene bis(4−cyclohexylisocyanate), p−nitrochlorobenzene and xylidine the source is capable of emitting and the allowable emissions of each substance by the source.

2. Submit to the department by April 1, 1992 a compliance plan for achieving compliance with sub. (4).

3. Achieve final compliance with sub. (4) by April 1, 1993 if compliance consists of measures other than installation of emission control equipment (e.g., material substitution), or by April 1, 1994 if compliance requires installation of emission control equipment.

(bm) *Compliance schedule for Table 5.* 1. The owner or operator of any facility subject to this subsection for emissions of any hazardous air contaminant in Table 5 of s. NR 445.04 shall:

a. Submit to the department's bureau of air management a plan describing how the facility will achieve compliance with sub. (4r) (a) according to the schedule in subd. 3.

b. Achieve final compliance with sub. (4r) (a) according to the schedule in subd. 4.

2. The compliance plan required under subd. 1. a. shall:

a. For sources required to obtain an operation permit under s. NR 407.04, be submitted 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.

b. For sources exempt from s. NR 407.04 permitting requirements, be submitted on the application forms used for significant permit revisions under s. NR 407.13.

c. Include at a minimum the forms required under subd. 2. a. and b. that provide information on the amount of hazardous air contaminants emitted; the emitting process, control equipment and the exhaust stack; the facility plot plan and proposals for a compliance schedule and methods to demonstrate compliance. The compliance plan shall also include any emission factors used in calculating facility emissions and an explanation of any exemptions claimed.

**Note:** The owner or operator may incorporate by reference forms previously submitted to the department under ch. NR 407.

3. The compliance plan required under subd. 1. a. shall be submitted according to the following schedule:

**Note:** The following references are to 40 CFR part 63 as in effect on July 1, 1994.

a. For a facility which is included in a single category identified in 40 CFR part 63 with a schedule deadline of November 15, 1994, submit the compliance plan for all emissions units at the facility within 12 months after the effective date for a national emission standard applicable to the source under section 112 (d) of the Act (42 USC 7412(d)), but no later than May 15, 1996.

b. For a facility which is included in a single category identified in 40 CFR part 63 with a schedule deadline of November 15, 1997, submit the compliance plan for all emissions units at the facility within 12 months after the effective date for a national emission standard applicable to the source under section 112 (d) of the Act, but no later than May 15, 1999.

c. For a facility which is included in a single category identified in 40 CFR part 63 with a schedule deadline of November 15, 2000, submit the compliance plan for all emissions units at the facility within 12 months after the effective date for a national emission standard applicable to the source under section 112 (d) of the Act, but no later than May 15, 2002.

d. For any facility subject to sub. (4r) (a) not included in a category identified in 40 CFR part 63, submit the compliance plan no later than May 15, 2002.

e. For facilities with emissions units included in more than one category identified in 40 CFR part 63, submit a compliance plan for each hazardous air contaminant within 12 months after the effective date for the last scheduled national emission standard applicable to the affected emissions units under section 112 (d) of the Act, but no later than May 15, 2002. The affected emissions units only include emissions units that are capable of emitting the hazardous air contaminant and those emissions units which, though not capable of emitting the hazardous air contaminant, otherwise have a causal affect on the emissions of the hazardous air contaminant.

4. Final compliance with sub. (4r) (a) shall be achieved according to the following schedule:

a. For a facility which is included in a single category identified in 40 CFR part 63 with a schedule deadline of November 15, 1994, achieve compliance by the final compliance deadline set by a national emission standard applicable to the source under section 112 (d) of the Act (42 USC 7412(d)), but no later than May 15, 1999.

b. For a facility which is included in a single category identified in 40 CFR part 63 with a schedule deadline of November 15, 1997, achieve compliance by the final compliance deadline set by a national emission standard applicable to the source under section 112 (d) of the Act, but no later than May 15, 2002.

c. For a facility which is included in a single category identified in 40 CFR part 63 with a schedule deadline of November 15, 2000, achieve compliance by the final compliance deadline set by a national emission standard applicable to the source under section 112 (d) of the Act, but no later than May 15, 2005.

d. For any facility subject to sub. (4r) (a) not included in a category identified in 40 CFR part 63, achieve compliance no later than May 15, 2005.

e. For facilities with emissions units which are included in more than one category identified in 40 CFR part 63, achieve final compliance with sub. (4r) (a) by the final compliance deadline set by the last scheduled national emission standard applicable to the emissions units under section 112 (d) of the Act, but no later than May 15, 2005. The affected emissions units only include emissions units that are capable of emitting the hazardous air contaminant and those emissions units which, though not capable of emitting the hazardous air contaminant, otherwise have a causal affect on the emissions of the hazardous air contaminant.

(c) *Department review.* The department shall review any compliance plan submitted under par. (a), (am) or (bm) to determine whether the control technology is adequate. Department approval, conditional approval or disapproval of any compliance plan shall be completed within 6 months after the applicable deadline date provided in par. (a) 1. b., 2. b., 3. b., (am) 2. or (bm) 3. If the department does not complete its review and approve, disapprove or conditionally approve a source's compliance plan within 6 months after the applicable deadline date provided in par. (a) 1. b., 2. b., 3. b., (am) 2. or (bm) 3., the source's compliance deadline under par. (a) 1. c., 2. c., 3. c., (am) 3. or (bm) 4. shall be extended by 6 additional months.

(d) *Demonstration of compliance.* For the purpose of demonstrating compliance with this section:

1. The owner or operator of a source 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 Tables 1 to 5 of s. NR 445.04 and the hazardous air contaminant listed in Table 1, 2, 4 or 5 constitutes 10,000 parts per million or more of the material or the hazardous air contaminant listed in Table 3 constitutes 1,000 parts per million or more of the material. If an approved material safety data sheet for a material is not classified as proprietary and does not list a hazardous air contaminant in Tables 1 to 5 at or above the amounts listed in this paragraph, that 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.

2. The owner or operator of a source may rely upon mass balance or other use, consumption and analytical methodologies for calculating potential emissions. However, the department may require that a stack test be conducted to affirm the accuracy of emission estimations.

3. The owner or operator of a source is not required to consider indoor fugitive emissions in calculating emissions of any hazardous air contaminant in Table 1, 2 or 4 of s. NR 445.04.

4. The department shall allow credit for the emission reduction capability of in−place emission control devices.

5. The owner or operator of a source may demonstrate compliance with the emission limitations of sub. (1), (2), (4) or (4r) by demonstrating that the concentration of the hazardous air contaminant in Table 1, 2, 4 or 5 of s. NR 445.04 in the stack is less than the ambient concentration allowed under sub. (1), (2), (4) or (4r).

6. The owner or operator of a source is not required to consider emissions resulting directly from naturally occurring constituents in windblown soil.

7. The owner or operator of a source is not required to consider emissions exempt under s. NR 445.05 (4r) (b) in calculating emissions of any hazardous air contaminant in Table 5 of s. NR 445.04.

(e) *Subsequent requirements.* 1. The owner or operator of a source which has achieved compliance with this section by installing emission control equipment may not be required to install additional control equipment to achieve compliance with this section 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 subdivision, increasing stack height, other dilution measures, or material reformulations may not be construed as installation of emission control equipment. Material reformulation which requires substantial capital expenditures for process equipment which was made with prior department approval and which results in a reduction of emissions of hazardous air contaminants which is sufficient to comply with the limitations of this section, may be construed as installation of emission control equipment under this subdivision.

2. The owner or operator of a source which has achieved compliance with sub. (4r) (a) may not be required to meet additional requirements under this section if the reference concentration, as listed in Table 5 of s. NR 445.04, is amended after the effective date of a national emission standard applicable to the source

which is promulgated under section 112 of the Act (42 USC 7412) for that hazardous air contaminant.

(f) *Compliance extensions.* 1. The department may, at the request of the owner or operator of a source, grant an extension of any compliance deadline in par. (a), (am) or (bm) for a period not to exceed 6 months.

2. The owner or operator of a source which has achieved compliance with the emission limits for the hazardous air contaminants in Tables 1 to 3 of s. NR 445.04 under subs. (1) to (3) by installing emission control equipment, may apply for, and the department may grant, an extension of the schedule for submitting a compliance plan and deadline for achieving compliance with an emission limitation in par. (b) for the earlier of April 1, 1997 or the useful life of the control equipment installed to meet the provisions of subs. (1) to (3), as determined by the department. 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 which requires substantial capital expenditures for process equipment which was made with prior department approval and which results in a reduction of emissions of hazardous air contaminants which is sufficient to comply with the limitations of this section, may be construed as installation of emission control equipment under this subdivision. An extension may be granted under this subdivision if the applicant demonstrates to the satisfaction of the department that compliance with par. (b) would be economically infeasible and the department finds that the residual emissions would not pose a threat to public health and would not cause significant public harm.

3. Notwithstanding the compliance deadlines in pars. (a) 1. c., 2. c., 3. c., (am) 3. and (bm) 4., if the department is required to review a source's compliance plan under par. (c), the source shall achieve final compliance with subs. (1) to (3) and (4r) by one of the following deadlines:

a. Within 12 months after the department completes its review of the source's compliance plan under par. (c), if compliance consists of measures other than installation of emission control equipment.

b. Within 24 months after the department completes its review of the source's compliance plan under par. (c), if compliance requires installation of emission control equipment.

**(8)** CONTINUING REQUIREMENTS FOR SOURCES ISSUED A VARIANCE UNDER THIS SUBSECTION. An owner or operator of a source which has been granted a variance from an emission limitation in sub. (3) (a), (4r) (a) or (5) as it existed prior to July 1, 2004, shall continue to comply with all provisions related to the approval until the time that one of the following are satisfied:

(a) The department modifies, extends or rescinds the variance in accord with the provisions of s. NR 445.12.

(b) The owner or operator demonstrates compliance with all of the applicable requirements in s. NR 445.07 and completes all necessary revisions to a permit in accord with the provisions in chs. NR 406 and 407, as applicable.

**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.

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

**NR 445.06 Hazardous air contaminant review. History:** Renum. from NR 154.19 (2), Register, September, 1986, No. 369, eff. 10–1–86; renum. from NR 445.04 and am. Register, September, 1988, No. 393, eff. 10–1–88; CR: 02–097: (1) and (4) renum. to NR 445.15 (1) and (4), r. (2), (3) and (5), June 2004 No. 582, eff. 7–1–04.

