

**Sierra Club Great Lakes Program  
Airborne Toxicant Education Series**

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A Narrative on Wisconsin's Air Management Rules for  
Regulating Airborne Toxicants

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## **Forward**

This document is one in a series produced for the Sierra Club Great Lakes Program in order to facilitate and increase public understanding of toxic substance issues and the connection between toxic air pollution, Great Lakes water pollution and effects on human health and the environment.

In this document, we brief the reader on current provisions of the toxic air pollution regulations of the Wisconsin Department of Natural Resources. The Sierra Club Great Lakes Program hopes that these educational materials will assist citizens in their use of these regulations and stimulate discussion about potential changes in Wisconsin policy to more fully protect public health and the environment.

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### **Note to Readers:**

This document assumes understanding of many terms and some of the basic science of air quality regulation and toxicology that is explained in the Sierra Club Great Lakes Program Airborne Toxicant Education Series document entitled “An Introduction to Airborne Toxicant Evaluation and Regulation.”

Persons who are not already familiar with basic concepts of air quality regulation and toxicology should first read that introductory briefing paper before reading this document.

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## **1. History & Context of Wisconsin's Airborne Toxicant Regulatory Program**

In May of 1983, the Wisconsin Department of Natural Resources (WDNR) formed a Hazardous Emissions Task Force to respond to what had then been stagnation in EPA's federal program to regulate hazardous air pollutants. The seven member Task Force was charged with developing a methodology to establish emissions limitations to protect public health and welfare from hazardous air pollutants.

One of the reasons to convene the task force was public concern over emissions of methyl chloroform and methylene chloride which had been proposed for deregulation since they did not contribute to formation of ozone and smog.

Two prominent environmentalists, Robert Ginsburg and Kevin Green, who both represented Citizens for a Better Environment, sat on the Task Force along with representatives from the medical/public health community, air regulators, commerce officials and industry.

The Task Force made a report in July 1985 which eventually resulted in the adoption of Wisconsin's first major air toxic rule, NR 445, that became effective in October 1988. Subsequent amendments were made to NR 445 through the early 1990's that added additional pollutants for regulation and made other refinements.

In general, attempts to first adopt, and then to amend and/or strengthen the rule have generated significant controversy with industry opposition to proposals by WDNR staff for changes that would increase coverage or stringency of the rule. Prior to issuance of the rule, trade associations representing hospitals, manufacturers, printers, paper/pulp mills, foundries and the petroleum industry challenged the rule in a Wisconsin Circuit Court. The industry plaintiff argued that WDNR exceeded its authority and that regulation of waste incinerators violated the equal protection clause of Federal and State Constitutions. The plaintiffs lost most of their claims and the circuit court's decision was upheld in the Wisconsin Court of Appeals on most of the Defendant WDNR claims.

Later, it took over 4 years for WDNR to incorporate a limited list of EPA-written inhalation reference concentrations in NR 445. Other changes are expected to take a significant amount of time because of industry opposition.

At this writing, WDNR has announced a schedule for new changes to WDNR NR 445 air toxics rules. WDNR intends to seek hearing authorization in 10/99, hold a public hearing in 1/2000, seek Natural Resource Board adoption in 4/2000 with a final effective date of 9/2000. Whether this schedule holds is likely to depend on the level of opposition and the level of public support for any changes, so current Sierra Club efforts to educate citizens about air toxics issue and Great Lakes effects are particularly timely. In addition to changes to NR 445, WDNR is currently expected to make changes to rules addressing emissions of perchloroethylene and toxic emission control technology rules for the printing and publishing industry.

WDNR toxicologists are presently working on a proposal to add over 100 chemicals to the presently existing regulation and to modify acceptable ambient concentrations for existing list chemicals.