**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 2 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.

**NR 445.07 Hazardous air contaminant limitations. History:** Cr. Register, September, 1988, No. 393, eff. 10–1–88; am. (4), Register, May, 1992, No. 437, eff. 6–1–92; am. (3), Register, December, 1994, No. 468, eff. 1–1–95; am. (4), Register,

December, 1995, No. 480, eff. 1–1–96; CR 02–097: renum. to NR 445.15 (5) Register June 2004 No. 582, eff. 7–1–04.

**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 and family 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) |
| 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 |
| Acetic acid | 64−19−7 | 1.32 | 5.12 | 10.3 | 39.8 | 589 | 24 Hr Avg | N/A |
| Acetic anhydride | 108−24−7 | 1.12 | 4.36 | 8.79 | 33.9 | 501 | 24 Hr Avg | N/A |
| Acetonitrile | 75−05−8 | 3.61 | 14 | 28.3 | 109 | 1,612 | 24 Hr Avg | N/A |
| Acetophenone | 98−86−2 | 2.64 | 10.3 | 20.7 | 79.7 | 1,179 | 24 Hr Avg | N/A |
| Acrolein | 107−02−8 | 0.0171 | 0.0545 | 0.105 | 0.281 | 22.9 | 1 Hr | N/A |
| 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 |
| 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 |
| Acrylonitrile | 107−13−1 | 26.1 | 107 | 256 | 901 | N/A | Annual | BACT |
| Adipic acid | 124−04−9 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Adiponitrile | 111−69−3 | 0.475 | 1.85 | 3.72 | 14.3 | 212 | 24 Hr Avg | N/A |
| Aflatoxins | 1402−68−2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| Allyl alcohol | 107−18−6 | 0.0638 | 0.248 | 0.5 | 1.93 | 28.5 | 24 Hr Avg | N/A |
| Allyl chloride | 107−05−1 | 0.168 | 0.653 | 1.32 | 5.07 | 75.1 | 24 Hr Avg | N/A |
| Allyl glycidyl ether | 106−92−3 | 0.251 | 0.974 | 1.97 | 7.57 | 112 | 24 Hr Avg | N/A |
| Aluminum alkyls and soluble salts, as Al | 7429−90−5 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| Aluminum pyro powders, as Al | 7429−90−5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| o−Aminoazotoluene (2−Aminoazotoluene) | 97−56−3 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| 4−Aminobiphenyl | 92−67−1 | 0.296 | 1.22 | 2.9 | 10.2 | N/A | Annual | LAER |
| 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 |
| Ammonium perfluorooctanoate | 3825−26−1 | 0.000537 | 0.00209 | 0.00421 | 0.0162 | 0.24 | 24 Hr Avg | N/A |
| Aniline | 62−53−3 | 0.409 | 1.59 | 3.21 | 12.4 | 183 | 24 Hr Avg | N/A |
| o−Anisidine and o−anisidine hydrochloride (mixtures and isomers) | 29191−52−4 | 44.4 | 183 | 435 | 1,531 | N/A | Annual | BACT |
| | | 0.0271 | 0.105 | 0.212 | 0.817 | 12.1 | 24 Hr Avg | N/A |
| Antimony and compounds, as Sb | 7440−36−0 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Antimony trioxide | 1309−64−4 | 35.5 | 146 | 348 | 1,225 | 0.2 | Annual | N/A |
| Arsenic, elemental and inorganic compounds, as As | 7440−38−2 | 0.413 | 1.7 | 4.04 | 14.2 | N/A | Annual | LAER |
| 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 |
| Asbestos, all forms | 1332−21−4 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| Aziridine (Ethylenimine) | 151−56−4 | 0.0473 | 0.184 | 0.371 | 1.43 | 21.1 | 24 Hr Avg | N/A |
| Barium, soluble compounds, as Ba | 7440−39−3 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Benz(a)anthracene | 56−55−3 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| Benzene | 71−43−2 | 228 | 936 | 2,228 | 7,854 | N/A | Annual | LAER |
| Benzidine | 92−87−5 | 0.0265 | 0.109 | 0.259 | 0.914 | 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) |
| Benzo(b)fluoranthene | 205–99–2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Benzo(j)fluoranthene | 205–82–3 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Benzo(k)fluoranthene | 207–08–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Benzo(a)pyrene | 50–32–8 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| Benzotrichloride | 98–07–7 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Benzoyl chloride | 98–88–4 | 0.215 | 0.684 | 1.31 | 3.53 | 287 | 1 Hr | N/A |
| Benzoyl peroxide | 94–36–0 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Benzyl acetate | 140–11–4 | 3.3 | 12.8 | 25.9 | 99.6 | 1,474 | 24 Hr Avg | N/A |
| Benzyl chloride | 100–44–7 | 0.278 | 1.08 | 2.18 | 8.4 | 124 | 24 Hr Avg | N/A |
| 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 |
| Biphenyl | 92–52–4 | 0.0678 | 0.263 | 0.531 | 2.05 | 30.3 | 24 Hr Avg | N/A |
| Bis(2–chloroethyl)ether (Dichloroethyl ether) | 111–44–4 | 1.57 | 6.1 | 12.3 | 47.4 | 702 | 24 Hr Avg | N/A |
| Bis(2–dimethylaminoethyl) ether (DMAEE) | 3033–62–3 | 0.0176 | 0.0684 | 0.138 | 0.531 | 7.87 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| Borates, tetra, sodium salts, decahydrate | 1303–96–4 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Borates, tetra, sodium salts, pentahydrate | 1303–96–4 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| Boron tribromide | 10294–33–4 | 0.765 | 2.44 | 4.69 | 12.6 | 1,025 | 1 Hr | N/A |
| Boron trifluoride | 7637–07–2 | 0.207 | 0.66 | 1.27 | 3.4 | 277 | 1 Hr | N/A |
| Bromine | 7726–95–6 | 0.0351 | 0.136 | 0.275 | 1.06 | 15.7 | 24 Hr Avg | N/A |
| Bromine pentafluoride | 7789–30–2 | 0.0384 | 0.149 | 0.301 | 1.16 | 17.2 | 24 Hr Avg | N/A |
| Bromodichloromethane | 75–27–4 | 48 | 197 | 470 | 1,656 | N/A | Annual | BACT |
| Bromodiphenyls (Polybrominated biphenyls; PBBs) | 59536–65–1 | 0.207 | 0.849 | 2.02 | 7.12 | N/A | Annual | BACT |
| Bromoform | 75–25–2 | 0.278 | 1.08 | 2.18 | 8.38 | 124 | 24 Hr Avg | N/A |
| 1,3–Butadiene | 106–99–0 | 6.35 | 26.1 | 62.1 | 219 | N/A | Annual | BACT |
| 2–Butoxyethanol (Ethylene glycol monobutyl ether; EGBE; Butyl Cellosolve) | 111–76–2 | 5.19 | 20.2 | 40.7 | 157 | 2,320 | 24 Hr Avg | N/A |
| n–Butyl acrylate | 141–32–2 | 0.563 | 2.19 | 4.41 | 17 | 252 | 24 Hr Avg | N/A |
| n–Butylamine | 109–73–9 | 1.12 | 3.56 | 6.84 | 18.4 | 1,496 | 1 Hr | N/A |
| n–butyl alcohol (n–Butanol) | 71–36–3 | 11.3 | 36 | 69.3 | 186 | 15,157 | 1 Hr | N/A |
| Butylated hydroxyanisole (BHA) | 25013–16–5 | 31,173 | 128,070 | 304,929 | 1,074,715 | N/A | Annual | BACT |
| Butyl Cellosolve (2–Butoxyethanol; ethylene glycol monobutyl ether; EGBE) | 111–76–2 | 5.19 | 20.2 | 40.7 | 157 | 2,320 | 24 Hr Avg | N/A |
| tert–Butyl chromate, as Cr | 1189–85–1 | 0.00747<br>0.148 | 0.0238<br>0.608 | 0.0457<br>1.45 | 0.123<br>5.1 | 10<br>N/A | 1 Hr<br>Annual | N/A<br>LAER |
| n–Butyl glycidyl ether (BGE) | 2426–08–6 | 7.15 | 27.8 | 56.1 | 216 | 3,195 | 24 Hr Avg | N/A |
| n–Butyl lactate | 138–22–7 | 1.61 | 6.24 | 12.6 | 48.5 | 717 | 24 Hr Avg | N/A |
| o–sec–Butylphenol | 89–72–5 | 1.65 | 6.41 | 12.9 | 49.8 | 737 | 24 Hr Avg | N/A |
| p–tert–Butyltoluene | 98–51–1 | 0.326 | 1.26 | 2.55 | 9.83 | 145 | 24 Hr Avg | N/A |
| C.I. Basic Red 9 monohydrochloride | 569–61–9 | 25 | 103 | 245 | 863 | N/A | Annual | BACT |
| Cadmium and cadmium compounds, as Cd | 7440–43–9 | 0.987 | 4.06 | 9.66 | 34 | N/A | Annual | LAER |
| Calcium cyanamide | 156–62–7 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Calcium hydroxide | 1305–62–0 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Calcium oxide | 1305–78–8 | 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) |
| Camphor (synthetic) | 76–22–2 | 0.669 | 2.6 | 5.24 | 20.2 | 299 | 24 Hr Avg | N/A |
| Caprolactam (aerosol and vapor) | 105–60–2 | 1.24 | 4.83 | 9.74 | 37.5 | 555 | 24 Hr Avg | N/A |
| Carbon black | 1333–86–4 | 0.188 | 0.73 | 1.47 | 5.68 | 84 | 24 Hr Avg | N/A |
| 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 |
| Carbon tetrabromide | 558–13–4 | 0.0729 | 0.283 | 0.571 | 2.2 | 32.6 | 24 Hr Avg | N/A |
| Carbon tetrachloride | 56–23–5 | 118 | 487 | 1,159 | 4,084 | N/A | Annual | BACT |
| Carbonyl fluoride | 353–50–4 | 0.29 | 1.13 | 2.27 | 8.76 | 130 | 24 Hr Avg | N/A |
| Catechol (Pyrocatechol) | 120–80–9 | 1.21 | 4.7 | 9.48 | 36.5 | 540 | 24 Hr Avg | N/A |
| 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 |
| Cellosolve acetate (2–Ethoxyethyl acetate; EGEEA) | 111–15–9 | 1.45 | 5.64 | 11.4 | 43.8 | 649 | 24 Hr Avg | N/A |
| Refractory ceramic fibers (respirable size) | | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Cesium hydroxide | 21351–79–1 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| Chlordecone (Kepone) | 143–50–0 | 0.386 | 1.59 | 3.78 | 13.3 | N/A | Annual | BACT |
| Chlorendic acid | 115–28–6 | 68.3 | 281 | 668 | 2,356 | N/A | Annual | BACT |
| Chlorinated diphenyl oxide | 55720–99–5 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Chlorinated paraffins (C12; 60% chlorine) | 108171–26–2 | 71.1 | 292 | 695 | 2,450 | N/A | Annual | BACT |
| Chlorine | 7782–50–5 | 0.0779 | 0.303 | 0.611 | 2.35 | 34.8 | 24 Hr Avg | N/A |
| Chlorine dioxide | 10049–04–4 | 0.0148 | 0.0576 | 0.116 | 0.447 | 6.62 | 24 Hr Avg | N/A |
| Chlorine trifluoride | 7790–91–2 | 0.0282 | 0.0899 | 0.173 | 0.464 | 37.8 | 1 Hr | N/A |
| 2–Chloroacetophenone | 532–27–4 | 0.017 | 0.066 | 0.133 | 0.513 | 7.59 | 24 Hr Avg | N/A |
| Chlorobenzene (Monochlorobenzene) | 108–90–7 | 2.47 | 9.61 | 19.4 | 74.7 | 1,105 | 24 Hr Avg | N/A |
| o– Chlorobenzylidene malononitrile | 2698–41–1 | 0.0288 | 0.0917 | 0.176 | 0.473 | 38.6 | 1 Hr | N/A |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| Chloromethane (Methyl chloride) | 74–87–3 | 5.55 | 21.5 | 43.5 | 167 | 2,478 | 24 Hr Avg | N/A |
| 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 |
| o–Chlorostyrene | 2039–87–4 | 15.2 | 59.2 | 119 | 460 | 6,802 | 24 Hr Avg | N/A |
| o–Chlorotoluene | 95–49–8 | 13.9 | 54 | 109 | 420 | 6,213 | 24 Hr Avg | N/A |
| Chromium (metal) and compounds other than Chromium (VI) | 7440–47–3 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 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) |
| 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 |
| Chromium (VI): compounds and particulates | 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 |
| Chromyl chloride, as Cr | 14977–61–8 | 0.148<br>0.00851 | 0.608<br>0.0331 | 1.45<br>0.0667 | 5.1<br>0.257 | N/A<br>3.8 | Annual<br>24 Hr Avg | LAER<br>N/A |
| 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 |
| Coke oven emissions | | 2.87 | 11.8 | 28 | 98.8 | N/A | Annual | LAER |
| 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 |
| Copper and compounds, fume, as Cu | 7440–50–8 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| p–Cresidine | 120–71–8 | 41.3 | 170 | 404 | 1,425 | N/A | Annual | BACT |
| Cresol (mixtures and isomers) | 1319–77–3 | 1.19 | 4.62 | 9.31 | 35.9 | 531 | 24 Hr Avg | N/A |
| Crotonaldehyde | 4170–30–3 | 0.0642 | 0.205 | 0.393 | 1.06 | 86 | 1 Hr | N/A |
| Cumene (Isopropyl benzene) | 98–82–8 | 13.2 | 51.3 | 103 | 399 | 5,899 | 24 Hr Avg | N/A |
| Cyanamide | 420–04–2 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| Cyanides, (inorganics), as CN | 143–33–9 | 0.373 | 1.19 | 2.29 | 6.13 | 500 | 1 Hr | N/A |
| Cyanogen | 460–19–5 | 1.14 | 4.44 | 8.96 | 34.5 | 511 | 24 Hr Avg | N/A |
| Cyanogen chloride | 506–77–4 | 0.0563 | 0.179 | 0.345 | 0.926 | 75.4 | 1 Hr | N/A |
| Cyclohexanol | 108–93–0 | 11 | 42.7 | 86.2 | 332 | 4,916 | 24 Hr Avg | N/A |
| Cyclohexanone | 108–94–1 | 5.17 | 20.1 | 40.5 | 156 | 2,311 | 24 Hr Avg | N/A |
| Cyclohexylamine | 108–91–8 | 2.18 | 8.46 | 17.1 | 65.8 | 973 | 24 Hr Avg | N/A |
| Cyclonite | 121–82–4 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Cyclopentadiene | 542–92–7 | 10.9 | 42.3 | 85.4 | 329 | 4,866 | 24 Hr Avg | N/A |
| Danthron (1,8–Dihydroxyanthroquinone) | 117–10–2 | 80.8 | 332 | 790 | 2,784 | N/A | Annual | BACT |
| DBCP (1,2–Dibromo–3–chloropropane) | 96–12–8 | 0.935 | 3.84 | 9.15 | 32.2 | N/A | Annual | BACT |
| 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 |
| Diacetone alcohol | 123–42–2 | 12.8 | 49.6 | 100 | 385 | 5,701 | 24 Hr Avg | N/A |
| 2,4–Diaminoanisole sulfate | 39156–41–7 | 480 | 1,973 | 4,698 | 16,556 | N/A | Annual | BACT |
| 2,4–Diaminotoluene (Toluene–2,4–diamine) | 95–80–7 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| Diazomethane | 334–88–3 | 0.0185 | 0.0718 | 0.145 | 0.558 | 8.25 | 24 Hr Avg | N/A |
| Dibenz(a,h)acridine | 226–36–8 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| Dibenz(a,j)acridine | 224–42–0 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| Dibenz(a,h)anthracene | 53–70–3 | 1.48 | 6.08 | 14.5 | 51 | N/A | Annual | BACT |
| 7H–Dibenzo(c,g)carbazole | 194–59–2 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| Dibenzo(a,e)pyrene | 192–65–4 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| Dibenzo(a,h)pyrene | 189–64–0 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| Dibenzo(a,i)pyrene | 189–55–9 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| Dibenzo(a,l)pyrene | 191–30–0 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| Diborane | 19287–45–7 | 0.00608 | 0.0236 | 0.0477 | 0.184 | 2.72 | 24 Hr Avg | N/A |
| 1,2–Dibromo–3–chloropropane (DBCP) | 96–12–8 | 0.935 | 3.84 | 9.15 | 32.2 | N/A | Annual | BACT |
| 1,2–Dibromoethane (Ethylene dibromide; EDB) | 106–93–4 | 8.08 | 33.2 | 79 | 278 | N/A | Annual | BACT |
| 2–N–Dibutylaminoethanol | 102–81–8 | 0.19 | 0.74 | 1.49 | 5.75 | 85.1 | 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) |
| Dibutylphenyl phosphate | 2528–36–1 | 0.189 | 0.733 | 1.48 | 5.7 | 84.3 | 24 Hr Avg | N/A |
| Dibutyl phthalate (Di–n–butyl phthalate) | 84–74–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| o–Dichlorobenzene (1,2–Dichlorobenzene) | 95–50–1 | 8.07 | 31.4 | 63.3 | 244 | 3,608 | 24 Hr Avg | N/A |
| 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 |
| | | 3.23 | 12.5 | 25.3 | 97.5 | 1,443 | 24 Hr Avg | N/A |
| 3,3'–Dichlorobenzidine | 91–94–1 | 5.23 | 21.5 | 51.1 | 180 | N/A | Annual | BACT |
| 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 |
| Dichlorodiphenyltrichloroethane (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 |
| 1,1–Dichloroethane (Ethylidene dichloride) | 75–34–3 | 21.7 | 84.5 | 170 | 656 | 9,715 | 24 Hr Avg | N/A |
| 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 |
| Dichloroethyl ether (Bis(2–chloroethyl)ether) | 111–44–4 | 1.57 | 6.1 | 12.3 | 47.4 | 702 | 24 Hr Avg | N/A |
| 1,1–Dichloroethylene (Vinylidene chloride) | 75–35–4 | 1.06 | 4.14 | 8.35 | 32.2 | 476 | 24 Hr Avg | N/A |
| 1,2–Dichloroethylene | 540–59–0 | 42.6 | 166 | 334 | 1,286 | 19,033 | 24 Hr Avg | N/A |
| 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 |
| 1,1–Dichloro–1–nitroethane | 594–72–9 | 0.633 | 2.46 | 4.96 | 19.1 | 283 | 24 Hr Avg | N/A |
| 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 |
| Dicyclopentadiene | 77–73–6 | 1.45 | 5.64 | 11.4 | 43.8 | 649 | 24 Hr Avg | N/A |
| Diethanolamine | 111–42–2 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| Diethylamine | 109–89–7 | 0.803 | 3.12 | 6.3 | 24.3 | 359 | 24 Hr Avg | N/A |
| 2–Diethylaminoethanol | 100–37–8 | 0.515 | 2 | 4.04 | 15.5 | 230 | 24 Hr Avg | N/A |
| Diethylene triamine | 111–40–0 | 0.227 | 0.881 | 1.78 | 6.84 | 101 | 24 Hr Avg | N/A |
| 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 |
| Diethyl phthalate | 84–66–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Diethyl sulfate | 64–67–5 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 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 |
| 1,1–Difluoroethane | 75–37–6 | 7,107,505 | 29,200,000 | 69,523,810 | 245,034,965 | 40,000 | Annual | N/A |
| Diglycidyl ether (DGE) | 2238–07–5 | 0.0286 | 0.111 | 0.224 | 0.863 | 12.8 | 24 Hr Avg | N/A |
| Diglycidyl resorcinol ether | 101–90–6 | 3.63 | 14.9 | 35.5 | 125 | N/A | Annual | BACT |
| 1,8–Dihydroxyanthroquinone (Danthron) | 117–10–2 | 80.8 | 332 | 790 | 2,784 | N/A | Annual | BACT |
| Diisobutyl ketone | 108–83–8 | 7.81 | 30.4 | 61.2 | 236 | 3,490 | 24 Hr Avg | N/A |
| Diisopropylamine | 108–18–9 | 1.11 | 4.32 | 8.71 | 33.6 | 497 | 24 Hr Avg | N/A |
| N,N–Dimethyl acetamide | 127–19–5 | 1.91 | 7.44 | 15 | 57.8 | 855 | 24 Hr Avg | N/A |
| Dimethylamine | 124–40–3 | 0.495 | 1.92 | 3.88 | 14.9 | 221 | 24 Hr Avg | N/A |
| 4–Dimethylaminoazobenzene | 60–11–7 | 1.37 | 5.62 | 13.4 | 47.1 | N/A | Annual | BACT |
| Dimethylaniline (N,N–Dimethylaniline) | 121–69–7 | 1.33 | 5.17 | 10.4 | 40.2 | 595 | 24 Hr Avg | N/A |
| Dimethyl benzene (Xylene (mixtures and isomers); Xylol) | 1330–20–7 | 23.3 | 90.6 | 183 | 704 | 10,421 | 24 Hr Avg | N/A |
| 3,3'–Dimethylbenzidine (o–Tolidine) | 119–93–7 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |

**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) |
| Dimethyl carbamoyl chloride | 79–44–7 | 0.48 | 1.97 | 4.7 | 16.6 | N/A | Annual | BACT |
| Dimethylethoxysilane | 14857–34–2 | 0.114 | 0.445 | 0.897 | 3.46 | 51.1 | 24 Hr Avg | N/A |
| 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 |
| 1,1–Dimethylhydrazine | 57–14–7 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Dimethylphthalate | 131–11–3 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 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 |
| Dinitolmide | 148–01–6 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Dinitrobenzene (mixtures and isomers) | 528–29–0 | 0.0554 | 0.215 | 0.434 | 1.67 | 24.8 | 24 Hr Avg | N/A |
| Dinitrotoluene (mixtures and isomers) | 25321–14–6 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| Direct Black 38 (benzidine–based dye) | 1937–37–7 | 0.846 | 3.48 | 8.28 | 29.2 | N/A | Annual | BACT |
| Direct Blue 6 (benzidine–based dye) | 2602–46–2 | 0.846 | 3.48 | 8.28 | 29.2 | N/A | Annual | BACT |
| Disperse Blue 1 | 2475–45–8 | 1,367 | 5,615 | 13,370 | 47,122 | N/A | Annual | BACT |
| Disulfiram | 97–77–8 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| Divinyl benzene (mixtures and isomers) | 1321–74–0 | 2.86 | 11.1 | 22.4 | 86.3 | 1,278 | 24 Hr Avg | N/A |
| EGBE (2–Butoxyethanol; Ethylene glycol monobutyl ether; Butyl cellosolve) | 111–76–2 | 5.19 | 20.2 | 40.7 | 157 | 2,320 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| EGME (2–Methoxyethanol; Methyl Cellosolve) | 109–86–4 | 0.836 | 3.25 | 6.55 | 25.2 | 373 | 24 Hr Avg | N/A |
| EGMEA (2–Methoxyethyl acetate; Methyl Cellosolve acetate) | 110–49–6 | 1.3 | 5.04 | 10.2 | 39.2 | 580 | 24 Hr Avg | N/A |
| 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 |
| 1,2–Epoxybutane (1,2–Butylene oxide) | 106–88–7 | 3,554 | 14,600 | 34,762 | 122,517 | 20 | Annual | N/A |
| Erionite (Zeolites) | 66733–21–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| Ethanamine (Ethylamine) | 75–04–7 | 0.495 | 1.92 | 3.88 | 14.9 | 221 | 24 Hr Avg | N/A |
| Ethanolamine | 141–43–5 | 0.403 | 1.56 | 3.16 | 12.2 | 180 | 24 Hr Avg | N/A |
| 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) |
| 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 |
| Ethyl acrylate | 140–88–5 | 1.1 | 4.27 | 8.62 | 33.2 | 491 | 24 Hr Avg | N/A |
| Ethylamine (Ethanamine) | 75–04–7 | 0.495 | 1.92 | 3.88 | 14.9 | 221 | 24 Hr Avg | N/A |
| Ethyl amyl ketone | 541–85–5 | 7.04 | 27.4 | 55.2 | 213 | 3,146 | 24 Hr Avg | N/A |
| 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 |
| Ethyl bromide | 74–96–4 | 1.2 | 4.65 | 9.38 | 36.1 | 535 | 24 Hr Avg | N/A |
| Ethyl tert–butyl ether (ETBE) | 637–92–3 | 1.12 | 4.36 | 8.8 | 33.9 | 501 | 24 Hr Avg | N/A |
| Ethyl butyl ketone | 106–35–4 | 12.5 | 48.7 | 98.3 | 379 | 5,604 | 24 Hr Avg | N/A |
| Ethyl carbamate (Urethane) | 51–79–6 | 6.13 | 25.2 | 59.9 | 211 | N/A | Annual | BACT |
| Ethyl chloride (Chloroethane) | 75–00–3 | 1,776,876 | 7,300,000 | 17,380,952 | 61,258,741 | 10,000 | Annual | N/A |
| | | 14.2 | 55.1 | 111 | 428 | 6,333 | 24 Hr Avg | N/A |
| Ethyl cyanoacrylate | 7085–85–0 | 0.055 | 0.214 | 0.431 | 1.66 | 24.6 | 24 Hr Avg | N/A |
| Ethylene chlorohydrin | 107–07–3 | 0.246 | 0.783 | 1.51 | 4.04 | 329 | 1 Hr | N/A |
| Ethylenediamine | 107–15–3 | 1.32 | 5.13 | 10.3 | 39.9 | 590 | 24 Hr Avg | N/A |
| Ethylene dibromide (EDB; 1,2–Dibromoethane) | 106–93–4 | 8.08 | 33.2 | 79 | 278 | N/A | Annual | BACT |
| Ethylene dichloride (EDC; 1,2–Dichloroethane) | 107–06–2 | 2.17 | 8.45 | 17 | 65.6 | 971 | 24 Hr Avg | N/A |
| | | 68.3 | 281 | 668 | 2,356 | N/A | Annual | BACT |
| Ethylene glycol monobutyl ether (2–Butoxyethanol; EGBE; Butyl cellosolve) | 111–76–2 | 2,309,939 | 9,490,000 | 22,595,238 | 79,636,364 | 13,000 | Annual | N/A |
| | | 5.19 | 20.2 | 40.7 | 157 | 2,320 | 24 Hr Avg | N/A |
| Ethylene glycol monoethyl ether (2–Ethoxyethanol; EGEE; Cellosolve) | 110–80–5 | 35,538 | 146,000 | 347,619 | 1,225,175 | 200 | Annual | N/A |
| | | 0.99 | 3.85 | 7.76 | 29.9 | 442 | 24 Hr Avg | N/A |
| 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 |
| Ethylene glycol vapor and aerosol | 107–21–1 | 7.47 | 23.8 | 45.7 | 123 | 10,000 | 1 Hr | N/A |
| Ethylene oxide | 75–21–8 | 20.2 | 83 | 198 | 696 | N/A | Annual | LAER |
| Ethylene thiourea | 96–45–7 | 137 | 562 | 1,337 | 4,712 | N/A | Annual | BACT |
| Ethylenimine (Aziridine) | 151–56–4 | 0.0473 | 0.184 | 0.371 | 1.43 | 21.1 | 24 Hr Avg | N/A |
| Ethylidene dichloride (1,1–Dichloroethane) | 75–34–3 | 21.7 | 84.5 | 170 | 656 | 9,715 | 24 Hr Avg | N/A |
| Ethylidene norbornene | 16219–75–3 | 1.84 | 5.85 | 11.2 | 30.2 | 2,458 | 1 Hr | N/A |
| N–Ethylmorpholine | 100–74–3 | 1.27 | 4.92 | 9.92 | 38.2 | 565 | 24 Hr Avg | N/A |
| Ethyl silicate | 78–10–4 | 4.58 | 17.8 | 35.9 | 138 | 2,045 | 24 Hr Avg | N/A |
| Fenamiphos | 22224–92–6 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Flour dust (inhalable fraction) | | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Fluorides, (inorganics), as F | | 0.134 | 0.522 | 1.05 | 4.05 | 60 | 24 Hr Avg | N/A |
| Fluorine | 7782–41–4 | 0.0835 | 0.324 | 0.654 | 2.52 | 37.3 | 24 Hr Avg | N/A |
| Formaldehyde | 50–00–0 | 137 | 562 | 1,337 | 4,712 | N/A | Annual | BACT |
| Formamide | 75–12–7 | 0.99 | 3.84 | 7.76 | 29.9 | 442 | 24 Hr Avg | N/A |
| Formic acid | 64–18–6 | 0.506 | 1.96 | 3.96 | 15.3 | 226 | 24 Hr Avg | N/A |
| Furan | 110–00–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Furfural | 98–01–1 | 0.422 | 1.64 | 3.31 | 12.7 | 189 | 24 Hr Avg | N/A |
| Furfuryl alcohol | 98–00–0 | 2.16 | 8.37 | 16.9 | 65.1 | 963 | 24 Hr Avg | N/A |
| Germanium tetrahydride | 7782–65–2 | 0.0337 | 0.131 | 0.264 | 1.02 | 15 | 24 Hr Avg | N/A |
| Glutaraldehyde | 111–30–8 | 0.0153 | 0.0487 | 0.0936 | 0.251 | 20.5 | 1 Hr | N/A |
| 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 |