Although NR 445 is the heart of Wisconsin's air toxics regulatory effort, several other provisions of Wisconsin's Air Management Rules affect emissions of airborne toxicants both directly and indirectly. To understand the totality of WDNR's air toxics regulatory provisions, it is important to review other important regulatory provisions, the most important of which are:

NR 400	Definitions
NR 405	Prevention of Significant Deterioration
NR 406	Construction Permits
NR 407	Operation Permits
NR 446	Control of Mercury Emissions
NR 447	Control of Asbestos Emissions
NR 448	Control of Beryllium Emissions
NR 438	Airborne Toxicant Annual Emission Reporting Requirements
NR 439	Compliance Testing
NR 449	Control of Vinyl Chloride Emissions
NR 460	Emission Standards for Hazardous Air Pollutants for Source Categories – General Provisions
NR 463	Chromium Emissions for Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks
NR 468	Emission Standards for Hazardous Air Pollutants for Miscellaneous Processes
NR 469	Emission Standards for hazardous Air Pollutants for Halogenated Solvent Cleaning Operations
NR 488	Refrigerant Recovery from Salvaged or Dismantled Refrigeration Equipment

Some of these different air toxics regulations will be discussed in more detail below as appropriate, particularly in relation to NR 445, permitting regulations and Great Lakes issues.

**2. The Heart of Wisconsin's Air Toxics Regulatory Program – NR 445 and Related Permitting Rules – NR 406 & NR 407**

**2.1 A Quick Overview – NR 445 at a Glance**

Wisconsin Air Management Rule NR 445 has eight basic functions:

- a. NR 445's applicability section defines which airborne toxicant sources are regulated pursuant to its provisions to include all emission sources which are not regulated by other Wisconsin air toxic or certain federal hazardous air pollutant rules.
- b. Definitions are provided for various terms, including "hazardous air contaminant" and other pertinent terms
- c. Wisconsin DNR is provided with general duty authority to prevent emissions that harm human health, plant or animal life.
- d. Five different tables of specifically regulated chemicals are provided, each grouped according to considerations of toxicity, use and prevalence; each table provides for threshold emission requirements that bring emission sources under the jurisdiction of the rule through permit rules in NR 406 and NR 407; procedures to amend the tables and various study requirements are also set forth. See Table 1 for a description of the toxicant tables.
- e. In general, the rule provides that an emission source may not cause ambient concentrations of pollutants to which the public is exposed to exceed specific concentrations for chemical agents which are not deemed to be environmental carcinogens (known or suspected cancer-causing materials).
- f. For carcinogens, the rule imposes control technology requirements which must be met that vary according to whether the material is a proven or suspected carcinogen.
- g. In general, the rule provides for immediate compliance for new and modified sources of toxicants
- h. Existing sources of toxicants must submit a plan to comply with the requirements of the rule on a specific timetable, with opportunities for compliance date extensions. Certain variance provisions are also available under the rule.

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<b>Table</b>	<b>Description</b>	<b>Acceptable Ambient Concentration</b>	<b>Control Technology</b>
1	This table contains 103 common chemical and elemental toxicants, most of which display some acute toxicity. The materials are grouped into the categories of acids, cyanides, industrial gases, chemical intermediates, plasticizing compounds, metals and their compounds, monomers, solvents and general/supplemental use chemicals.	On a 24 hour average, not to exceed 2.4% of the 1987-88 ACGIH TLV; or 10% of the TLV for temporary emissions.  On a 1 hour average, not to exceed 10% of the 1987-88 TLV ceiling limit if it exists.	No technology-based emission control standards are required
2	This table contains 64 chemical compounds, all of which are pesticides, rodenticides, insecticides, herbicides or fungicides; all of these materials have acceptable ambient concentrations published by WDNR or defined by the regulation	On a 24 hour average, not to exceed 2.4% of the 1987-88 ACGIH TLV.  On a 1 hour average, not to exceed 10% of the 1987-88 TLV ceiling limit if it exists	No technology-based emission control standards are required
3A	22 known human carcinogens as designated by the U.S. National Toxicology Program (NTP) and the International Association for Research on Cancer (IARC); or determined to be a known carcinogen by WDNR and listed by administrative rule procedure pursuant to NR 445.06(3).	None provided	Lowest Achievable Emission Rate (LAER) is required
3B	89 suspected human carcinogens as designated by the U.S. National Toxicology Program (NTP) and the International Association for Research on Cancer (IARC); or determined to be a suspected carcinogen by WDNR and listed by administrative rule procedure pursuant to NR 445.06(3).	None provided	Sources must install Best Available Control Technology (BACT)
4	157 chemical and elemental toxicants divided into the same categories as provided in Table 1; all have primarily acute toxicity and existing sources must comply with ambient limits by April 1, 1993	On a 24 hour average, not to exceed 2.4% of the 1990-91 ACGIH TLV; or 10% of the TLV for temporary emissions.  On a 1 hour average, not to exceed 10% of the 1990-91 TLV ceiling limit if it exists.	No technology-based emission control standards are required
5	17 chemical and elemental toxicants having U.S. EPA reference concentrations and uncertainty factors of 300 or less listed as of January 1, 1995	Not to exceed the EPA reference concentration listed in regulation on an annual average.	No technology-based emission control standards are required