**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) |
| Graphite (all forms except graphite fiber) | 7782–42–5 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| Hexachloronaphthalene | 1335–87–1 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| Hexamethyl phosphoramide | 680–31–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Hexamethylene–1,6–diiso-cyanate (HDI) | 822–06–0 | 1.78 | 7.3 | 17.4 | 61.3 | 0.01 | Annual | N/A |
| | | 0.00185 | 0.00718 | 0.0145 | 0.0558 | 0.826 | 24 Hr Avg | N/A |
| 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 |
| 1,6– Hexanediamine | 124–09–4 | 0.128 | 0.496 | 1 | 3.85 | 57 | 24 Hr Avg | N/A |
| 1–Hexene | 592–41–6 | 5.55 | 21.6 | 43.5 | 167 | 2,478 | 24 Hr Avg | N/A |
| Hexone (Methyl isobutyl ketone; MIBK) | 108–10–1 | 11 | 42.7 | 86.2 | 332 | 4,916 | 24 Hr Avg | N/A |
| sec–Hexyl acetate | 108–84–9 | 15.8 | 61.5 | 124 | 478 | 7,078 | 24 Hr Avg | N/A |
| Hexylene glycol | 107–41–5 | 9.02 | 28.7 | 55.2 | 148 | 12,083 | 1 Hr | N/A |
| Hydrazine and hydrazine sulfate | 302–01–2 | 0.363 | 1.49 | 3.55 | 12.5 | N/A | Annual | BACT |
| | | 0.000704 | 0.00274 | 0.00552 | 0.0213 | 0.315 | 24 Hr Avg | N/A |
| Hydrochloric acid (Hydro-gen chloride; Muriatic acid) | 7647–01–0 | 0.557 | 1.77 | 3.41 | 9.15 | 746 | 1 Hr | N/A |
| | | 3,554 | 14,600 | 34,762 | 122,517 | 20 | Annual | N/A |
| Hydrogenated terphenyls | 61788–32–7 | 0.265 | 1.03 | 2.08 | 7.99 | 118 | 24 Hr Avg | N/A |
| Hydrogen bromide | 10035–10–6 | 0.741 | 2.36 | 4.54 | 12.2 | 993 | 1 Hr | N/A |
| Hydrogen chloride (Hydro-chloric acid; Muriatic acid) | 7647–01–0 | 3,554 | 14,600 | 34,762 | 122,517 | 20 | Annual | N/A |
| | | 0.557 | 1.77 | 3.41 | 9.15 | 746 | 1 Hr | N/A |
| Hydrogen cyanide | 74–90–8 | 0.388 | 1.24 | 2.38 | 6.38 | 520 | 1 Hr | N/A |
| Hydrogen fluoride (Hydro-fluoric acid) | 7664–39–3 | 0.183 | 0.584 | 1.12 | 3.01 | 246 | 1 Hr | N/A |
| Hydrogen peroxide | 7722–84–1 | 0.0747 | 0.29 | 0.586 | 2.26 | 33.4 | 24 Hr Avg | N/A |
| Hydrogen sulfide | 7783–06–4 | 0.749 | 2.91 | 5.87 | 22.6 | 335 | 24 Hr Avg | N/A |
| Hydroquinone | 123–31–9 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 2–Hydroxypropyl acrylate | 999–61–1 | 0.143 | 0.555 | 1.12 | 4.32 | 63.9 | 24 Hr Avg | N/A |
| Indeno(1,2,3–cd)pyrene | 193–39–5 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| Indium | 7440–74–6 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Iodine | 7553–56–2 | 0.0775 | 0.247 | 0.475 | 1.27 | 104 | 1 Hr | N/A |
| Iodomethane (Methyl iodide) | 74–88–4 | 0.624 | 2.42 | 4.89 | 18.8 | 279 | 24 Hr Avg | N/A |
| Iron oxide dust and fume, as Fe | 1309–37–1 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Iron salts, soluble, as Fe | | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| Isobutyl alcohol | 78–83–1 | 8.14 | 31.6 | 63.8 | 246 | 3,638 | 24 Hr Avg | N/A |
| Isooctyl alcohol | 26952–21–6 | 14.3 | 55.6 | 112 | 432 | 6,392 | 24 Hr Avg | N/A |
| Isophorone | 78–59–1 | 2.11 | 6.72 | 12.9 | 34.7 | 2,826 | 1 Hr | N/A |
| Isophorone diisocyanate | 4098–71–9 | 0.00244 | 0.00949 | 0.0191 | 0.0737 | 1.09 | 24 Hr Avg | N/A |
| Isoprene | 78–79–5 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 2–Isopropoxyethanol | 109–59–1 | 5.72 | 22.2 | 44.8 | 173 | 2,556 | 24 Hr Avg | N/A |
| Isopropylamine | 75–31–0 | 0.649 | 2.52 | 5.09 | 19.6 | 290 | 24 Hr Avg | N/A |
| Isopropyl benzene (Cumene) | 98–82–8 | 13.2 | 51.3 | 103 | 399 | 5,899 | 24 Hr Avg | N/A |
| Isopropyl glycidyl ether | 4016–14–2 | 12.8 | 49.6 | 100 | 385 | 5,702 | 24 Hr Avg | N/A |
| N–Isopropylaniline | 768–52–5 | 0.594 | 2.31 | 4.66 | 17.9 | 265 | 24 Hr Avg | N/A |
| Kaolin | 1332–58–7 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| Kepone (Chlordecone) | 143–50–0 | 0.386 | 1.59 | 3.78 | 13.3 | N/A | Annual | BACT |
| Ketene | 463–51–4 | 0.0462 | 0.179 | 0.362 | 1.39 | 20.6 | 24 Hr Avg | N/A |
| Lead acetate, as Pb | 301–04–2 | 22.2 | 91.3 | 217 | 766 | N/A | Annual | BACT |