## **2.2 A Detailed Analysis of NR 445 and its Interaction with Permitting Rules**

### **2.2.1 Applicability of NR 445**

NR 445 creates a general presumption of applicability for

“...all air contaminant sources which may emit hazardous pollutants and to their owners and operators.”<sup>1</sup>

However, the rule exempts emission sources regulated under NR 446 (all mercury sources and specifically chlor-alkali plants and sludge processing units), NR 447 (asbestos sources), NR 448 (beryllium sources) and NR 449 (vinyl chloride sources). The exemption only extends to these 4 pollutant source categories for the specific pollutant named. For example, if a mercury emitting chlor-alkali plant emits chlorine gas, the chlorine gas emission would still be subject to NR 445 requirements.

In addition, the rule completely exempts sources which are subject to a final Maximum Achievable Control Technology (MACT) rule issued by the U.S. Environmental Protection Agency under the Federal Clean Air Act Amendments of 1990 if such MACT standard is issued before the effective date of “emission limitations” of the Wisconsin rule.

However, the rule also provides that sources that later become subject to such a final MACT standard issued after the effective date of the Wisconsin emission limitation requirements shall continue to comply with the Wisconsin rule<sup>2</sup>. This “anti-backsliding” distinction is important because many of EPA’s MACT standards have only been proposed at this writing and have not been finally promulgated. Certain requirements of the Wisconsin rule have already come into effect and this provision is intended to ensure the requirements remain in place as long as they do not conflict with the Federal MACT emission standards.

### **2.2.2 NR 445's General Duty Authority**

NR 445 contains an important “general duty” provision which potentially would have over-arching effectiveness under certain circumstances:

“General limitations. No person may cause, allow or permit emissions into the ambient air of any hazardous substance in such quantity, concentration or duration

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<sup>1</sup> NR 445.01(1)(a)

<sup>2</sup> NR 445.01(1)(b)



as to be 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 hazardous air contaminants listed in Tables 1 to 4 of NR 445.04.”<sup>3</sup>

Theoretically, this provision creates broad authority to regulate virtually any kind of air contaminant and for agency jurisdiction over most any kind of adverse public health and environmental effect. However, in practice, such general authority provisions can be difficult to use. NR 445.03 might most frequently be used to address already existing toxic air pollution hazards that have been created by existing emissions in a “reactive” mode. Such provisions might potentially be used to address permit-related controls in a preventative, prospective situation. Under this kind of authority, WDNR officials might consider a case by case review of a particularly important chemical emission issue that may arise in a permit proceeding.

Although the general duty regulation is important, agencies like WDNR might end up on the defensive any time they try to use such a regulation. Such general duty provisions are generally easier to use on small sources who do not have sophisticated environmental and legal resources available. Large industrial facilities will generally tend to object to use of general duty provisions by state government through the use of detailed scientific and legal responses and contested hearings. An agency like WDNR can be subject to a counterattack with defenses claiming such theories as selective prosecution, equal protection and due process and abuse of agency discretion, as well as detailed scientific defenses against claims of causation and the environmental harms alleged by the agency.

### **2.2.3 NR 445 is a “List-Based” Airborne Toxicant Regulation with Five Different Tables of Chemical and Elemental Toxicants Listed**

Under NR 445.04, WDNR Air Management Rules created 5 different lists known as Tables 1 through 5. If a chemical is not on one of the tables, it will be unregulated in Wisconsin unless it is otherwise addressed by WDNR under the general duty provisions, by other air management rules addressing a limited number of substances or industrial sectors, or by a final MACT standard issued by U.S. EPA or a “case by case” MACT standard issued by one of the states after May of 1999.

A total of 452 toxic chemical compounds and elements are regulated under all five tables.

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<sup>3</sup> NR 445.03

A chemical is regulated differently depending on which table it is placed. Depending on the list, a chemical emission may be subject to varying stringency in technology-based emission control requirements (or no requirement for emission control at all) and to an earlier or later final compliance date for existing sources to show that ambient impacts around a facility are acceptable.

See Table 1 for a description of the basis for the 5 tables and their corresponding requirements for maximum ambient impact limitations and emission control technology requirements.

Under NR 445, a “new or modified” source is considered to be one on which construction or modification commenced after October 1, 1988.<sup>4</sup> A modification is defined as follows:

“‘Modification’ means any physical change in, or change in the method of operation of, a stationary source that increases the amount of emissions of an air contaminant or that results in the emission of an air contaminant not previously emitted. A modification does not include any changes identified in NR 406.04(4).”<sup>5</sup>

NR 445 defines as an existing source a stationary source on which construction or modification was last commenced on or before October 1, 1988.<sup>6</sup>

#### **2.2.4 Exemptions from Ambient Impact Limits and Technology Requirements**

WDNR’s Air Management Rules also specify important exemptions from the ambient impact limits and emission control technology requirements provided for by Tables 1-5. All emissions from new, modified or existing laboratories (such as university and industry research facilities) are exempted from ambient limits and technology requirements.

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<sup>4</sup> See NR 445.04 generally.

<sup>5</sup> NR 400.02(55); NR 406.04(4) goes on to describe certain activities which will not be considered as modification under the rules.

<sup>6</sup> See NR 445.05 generally.

For Table 1, 2 and 4, “indoor fugitive emissions” are categorically exempted from all ambient limits for new, modified and existing sources.

For Table 3 and 5 pollutants, indoor fugitive emissions that are exhausted to the outdoor air through general building ventilation and which have a TLV (1987-88 index for table 3 carcinogens and 1990-91 index for table 5 pollutants) and for which the source demonstrates that they are in compliance with occupational safety and health requirements are exempted from control technology or ambient limit requirements for new, modified and existing sources.<sup>7</sup>

Clarifying note to readers of NR 445:

In writing NR 445, WDNR officials used the words “emission limits” to generally apply to both stack emission rates and also for limits to ambient ground-level impacts. In general, use of the words “emission limits” to describe limitations on the maximum ambient impact a source may have at ground-level outside of its property is a non-traditional use of that term..

This document will use the words “ambient impact limitation” to describe what Wisconsin has described as an “emission limit” that is really an attempt to limit ambient concentrations of contaminants and not stack emissions.

Emission sources which burn virgin fossil fuels which are natural gas, liquid petroleum gas, distillate fuel oil, gasoline and diesel fuel are categorically exempted from Table 1, 3, 4 and 5 regulation for new, modified and existing sources.<sup>8</sup>

New, modified and existing emission sources which burn fossil fuels which are coal or residual fuel oil are also exempted from Table 1, 3, 4 and 5 regulation as long as they utilize a discharge stack that is tall enough to deter aerodynamic downwash of plumes.<sup>9</sup>

Certain emission sources which are gasoline dispensing facilities are eligible to be exempted from Table 3 requirements for known and suspected carcinogens and Table 5 requirements. These exemptions depend on whether the sources are a new, modified or existing source, the amount of gasoline throughput they are expected to have and/or had in 1986, or whether they have made an adequate demonstration to WDNR that they will

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<sup>7</sup> NR 445.04(3)(c)6. and NR 445.04(4r)(b)4. for new and modified sources. NR 445.05(3)(c)7. and NR 445.05(4r)(b)4. for existing sources.

<sup>8</sup> NR 445.04(1)(c)1., NR 445.04(3)(c)1., NR 445.04(4)(c)1. and NR 445.04(4r)(b)1. for new and modified sources; NR 445.05(1)(c)1., NR 445.05(3)(c)1., NR 445.05(4)(c)1. and NR 445.05(4r)(b)1. for existing sources.