**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) |
| Lead phosphate, as Pb | 7446–27–7 | 148 | 608 | 1,448 | 5,105 | N/A | Annual | BACT |
| Maleic anhydride | 108–31–6 | 0.0215 | 0.0837 | 0.169 | 0.65 | 9.63 | 24 Hr Avg | N/A |
| 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 |
| Mercury, as Hg, alkyl compounds | 7439–97–6 | 0.000537 | 0.00209 | 0.00421 | 0.0162 | 0.24 | 24 Hr Avg | N/A |
| Mercury, as Hg, aryl compounds | 7439–97–6 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 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 |
| Mesityl oxide | 141–79–7 | 3.23 | 12.6 | 25.4 | 97.6 | 1,445 | 24 Hr Avg | N/A |
| Methacrylic acid | 79–41–4 | 3.78 | 14.7 | 29.7 | 114 | 1,690 | 24 Hr Avg | N/A |
| 2–Methoxyethanol (Methyl cellosolve; EGME) | 109–86–4 | 0.836 | 3.25 | 6.55 | 25.2 | 373 | 24 Hr Avg | N/A |
| 2–Methoxyethyl acetate (Methyl Cellosolve acetate; EGMEA) | 110–49–6 | 1.3 | 5.04 | 10.2 | 39.2 | 580 | 24 Hr Avg | N/A |
| 4–Methoxyphenol | 150–76–5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Methyl acrylate | 96–33–3 | 0.378 | 1.47 | 2.97 | 11.4 | 169 | 24 Hr Avg | N/A |
| Methylacrylonitrile | 126–98–7 | 0.147 | 0.573 | 1.16 | 4.45 | 65.9 | 24 Hr Avg | N/A |
| Methylamine | 74–89–5 | 0.341 | 1.33 | 2.67 | 10.3 | 152 | 24 Hr Avg | N/A |
| Methyl n–amyl ketone | 110–43–0 | 12.5 | 48.7 | 98.3 | 379 | 5,604 | 24 Hr Avg | N/A |
| N–Methyl aniline | 100–61–8 | 0.118 | 0.457 | 0.923 | 3.55 | 52.6 | 24 Hr Avg | N/A |
| 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 |
| Methyl n–butyl ketone | 591–78–6 | 1.1 | 4.27 | 8.62 | 33.2 | 492 | 24 Hr Avg | N/A |
| Methyl cellosolve (2–Methoxyethanol; EGME) | 109–86–4 | 0.836 | 3.25 | 6.55 | 25.2 | 373 | 24 Hr Avg | N/A |
| Methyl cellosolve acetate (2–Methoxyethyl acetate; EGMEA) | 110–49–6 | 1.3 | 5.04 | 10.2 | 39.2 | 580 | 24 Hr Avg | N/A |
| Methyl chloride (Chloromethane) | 74–87–3 | 5.55 | 21.5 | 43.5 | 167 | 2,478 | 24 Hr Avg | N/A |
| 5–Methyl chrysene | 3697–24–3 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| Methyl 2–cyanoacrylate | 137–05–3 | 0.0488 | 0.19 | 0.383 | 1.47 | 21.8 | 24 Hr Avg | N/A |
| Methylcyclohexanol | 25639–42–3 | 12.5 | 48.7 | 98.3 | 379 | 5,604 | 24 Hr Avg | N/A |
| o–Methylcyclohexanone | 583–60–8 | 12.3 | 47.9 | 96.6 | 372 | 5,505 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| 4,4'–Methylene bis(2–chloroaniline) (MOCA) | 101–14–4 | 4.13 | 17 | 40.4 | 142 | N/A | Annual | BACT |
| Methylene bis(4–cyclohexylisocyanate) | 5124–30–1 | 0.00288 | 0.0112 | 0.0226 | 0.087 | 1.29 | 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) |
| 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 |
| Methyl ethyl ketone peroxide | 1338–23–4 | 0.108 | 0.343 | 0.659 | 1.77 | 144 | 1 Hr | N/A |
| Methyl formate | 107–31–3 | 14.3 | 55.5 | 112 | 431 | 6,385 | 24 Hr Avg | N/A |
| Methyl hydrazine | 60–34–4 | 0.00101 | 0.00393 | 0.00793 | 0.0306 | 0.452 | 24 Hr Avg | N/A |
| Methyl iodide (Iodomethane) | 74–88–4 | 0.624 | 2.42 | 4.89 | 18.8 | 279 | 24 Hr Avg | N/A |
| Methyl isoamyl ketone | 110–12–3 | 12.5 | 48.7 | 98.3 | 379 | 5,605 | 24 Hr Avg | N/A |
| Methyl isobutyl carbinol | 108–11–2 | 5.61 | 21.8 | 44 | 169 | 2,507 | 24 Hr Avg | N/A |
| Methyl isobutyl ketone (MIBK; Hexone) | 108–10–1 | 11 | 42.7 | 86.2 | 332 | 4,916 | 24 Hr Avg | N/A |
| Methyl isocyanate | 624–83–9 | 0.00251 | 0.00974 | 0.0196 | 0.0757 | 1.12 | 24 Hr Avg | N/A |
| 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 |
| α–Methyl styrene | 98–83–9 | 13 | 50.4 | 102 | 392 | 5,800 | 24 Hr Avg | N/A |
| 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 |
| MIBK (Methyl isobutyl ketone; Hexone) | 108–10–1 | 11 | 42.7 | 86.2 | 332 | 4,916 | 24 Hr Avg | N/A |
| Mirex | 2385–85–5 | 0.348 | 1.43 | 3.41 | 12 | N/A | Annual | BACT |
| Molybdenum, as Mo, metal and insoluble compounds | 7439–98–7 | 0.537 | 2.09 | 4.21 | 16.2 | 240 | 24 Hr Avg | N/A |
| Molybdenum, as Mo, soluble compounds | 7439–98–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Monochlorobenzene (Chlorobenzene) | 108–90–7 | 2.47 | 9.61 | 19.4 | 74.7 | 1,105 | 24 Hr Avg | N/A |
| Morpholine | 110–91–8 | 3.83 | 14.9 | 30 | 116 | 1,710 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| Mustard gas | 505–60–2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| Naphthalene | 91–20–3 | 2.82 | 10.9 | 22.1 | 85 | 1,258 | 24 Hr Avg | N/A |
| 2–Naphthylamine | 91–59–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| Nickel and compounds, as Ni | 7440–02–0 | 6.83 | 28.1 | 66.8 | 236 | N/A | Annual | BACT |
| 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 |
| Nickel subsulfide, as Ni | 12035–72–2 | 3.7 | 15.2 | 36.2 | 128 | N/A | Annual | LAER |
| Nitric acid | 7697–37–2 | 0.277 | 1.08 | 2.17 | 8.36 | 124 | 24 Hr Avg | N/A |
| Nitrilotriacetic acid | 139–13–9 | 1,185 | 4,867 | 11,587 | 40,839 | N/A | Annual | BACT |
| p–Nitroaniline | 100–01–6 | 0.161 | 0.626 | 1.26 | 4.86 | 72 | 24 Hr Avg | N/A |
| Nitrobenzene | 98–95–3 | 0.27 | 1.05 | 2.12 | 8.17 | 121 | 24 Hr Avg | N/A |
| p–Nitrochlorobenzene | 100–00–5 | 0.0346 | 0.134 | 0.271 | 1.05 | 15.5 | 24 Hr Avg | N/A |
| Nitroethane | 79–24–3 | 16.5 | 64.1 | 129 | 498 | 7,369 | 24 Hr Avg | N/A |
| Nitrogen mustards (2,2'–Dichloro–N–methyldiethylamine) | 51–75–2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Nitromethane | 75–52–5 | 2.68 | 10.4 | 21 | 81 | 1,198 | 24 Hr Avg | N/A |
| 1–Nitropropane | 108–03–2 | 4.89 | 19 | 38.4 | 148 | 2,186 | 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) |
| 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 |
| 1–Nitropyrene | 5522–43–0 | 16.2 | 66.4 | 158 | 557 | N/A | Annual | BACT |
| N–Nitrosodi–n–butylamine | 924–16–3 | 1.11 | 4.56 | 10.9 | 38.3 | N/A | Annual | BACT |
| N–Nitrosodiethanolamine | 1116–54–7 | 2.22 | 9.13 | 21.7 | 76.6 | N/A | Annual | BACT |
| N–Nitrosodiethylamine | 55–18–5 | 0.0413 | 0.17 | 0.404 | 1.42 | N/A | Annual | BACT |
| N–Nitrosodimethylamine | 62–75–9 | 0.127 | 0.521 | 1.24 | 4.38 | N/A | Annual | BACT |
| N–Nitrosodi–n–propylamine | 621–64–7 | 0.888 | 3.65 | 8.69 | 30.6 | N/A | Annual | BACT |
| N–Nitroso–N–ethylurea | 759–73–9 | 0.231 | 0.948 | 2.26 | 7.96 | N/A | Annual | BACT |
| N–Nitroso–N–methylurea | 684–93–5 | 0.0523 | 0.215 | 0.511 | 1.8 | N/A | Annual | BACT |
| N–Nitrosomethylvinylamine | 4549–40–0 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| N–Nitrosomorpholine | 59–89–2 | 0.935 | 3.84 | 9.15 | 32.2 | N/A | Annual | BACT |
| N'–Nitrosonornicotine | 16543–55–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| N–Nitrosopiperidine | 100–75–4 | 0.658 | 2.7 | 6.44 | 22.7 | N/A | Annual | BACT |
| N–Nitrosopyrrolidine | 930–55–2 | 2.91 | 12 | 28.5 | 100 | N/A | Annual | BACT |
| N–Nitrososarcosine | 13256–22–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Nitrotoluene (mixtures and isomers) | 88–72–2 | 0.603 | 2.34 | 4.72 | 18.2 | 269 | 24 Hr Avg | N/A |
| Nitrous oxide | 10024–97–2 | 4.84 | 18.8 | 37.9 | 146 | 2,160 | 24 Hr Avg | N/A |
| Octachloronaphthalene | 2234–13–1 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Oxalic acid | 144–62–7 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| p,p'–Oxybis(benzenesulfonyl hydrazide) | 80–51–3 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Pentachloronaphthalene | 1321–64–8 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Pentachloronitrobenzene (Quintobenzene; PCNB) | 82–68–8 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Pentachlorophenol (PCP) | 87–86–5 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Pentyl Acetate (mixtures and isomers) | 628–63–7 | 14.3 | 55.6 | 112 | 432 | 6,390 | 24 Hr Avg | N/A |
| Perchloroethylene (Tetrachloroethylene) | 127–18–4 | 301 | 1,237 | 2,946 | 10,383 | N/A | Annual | BACT |
| | | 9.11 | 35.4 | 71.4 | 275 | 4,069 | 24 Hr Avg | N/A |
| Perchloromethyl mercaptan | 594–42–3 | 0.0408 | 0.159 | 0.32 | 1.23 | 18.2 | 24 Hr Avg | N/A |
| Perfluoroisobutylene | 382–21–8 | 0.00611 | 0.0195 | 0.0374 | 0.1 | 8.18 | 1 Hr | N/A |
| Persulfates (ammonium, potassium, sodium) | 7727–54–0 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| PGME (Propylene glycol monomethyl ether) | 107–98–2 | 355,375 | 1,460,000 | 3,476,190 | 12,251,748 | 2,000 | Annual | N/A |
| Phenol | 108–95–2 | 1.03 | 4.02 | 8.1 | 31.2 | 462 | 24 Hr Avg | N/A |
| Phenolphthalein | 77–09–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Phenylenediamine (mixtures and isomers) | 106–50–3 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Phenyl ether vapor | 101–84–8 | 0.374 | 1.45 | 2.93 | 11.3 | 167 | 24 Hr Avg | N/A |
| Phenyl glycidyl ether (PGE) | 122–60–1 | 0.033 | 0.128 | 0.259 | 0.996 | 14.7 | 24 Hr Avg | N/A |
| Phenylhydrazine | 100–63–0 | 0.0238 | 0.0923 | 0.186 | 0.717 | 10.6 | 24 Hr Avg | N/A |
| Phenyl mercaptan | 108–98–5 | 0.121 | 0.47 | 0.949 | 3.65 | 54.1 | 24 Hr Avg | N/A |
| Phosgene | 75–44–5 | 0.0217 | 0.0844 | 0.17 | 0.656 | 9.71 | 24 Hr Avg | N/A |
| Phosphine | 7803–51–2 | 0.0224 | 0.0871 | 0.176 | 0.677 | 10 | 24 Hr Avg | N/A |
| 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 |
| Phosphorus (yellow) | 7723–14–0 | 0.00544 | 0.0212 | 0.0427 | 0.164 | 2.43 | 24 Hr Avg | N/A |
| Phosphorus oxychloride | 10025–87–3 | 0.0337 | 0.131 | 0.264 | 1.02 | 15.1 | 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) |