<sup>9</sup> NR 445.04(1)(c)2., NR 445.04(3)(c)2., NR 445.04(4)(c)2. and NR 445.04(4r)(b)2. for new and modified sources; NR 445.05(1)(c)2., NR 445.05(3)(c)2., NR 445.05(4)(c)2. and NR 445.05(4r)(b)2. for existing sources

not exceed certain emission limitations. (See actual text of rules for complex detailed discussion of these exemptions).

New, modified and existing emission sources required to meet a national emission standard promulgated prior to 1995 under federal regulations at 40 CFR part 63 are exempt from Table 5 requirements concerning EPA reference concentrations.<sup>10</sup>

Existing (not new or modified) wood waste combustors are exempted from Table 3 control technology requirements for known and/or suspected carcinogens as long as they operate with “good combustion technology” which is further defined in the following way:

“Good combustion technology means that technology which provides for a minimization of emissions of hazardous air contaminants listed on Table 3 of 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.”<sup>11</sup>

### **2.2.5 Construction Permits for New and Modified Sources and Operating Permits for Existing Sources**

Although Tables 1, 2, 4 and 5 provide for ambient impact limitations and Table 3 provides for limitations in the rate of stack emissions, these requirements are generally not directly enforced from the rule through the use of ambient air quality monitoring.

It is not practical to provide a community air quality monitoring network for all of the potential airborne toxicants at a representative number of receptor points around all of the airborne toxicant sources in Wisconsin. Such an attempted monitoring effort would pose substantial technical and economic problems. Airborne toxicant monitoring may not be capable of detecting toxicants on a continuous, unattended basis and may not be able to detect the maximum ground-level ambient impacts that might occur.

Instead, the ambient impact requirements are imposed through permit emission rate and exemption requirements and air quality modeling reviews for the most significant

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<sup>10</sup> See NR 445.04(4r)(b)(5) for new and modified sources and NR 445.05(4r)(b)(5) for existing sources.

<sup>11</sup> NR 445.05(3)(c)(6)

sources of airborne toxicants. Wisconsin's Air Management Rules tie the NR 445 system of Tables 1-5 into requirements for permits relating to construction permits for new/modified sources and to operation permits for existing sources.

Each of Tables 1-5 in NR 445 have threshold emission rates published for each airborne toxicant. These threshold emission rates are actually considered as “maximum theoretical emissions,” which are defined as:

“...the quantity of air contaminants that theoretically could be emitted by a stationary source without control devices based on the design capacity or maximum production capacity of the source.”<sup>12</sup>

The rule also provides for additional guidance in how these theoretical emission rates would be calculated.

For Tables 1, 2, and 4, the threshold emission rates for each toxicant are listed as pounds per hour averaged over a 24 hour period, unless the particular toxicant in question has a “ceiling value” published for a Threshold Limit Value (TLV). In that case, the averaging time shall be one hour for calculation of the maximum expected hourly emission.

For the chronic toxicants in Tables 3 and 5, being carcinogens and chronic toxicants with an EPA reference concentration, the threshold emission amounts are in pounds per year. For Tables 1, 2, 4 and 5, there is one emission threshold listed for sources with emission stacks less than 25 feet high and another emission threshold listed for sources with stacks that are 25 feet and higher.

If an emission source has “maximum theoretical emissions” that are less than the published emission threshold numbers in Tables 1-5, they are not subject to requirements for either a construction permit or operating permit provided they meet all other requirements necessary for general permit exemptions. They must still not violate acceptable ambient impact requirements provided by Tables 1-5, but in practice there will likely be no review of their toxic impact on ambient air quality.