| Phosphorus pentachloride | 10026–13–8 | 0.0457 | 0.178 | 0.359 | 1.38 | 20.4 | 24 Hr Avg | N/A |
| Phosphorus pentasulfide | 1314–80–3 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| Phosphorus trichloride | 7719–12–2 | 0.0604 | 0.234 | 0.473 | 1.82 | 27 | 24 Hr Avg | N/A |
| Phthalic anhydride | 85–44–9 | 0.325 | 1.26 | 2.55 | 9.82 | 145 | 24 Hr Avg | N/A |
| Picric acid | 88–89–1 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Platinum (metal) | 7440–06–4 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| Platinum, soluble salts, as Pt | 7440–06–4 | 0.000107 | 0.000417 | 0.000842 | 0.00324 | 0.048 | 24 Hr Avg | N/A |
| Polybrominated biphenyls (PBBs; Bromodiphenyls) | 59536–65–1 | 0.207 | 0.849 | 2.02 | 7.12 | N/A | Annual | BACT |
| 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 |
| Potassium hydroxide | 1310–58–3 | 0.149 | 0.476 | 0.914 | 2.45 | 200 | 1 Hr | N/A |
| 1,3–Propane sultone | 1120–71–4 | 2.58 | 10.6 | 25.2 | 88.8 | N/A | Annual | BACT |
| Propargyl alcohol | 107–19–7 | 0.123 | 0.479 | 0.965 | 3.72 | 55 | 24 Hr Avg | N/A |
| 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 |
| Propionic acid | 79–09–4 | 1.63 | 6.32 | 12.8 | 49.1 | 727 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| 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 |
| 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 |
| Pyridine | 110–86–1 | 0.77 | 2.99 | 6.04 | 23.2 | 344 | 24 Hr Avg | N/A |
| Pyrocatechol (Catechol) | 120–80–9 | 1.21 | 4.7 | 9.48 | 36.5 | 540 | 24 Hr Avg | N/A |
| Quintobenzene (Penta-chloronitrobenzene) | 82–68–8 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Resorcinol | 108–46–3 | 2.42 | 9.4 | 19 | 73 | 1,081 | 24 Hr Avg | N/A |
| Rhodium (metal) and insoluble compounds, as Rh | 7440–16–6 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| Rhodium, soluble compounds, as Rh | 7440–16–6 | 0.000537 | 0.00209 | 0.00421 | 0.0162 | 0.24 | 24 Hr Avg | N/A |
| Safrole | 94–59–7 | 28.2 | 116 | 276 | 972 | N/A | Annual | BACT |
| Selenium and compounds, as Se | 7782–49–2 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| Silicon tetrahydride (Silane) | 7803–62–5 | 0.353 | 1.37 | 2.77 | 10.7 | 158 | 24 Hr Avg | N/A |
| 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 |
| Sodium bisulfite | 7631–90–5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Sodium hydroxide | 1310–73–2 | 0.149 | 0.476 | 0.914 | 2.45 | 200 | 1 Hr | N/A |
| Sodium metabisulfite | 7681–57–4 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Stoddard solvent (Mineral spirits) | 8052–41–3 | 30.8 | 119 | 241 | 929 | 13,742 | 24 Hr Avg | N/A |
| Strong inorganic acid mists containing sulfuric acid (>35% by weight) | 7664–93–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 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 |
| Sulfometuron methyl | 74222–97–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Sulfur monochloride | 10025–67–9 | 0.412 | 1.31 | 2.53 | 6.78 | 552 | 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) |
| Sulfur tetrafluoride | 7783–60–0 | 0.033 | 0.105 | 0.202 | 0.542 | 44.2 | 1 Hr | N/A |
| Sulfuric acid | 7664–93–9 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| Sulprofos | 35400–43–2 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| Talc, containing no asbestos fibers | 14807–96–6 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| Tantalum, metal and oxide dusts, as Ta | 7440–25–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| Terphenyls | 26140–60–3 | 0.373 | 1.19 | 2.29 | 6.13 | 500 | 1 Hr | N/A |
| 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 |
| 1,1,2,2–Tetrachloroethane | 79–34–5 | 0.369 | 1.43 | 2.89 | 11.1 | 165 | 24 Hr Avg | N/A |
| 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 |
| Tetrachloronaphthalene | 1335–88–2 | 0.107 | 0.417 | 0.842 | 3.24 | 48 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| Tetrahydrofuran | 109–99–9 | 31.7 | 123 | 248 | 956 | 14,155 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| Thionyl chloride | 7719–09–7 | 0.363 | 1.16 | 2.23 | 5.97 | 487 | 1 Hr | N/A |
| Thiourea | 62–56–6 | 84.6 | 348 | 828 | 2,917 | N/A | Annual | BACT |
| Tin organic compounds, as Sn | 7440–31–5 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 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 |
| o–Tolidine (3,3'–Dimethyl-benzidine) | 119–93–7 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| 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 |
| 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 |
| Toluene–2,4–diamine (2,4–Diaminotoluene) | 95–80–7 | 1.62 | 6.64 | 15.8 | 55.7 | N/A | Annual | BACT |
| m– and p–Toluidine | 108–44–1 | 0.471 | 1.83 | 3.69 | 14.2 | 210 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| Tributyl phosphate | 126–73–8 | 0.117 | 0.455 | 0.917 | 3.53 | 52.3 | 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) |
| 1,2,4–Trichlorobenzene | 120–82–1 | 2.77 | 8.82 | 17 | 45.5 | 3,711 | 1 Hr | N/A |
| 1,1,2–Trichloroethane | 79–00–5 | 2.93 | 11.4 | 23 | 88.5 | 1,310 | 24 Hr Avg | N/A |
| Trichloroethylene (Trichloroethene) | 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 |
| Trichloronaphthalene | 1321–65–9 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 2,4,6–Trichlorophenol | 88–06–2 | 573 | 2,355 | 5,607 | 19,761 | N/A | Annual | BACT |
| 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 |
| Triethanolamine | 102–71–6 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Triethylamine | 121–44–8 | 0.222 | 0.864 | 1.74 | 6.71 | 99.3 | 24 Hr Avg | N/A |
| 1,3,5–Triglycidyl–s–triazinetrione | 2451–62–9 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| Trimellitic anhydride | 552–30–7 | 0.00299 | 0.00951 | 0.0183 | 0.0491 | 4 | 1 Hr | N/A |
| Trimethyl benzene (mixtures and isomers) | 25551–13–7 | 6.6 | 25.6 | 51.7 | 199 | 2,949 | 24 Hr Avg | N/A |
| Trimethylamine | 75–50–3 | 0.649 | 2.52 | 5.09 | 19.6 | 290 | 24 Hr Avg | N/A |
| 2,4,6–Trinitrotoluene (TNT) | 118–96–7 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Triorthocresyl phosphate | 78–30–8 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Triphenyl phosphate | 115–86–6 | 0.161 | 0.626 | 1.26 | 4.86 | 72 | 24 Hr Avg | N/A |
| Tris(2,3–dibromopropyl phosphate) | 126–72–7 | 2.69 | 11.1 | 26.3 | 92.8 | N/A | Annual | BACT |
| Tungsten, as W, metal and insoluble compounds | 7440–33–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Tungsten, as W, soluble compounds | 7440–33–7 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 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 |
| Urethane (Ethyl carbamate) | 51–79–6 | 6.13 | 25.2 | 59.9 | 211 | N/A | Annual | BACT |
| n–Valeraldehyde | 110–62–3 | 9.46 | 36.8 | 74.2 | 286 | 4,227 | 24 Hr Avg | N/A |
| 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 |
| Vinyl acetate | 108–05–4 | 35,538 | 146,000 | 347,619 | 1,225,175 | 200 | Annual | N/A |
| | | 1.89 | 7.35 | 14.8 | 57.1 | 845 | 24 Hr Avg | N/A |
| Vinyl bromide | 593–60–2 | 0.117 | 0.456 | 0.921 | 3.55 | 52.5 | 24 Hr Avg | N/A |
| 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 |
| 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 |
| 4–Vinyl cyclohexene | 100–40–3 | 0.0238 | 0.0923 | 0.186 | 0.717 | 10.6 | 24 Hr Avg | N/A |
| Vinyl fluoride | 75–02–5 | 0.101 | 0.393 | 0.793 | 3.05 | 45.2 | 24 Hr Avg | N/A |
| Vinylidene chloride (1,1–Dichloroethylene) | 75–35–4 | 1.06 | 4.14 | 8.35 | 32.2 | 476 | 24 Hr Avg | N/A |
| Vinyl toluene | 25013–15–4 | 13 | 50.4 | 102 | 392 | 5,800 | 24 Hr Avg | N/A |
| Xylene (mixtures and isomers) (Xylol; Dimethyl benzene) | 1330–20–7 | 23.3 | 90.6 | 183 | 704 | 10,421 | 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) |
| m–Xylene–α, α'–diamine | 1477–55–0 | 0.00747 | 0.0238 | 0.0457 | 0.123 | 10 | 1 Hr | N/A |
| Xylidine (mixtures and isomers) | 1300–73–8 | 0.133 | 0.517 | 1.04 | 4.02 | 59.5 | 24 Hr Avg | N/A |
| Yttrium metal and compounds, as Y | 7440–65–5 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| Zeolites (Erionite) | 66733–21–9 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 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) |
| Aldrin | 309–00–2 | 0.0134 | 0.0522 | 0.105 | 0.405 | 6 | 24 Hr Avg | N/A |
| 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 |
| Antimony hydride (Stibine) | 7803–52–3 | 0.0274 | 0.107 | 0.215 | 0.828 | 12.2 | 24 Hr Avg | N/A |
| ANTU | 86–88–4 | 0.0161 | 0.0626 | 0.126 | 0.486 | 7.2 | 24 Hr Avg | N/A |
| Atrazine | 1912–24–9 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Azinphos–methyl | 86–50–0 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| Baygon (Propoxur) | 114–26–1 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Benomyl | 17804–35–2 | 0.537 | 2.09 | 4.21 | 16.2 | 240 | 24 Hr Avg | N/A |
| Bromacil | 314–40–9 | 0.537 | 2.09 | 4.21 | 16.2 | 240 | 24 Hr Avg | N/A |
| 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 |
| Captafol | 2425–06–1 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Captan | 133–06–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Carbaryl | 63–25–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Carbofuran | 1563–66–2 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Chlordane | 57–74–9 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| 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 |