If an emission source has “maximum theoretical emissions” greater than the published emission thresholds in Tables 1-5, then a new/modified source must obtain a construction permit and an existing source must obtain an operating permit and they are not eligible for the exemption from permit requirements.<sup>13</sup> During the review of the

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<sup>12</sup> NR 400.02(53m)

<sup>13</sup> NR 406.04(2)(f)(1-3m) for construction permits on new and modified sources and NR 407.03(2)(d) for operating permits on existing sources.

permit, a source must demonstrate that actual emissions (not the maximum theoretical emission number) will not cause ambient air quality impacts outside the plant property to exceed the requirements provided under the rule for acceptable ambient impacts for Table 1, 2, 4 and 5 airborne toxicants. Such demonstrations are made through the use of ambient air quality models that relate emissions from stacks and fugitive emissions to subsequent expected ground-level ambient air quality.

Where a source cannot show compliance with the acceptable ambient concentration for an airborne toxicant, the permit may be modified to limit the emission rate of a toxicant or a source may provide a taller stack to get more dilution of toxicants before permit issuance.

For Table 3 known or suspected carcinogens, a demonstration on emission control technology must be made by the applicant and analyzed by WDNR Bureau of Air Management staff. Under the rule, sources of known carcinogens must apply Lowest Achievable Emission Rate (LAER) technology, which:

“...means the rate of emission of a hazardous air contaminant which 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.”<sup>14</sup>

Emission sources of suspected human carcinogens must install Best Available Control Technology (BACT), which:

“...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.”<sup>15</sup>

Both LAER and BACT would be imposed in a permit through the use of an emission rate limitation that was commensurate with the level of performance that a LAER or BACT controlled facility could achieve.

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<sup>14</sup> NR 445.02(8)

<sup>15</sup> NR 445.02(4)

### **2.2.6 NR 445 Regulation of Municipal Solid Waste and Infectious Waste Incinerators**

NR 445 provides strong technology-base requirements for all municipal solid waste (MSW)<sup>16</sup> and infectious waste incinerators. There is no need for ambient and emission screening and emission threshold requirements to trigger these technology-based requirements in contrast to other industrial emission source categories.

All new, modified and existing MSW and infectious waste incinerators must control emissions of hazardous air contaminants with emission control technology capable of achieving the Lowest Achievable Emission Rate (LAER) performance. In addition, such incinerators must also comply with ambient impact limitations for airborne toxicants in Tables 1, 4 and 5.<sup>17</sup>

However, if the waste combustor burns refused derived fuel<sup>18</sup> and obtains less than 50% of its heat input from such refused derived fuel it is not subject to the incinerator section cited above.<sup>19</sup> It is possible, however, that such facilities may still be subject to the emission tables through analysis of “maximum theoretical emissions” under other provisions of NR 445.

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<sup>16</sup> NR 445 provides a reference to WDNR solid waste definitions of “municipal solid waste,” which is defined to mean:

- “(a) Household waste, or
- (b) Solid waste from commercial or industrial sources that does not contain hazardous waste and does not contain any process waste which is the direct or indirect result of the manufacturing of a product or the performance of a service such as dry cleaners or paint shops. “Municipal solid waste” does not include waste wood, papermill sludge, sewage sludge, tires or industrial process wastes.” NR 500.03(150)

<sup>17</sup> NR 445.04(5)(a)&(b) for new and modified incinerators and NR 445.05(5)(a)&(b) for existing incinerators.

<sup>18</sup> “Refused Derived Fuel” is defined to mean:

“...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. Refused derived fuel does not include tires, tire fragments, waste oils, waste solvents, and other materials not normally contained in household solid waste.” NR 445.02(10)

<sup>19</sup> NR 445.04(5)(c) for new and modified incinerators and NR 445.05(5)(c) for existing incinerators

There appears to be no minimum size limitation for applicability of the NR 445's waste incinerator rules, unlike present Federal regulations which have a cutoff on applicability at 250 tons of MSW per unit per day.

### **2.2.7 Airborne Toxicant Variances under NR 445**

NR 445 contains a variance provision for both new/modified and existing sources that allows sources to operate without complying with Lowest Achievable Emission Rate (LAER) technology controls for proven carcinogens and/or MSW/infectious waste incinerators, or the ambient impact requirements for airborne toxicants in Table 5. A public hearing is required and the variance is limited to 5 years. At the conclusion of such a variance it is subject to additional review, notice, hearings and potential modification, extension or rescission.<sup>20</sup>

Sources seeking a variance on LAER technology requirements for proven carcinogens and waste incinerators must show economic infeasibility, that the action would not cause significant harm to environment or public health and that the source is already controlled by the less stringent technology standard of Best Available Control Technology (BACT).<sup>21</sup>

Sources seeking a variance on ambient impact limitations associate with Table 5 must show that all sources owned or controlled by the applicant in Wisconsin are in compliance with, or are on a schedule for compliance with, all Wisconsin Air Management Rules. Sources must also show technological or economic infeasibility to comply, that residual emissions will not cause significant harm to public health and that good faith efforts, reasonably available alternative operating procedures and interim control measures to minimize emissions have been imposed.<sup>22</sup>

### **2.2.8 Compliance Schedules for Existing Sources under NR 445**

NR 445 provides schedules for final compliance for existing sources with ambient impact limits and control technology requirements; existing sources, again, are defined as those on which construction or modification last commenced on or before October 1, 1988<sup>23</sup>.

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<sup>20</sup> NR 445.04(7)(a) and NR 445.05(8)(a)

<sup>21</sup> NR 445.04(7)(b) and NR 445.05(8)(b)

<sup>22</sup> NR 445.04(7)(c) and NR 445.05(8)(c)

<sup>23</sup> See NR 445.05(6), sections (a), (am), (b), (bm)



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The compliance schedules for Table 1, 2 and 3 toxicants for most existing sources depend on how large an emitter they are of the traditional criteria pollutants, volatile organic compounds (VOC) and particulate matter.(PM), which airborne toxicants are emitted and which of these pollutants are contained in the specific Tables 1-5 of NR 445.

<b>Requirement</b>	<b>Facilities over 100 tons of VOC or PM in 1986</b>	<b>Facilities with all common pollutants together over 100 tons in 1986</b>	<b>Facilities with all common pollutants together less than 100 tons in 1986</b>
Notice to WDNR of which toxicants are emitted in Table 1-3	Due 1/1/1989	Due 6/1/1989	Due 12/1/1989
Submit compliance plan for Tables 1-3	Due 4/1/1989	Due 10/1/1989	Due 4/1/1990
Achieve Final Compliance for Tables 1-3 by	Due 4/1/1990 for measures other than control equipment;  Due 4/1/1991 for measures including installation of control equipment	Due 10/1/1990 for measures other than control equipment;  Due 10/1/1991 for measures including installation of control equipment	Due 4/1/1991 for measures other than control equipment;  Due 4/1/1992 for measures including installation of control equipment

Table 2 Compliance and Schedule Requirements for Table 1, 2 and 3 Airborne Toxicants of NR 445

Table 2 provides compliance schedule information for Toxicant Tables 1-3.<sup>24</sup> Table 3 provides compliance schedule information for Toxicant Table 4.

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<sup>24</sup> Note that these schedules do not necessarily apply to emissions of diisobutyl ketone, methylene bis(4-cyclohexylisocyanate), p-nitrochlorobenzene, xylidine, cromyl chloride, tert-butyl chromate, proylene oxide and anisidine. These chemicals had a change in status during a time of the rulemaking that interacted with the general timetable requirements and, as a result, special requirements were added to the rule on schedules of compliance for these chemicals. The reader is referred to NR 445.05(6)(am) & (b) for these requirements. In addition, aspects of these schedules do not apply to emissions of formaldehyde and chloroform, substances emitted by forest product (waferboard, plywood, particle board) and pulp mills, which have a special section discussed later in this paper (see NR 445.05(7)).

<b>Requirement</b>	<b>Deadline Date</b>
Notice to WDNR of which toxicants on Table 4 are emitted	Due 4/1/1990
Submit compliance plan for Tables 4 ambient impact limitations	Due 4/1/1992
Achieve Final Compliance with Table 4 requirements ambient impact limitations	Due 4/1/1993 for measures other than control equipment;  Due 4/1/1994 for measures including installation of control equipment

Table 3 Compliance Schedules for Table 4 Toxicants of NR 445

Table 4 provides compliance schedule information for Toxicant Table 5 of NR 445. Please note that the schedule for Table 5 pollutants is strongly influenced by a set of source categories EPA published in 1994 and the corresponding deadline dates EPA has put on itself to issue final MACT standards under the Federal Clean Air Act.