**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) |
| 1–Chloro–1–nitropropane | 600–25–9 | 0.543 | 2.11 | 4.25 | 16.4 | 243 | 24 Hr Avg | N/A |
| Chloropicrin (Trichloro-nitromethane) | 76–06–2 | 0.0361 | 0.14 | 0.283 | 1.09 | 16.1 | 24 Hr Avg | N/A |
| Chlorpyrifos | 2921–88–2 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| Crufomate | 299–86–5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Cyhexatin | 13121–70–5 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Demeton | 8065–48–3 | 0.00568 | 0.0221 | 0.0445 | 0.171 | 2.54 | 24 Hr Avg | N/A |
| Diazinon | 333–41–5 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| 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 |
| 2,2–Dichloropropionic acid | 75–99–0 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| 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 |
| Dicrotophos | 141–66–2 | 0.0134 | 0.0522 | 0.105 | 0.405 | 6 | 24 Hr Avg | N/A |
| Dieldrin | 60–57–1 | 0.0134 | 0.0522 | 0.105 | 0.405 | 6 | 24 Hr Avg | N/A |
| 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 |
| Dioxathion | 78–34–2 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| 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 |
| Diquat, total dust (various compounds) (Diquat dibromide) | 2764–72–9 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Disulfoton | 298–04–4 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Endosulfan | 115–29–7 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Endrin | 72–20–8 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| EPN | 2104–64–5 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Ethion | 563–12–2 | 0.0215 | 0.0835 | 0.168 | 0.649 | 9.6 | 24 Hr Avg | N/A |
| Fensulfothion | 115–90–2 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Fenthion | 55–38–9 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| Fonofos | 944–22–9 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Heptachlor and heptachlor epoxide | 76–44–8 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| Hexachlorobutadiene | 87–68–3 | 0.0115 | 0.0445 | 0.0898 | 0.346 | 5.12 | 24 Hr Avg | N/A |
| 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 |
| Hexachlorocyclopentadiene | 77–47–4 | 0.00599 | 0.0233 | 0.047 | 0.181 | 2.68 | 24 Hr Avg | N/A |
| 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 |
| Methomyl | 16752–77–5 | 0.134 | 0.522 | 1.05 | 4.05 | 60 | 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) |
| Methyl bromide (Bromo-methane) | 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 |
| Methyl demeton | 8022–00–2 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Methyl parathion | 298–00–0 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| Metribuzin | 21087–64–9 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Mevinphos (Phosdrin) | 7786–34–7 | 0.00483 | 0.0188 | 0.0379 | 0.146 | 2.16 | 24 Hr Avg | N/A |
| Monocrotophos | 6923–22–4 | 0.0134 | 0.0522 | 0.105 | 0.405 | 6 | 24 Hr Avg | N/A |
| Naled | 300–76–5 | 0.161 | 0.626 | 1.26 | 4.86 | 72 | 24 Hr Avg | N/A |
| Paraquat (respirable sizes) (Paraquat chloride) | 1910–42–5 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Parathion | 56–38–2 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Phenothiazine | 92–84–2 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Phorate | 298–02–2 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| Pindone | 83–26–1 | 0.00537 | 0.0209 | 0.0421 | 0.162 | 2.4 | 24 Hr Avg | N/A |
| Propoxur (Baygon) | 114–26–1 | 0.0269 | 0.104 | 0.211 | 0.811 | 12 | 24 Hr Avg | N/A |
| Pyrethrum | 8003–34–7 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Quinone | 106–51–4 | 0.0237 | 0.0923 | 0.186 | 0.717 | 10.6 | 24 Hr Avg | N/A |
| Rotenone (commercial) | 83–79–4 | 0.269 | 1.04 | 2.11 | 8.11 | 120 | 24 Hr Avg | N/A |
| Sodium fluoroacetate | 62–74–8 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| Stibine (Antimony hydride) | 7803–52–3 | 0.0274 | 0.107 | 0.215 | 0.828 | 12.2 | 24 Hr Avg | N/A |
| Strychnine | 57–24–9 | 0.00806 | 0.0313 | 0.0632 | 0.243 | 3.6 | 24 Hr Avg | N/A |
| Sulfotep (TEDP) | 3689–24–5 | 0.0107 | 0.0417 | 0.0842 | 0.324 | 4.8 | 24 Hr Avg | N/A |
| Sulfuryl fluoride | 2699–79–8 | 1.12 | 4.36 | 8.79 | 33.8 | 501 | 24 Hr Avg | N/A |
| TEPP | 107–49–3 | 0.00269 | 0.0104 | 0.0211 | 0.0811 | 1.2 | 24 Hr Avg | N/A |
| Thiram | 137–26–8 | 0.0537 | 0.209 | 0.421 | 1.62 | 24 | 24 Hr Avg | N/A |
| 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 |
| Trichloronitromethane (Chloropicrin) | 76–06–2 | 0.0361 | 0.14 | 0.283 | 1.09 | 16.1 | 24 Hr Avg | N/A |
| 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) |
| Adriamycin | 23214–92–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Azathioprine | 446–86–6 | 3.48 | 14.3 | 34.1 | 120 | N/A | Annual | LAER |
| Bischloroethyl nitrosourea | 154–93–8 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| N,N–Bis (2–chloro-ethyl)–2–naphthylamine (Chlornaphazine) | 494–03–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| Bis(chloromethyl) ether (BCME) and technical grade | 542–88–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 1,4–Butanediol dimethane-sulphonate (Myleran; busul-phan) | 55–98–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| Chlorambucil | 305–03–3 | 0.0137 | 0.0562 | 0.134 | 0.471 | N/A | Annual | LAER |
| Chlornaphazine (N,N–Bis (2–chloroethyl)–2–naphthyl-amine) | 494–03–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| 1–(2–Chloroethyl)–3–cyclo-hexyl–1–nitrosourea (CCNU) | 13010–47–4 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Chloromethyl methyl ether (CMME) | 107–30–2 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| Cyclophosphamide | 50–18–0 | 10.5 | 42.9 | 102 | 360 | N/A | Annual | LAER |
| Dacarbazine | 4342–03–4 | 0.127 | 0.521 | 1.24 | 4.38 | N/A | Annual | BACT |
| Diethylstilbestrol (DES) | 56–53–1 | 0.0178 | 0.073 | 0.174 | 0.613 | N/A | Annual | LAER |
| Estradiol (Oestradiol) | 50–28–2 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| Iron dextran complex | 9004–66–4 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Melphalan | 148–82–3 | 0.048 | 0.197 | 0.47 | 1.66 | N/A | Annual | LAER |
| Mestranol | 72–33–3 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| N–Methyl–N'–nitro–N–nitro-soguanidine (MNNG) | 70–25–7 | 0.74 | 3.04 | 7.24 | 25.5 | N/A | Annual | BACT |
| Myleran (1,4–Butanediol dimethanesulphonate; Busul-phan) | 55–98–1 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | LAER |
| Oestradiol (Estradiol) | 50–28–2 | 0.162 | 0.664 | 1.58 | 5.57 | N/A | Annual | BACT |
| Phenazopyridine and phena-zopyridine hydrochloride | 136–40–3 | 36.3 | 149 | 355 | 1250 | N/A | Annual | BACT |
| Phenytoin and sodium salt of phenytoin | 57–41–0 | 2.43 | 10 | 23.8 | 83.9 | N/A | Annual | BACT |
| Procarbazine and procarba-zine hydrochloride | 366–70–1 | 0.444 | 1.83 | 4.35 | 15.3 | N/A | Annual | BACT |
| Propylthiouracil | 51–52–5 | 6.13 | 25.2 | 59.9 | 211 | N/A | Annual | BACT |
| Streptozotocin | 18883–66–4 | 0.0573 | 0.235 | 0.561 | 1.98 | N/A | Annual | BACT |
| Thiotepa (Tris(1–aziri-dinyl)phosphine sulfide) | 52–24–4 | 0.523 | 2.15 | 5.11 | 18 | N/A | Annual | LAER |
| 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.

**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 x $10^{-6}$. 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 emissions 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:

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

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 within 36 months of July 1, 2004.

**(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 1, 2007, 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 1, 2007, are exempt from the requirements in this chapter until July 1, 2007. 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 June 30, 2008.

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 in subch. II by installing emission control equipment may not be required to install additional control equipment to achieve compliance with this subchapter 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.

## 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 Parts 9, 86 and 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. A particulate emission standard of 0.01 grams per brake horsepower–hour 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.

## 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 |
|---|---|
| 01–09 | Agriculture, Forestry and Fishing |
| 15 | General Building Contractors |
| 17 | Special Trade Contractors |
| 40–45, 47 | Transportation |
| 48 | Communications |
| 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) |
| 52–59 | Retail Trade |
| 60–69 | Finance, Insurance and Real Estate |
| 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 |
|---|---|
| Acetaldehyde | 75–07–0 |
| Acrolein | 107–02–8 |
| Acrylamide | 79–06–1 |
| Acrylic acid | 79–10–7 |
| Acrylonitrile | 107–13–1 |
| Ammonia | 7664–41–7 |
| Arsenic, elemental and inorganic compounds, as As | 7440–38–2 |
| Arsine | 7784–42–1 |
| Benzene | 71–43–2 |
| Benzo(a)pyrene | 50–32–8 |
| Beryllium and beryllium compounds, as Be | 7440–41–7 |
| Bromine | 7726–95–6 |
| Bromine pentafluoride | 7789–30–2 |
| 1,3–Butadiene | 106–99–0 |
| Cadmium and cadmium compounds, as Cd | 7440–43–9 |
| Carbon tetrachloride | 56–23–5 |
| Chlorine | 7782–50–5 |
| Chlorine dioxide | 10049–04–4 |
| Chlorine trifluoride | 7790–91–2 |
| Chloroform | 67–66–3 |
| Chromium (VI): chromic acid mists and dissolved Cr (VI) aerosols, as Cr | 7440–47–3 |
| Chromium (VI): compounds and particulates | 7440–47–3 |
| Cobalt, elemental, and inorganic compounds, as Co | 7440–48–4 |
| Diborane | 19287–45–7 |
| 1,2–Dibromoethane (Ethylene dibromide; EDB) | 106–93–4 |
| 1,2–Dichloroethane (Ethylene dichloride; EDC) | 107–06–2 |
| Diglycidyl ether (DGE) | 2238–07–5 |
| Ethylene oxide | 75–21–8 |
| Fluorine | 7782–41–4 |
| Formaldehyde | 50–00–0 |
| Hexachlorobenzene (HCB) | 118–74–1 |

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

| Substance | CAS Number |
|---|---|
| Hexamethylene–1,6–diisocyanate (HDI) | 822–06–0 |
| Hydrazine and hydrazine sulfate | 302–01–2 |
| Hydrogen chloride (Hydrochloric acid; Muriatic acid) | 7647–01–0 |
| Hydrogen bromide | 10035–10–6 |
| Hydrogen cyanide | 74–90–8 |
| Hydrogen fluoride (Hydrofluoric acid) | 7664–39–3 |
| Hydrogen peroxide | 7722–84–1 |
| Hydrogen sulfide | 7783–06–4 |
| Indium | 7440–74–6 |
| Iodine | 7553–56–2 |
| Isophorone diisocyanate | 4098–71–9 |
| Lead Acetate, as Pb | 301–04–2 |
| Lead Phosphate, as Pb | 7446–27–7 |
| Maleic anhydride | 108–31–6 |
| Manganese, elemental and inorganic compounds, as Mn | 7439–96–5 |
| Mercury, as Hg, alkyl compounds | 7439–97–6 |
| Mercury, as Hg, aryl compounds | 7439–97–6 |
| Mercury, as Hg, inorganic forms including metallic mercury | 7439–97–6 |
| Methyl hydrazine | 60–34–4 |
| Methyl isocyanate | 624–83–9 |
| Methylene bisphenyl isocyanate (Methylene diphenyl isocyanate; MDI) | 101–68–8 |
| Methylene chloride (Dichloromethane) | 75–09–2 |
| Nickel and compounds, as Ni | 7440–02–0 |
| Nitric acid | 7697–37–2 |
| Octachloronaphthalene | 2234–13–1 |
| Oxalic acid | 144–62–7 |
| Pentachloronaphthalene | 1321–64–8 |
| Pentachlorophenol (PCP) | 87–86–5 |
| Perchloroethylene (Tetrachloroethylene) | 127–18–4 |
| Phenylenediamine (mixtures and isomers) | 106–50–3 |
| Phosphine | 7803–51–2 |
| Phosphoric acid | 7664–38–2 |
| Phosphorus (yellow) | 7723–14–0 |
| Phosphorus pentachloride | 10026–13–8 |
| Platinum, soluble salts, as Pt | 7440–06–4 |
| Propylene dichloride (1,2–Dichloropropane) | 78–87–5 |
| Rhodium, soluble compounds, as Rh | 7440–16–6 |
| Selenium and compounds, as Se | 7782–49–2 |
| Sulfuric acid | 7664–93–9 |
| Tellurium and compounds, except hydrogen telluride, as Te | 13494–80–9 |
| Tetrafluoroethylene | 116–14–3 |
| Thallium, elemental and soluble compounds, as Tl | 7440–28–0 |
| Tin organic compounds, as Sn | 7440–31–5 |
| 2,4–/2,6–Toluene diisocyanate (mixtures and isomers) (TDI) | 584–84–9 |
| Trichloroethylene (Trichloroethene) | 79–01–6 |
| Trimellitic anhydride | 552–30–7 |
| Triorthocresyl phosphate | 78–30–8 |
| Tungsten, as W, soluble compounds | 7440–33–7 |
| Vinyl chloride | 75–01–4 |
| n–Xylene–α, α'–diamine | 1477–55–0 |

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

**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 and family 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.

**NR 445.13 Review of hazardous air contaminant requirements. (1)** PERIODIC REPORTS. The department, in consultation with the department of health and family 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.

**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 and family services prior to incorporating an emission limit for any of the following requirements in an order or a permit:

(a) Section NR 445.04 (1) (a) 2.

(b) Section NR 445.04 (4) (a) 2.

(c) Section NR 445.05 (1) (a) 2.

(d) Section NR 445.05 (4) (a) 2.

(e) Section NR 445.07 (1) (b).

**(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 and family 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.

**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 4453.08 Register June 2004 No. 582, eff. 7–1–04.