WDNR Bureau of Air Management is required to review submitted compliance plans to determine whether control technology is adequate. WDNR must issue an approval, conditional approval or disapproval within 6 months after the applicable deadline date for submittal of a compliance plan. If WDNR fails to act within the 6 month timeframe, the applicant is automatically granted a 6 month compliance date extension on their final compliance date under the rules.<sup>25</sup>

In demonstrating final compliance a source may rely on material safety datasheets, mass balance calculations or other engineering methods. However, WDNR may require that a stack test be conducted to affirm the accuracy of emission estimations. For Table 5 toxicants, a source may exclude from compliance calculations any emissions that are otherwise exempted under the Table 5 provisions of the rule.

Facilities that have installed emission control equipment in order to comply with the rule may not be required to install additional control equipment for a period of 10

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<sup>25</sup> NR 445.05(6)(c)

years after installation of the initial equipment or the useful life of the equipment, whichever the WDNR determines is less.<sup>26</sup>

<b>EPA's Deadline for MACT Standard Development as of July 1, 1994 for a list of source categories</b>	<b>Deadline for Submitting Wisconsin Table 5 Ambient Impact Compliance Plan</b>	<b>Deadline for Final Compliance with Wisconsin Table 5 Ambient Impact Limits</b>
Facility categories on EPA's 11/15/1994 deadline list	Within 12 months after effective date of the MACT standard, but not later than 5/15/1996	By the MACT standard final compliance deadline, but no later than 5/15/1999
Facility categories on EPA's 11/15/1997 deadline list	Within 12 months after effective date of the MACT standard, but not later than 5/15/1999	By the MACT standard final compliance deadline, but no later than 5/15/2002
Facility categories on EPA's 11/15/2000 deadline list	Within 12 months after effective date of the MACT standard, but not later than 5/15/2002	By the MACT standard final compliance deadline, but no later than 5/15/2005
For facilities not on any EPA deadline list category	5/15/2002	5/15/2005
For facilities with emission units included in more than one EPA deadline list category	Within 12 months after effective date of the last MACT standard made effective, but not later than 5/15/2002	By the last scheduled MACT standard final compliance deadline, but no later than 5/15/2005

Table 4 Compliance Schedule Requirements for Table 5 Toxicants of NR 445

### **2.2.9 Chloroform and Formaldehyde Study and Compliance Requirements**

Undoubtedly because of demands from Wisconsin pulp mills which emit chloroform from the bleaching process and Wisconsin forest products facilities which emit formaldehyde from waferboard, particle board and plywood plants, special provisions in the rule apply to these two toxic pollutants.<sup>27</sup>

<sup>26</sup> NR 445.05(6)(e)

<sup>27</sup> See generally, NR 445.05(7)

By January 1, 1991, WDNR was to produce a report on emissions and control technology for these two suspected carcinogens.

WDNR provided different compliance provisions for sources emitting these pollutants. By December 1, 1989, sources were to report that they had such emissions and they were required to submit a compliance plan by April 1, 1992 in order to achieve the Table 3 requirement for Best Available Control Technology (BACT). If a source does not install control equipment to meet this limit, they must finally comply by April 1, 1993. If they are installing control equipment, they must finally comply by April 1, 1994.

However, NR 445.05(7)(c) provides the opportunity to obtain an additional 2 year compliance date extension under a variance-like procedure with criteria for approval, public notice and a potential public hearing.

### **3. Control of Mercury Emissions under NR 446**

A special section of WDNR air management rules regulates mercury emissions from a limited set of source categories.

Any source which emits mercury must limit ambient impact concentrations so as not to exceed 1 microgram per cubic meter on a 30 day average. This type of limit will be relatively easy to meet for tall stack sources and typical property boundaries.

Chlor-alkali plants and mercury ore processing facilities must limit mercury emissions to 2,300 grams per 24 hour period. Sludge incineration plant or sludge drying units that process wastewater treatment plant residuals must limit emissions to no more than 3,200 grams of mercury per 24 hour period.<sup>28</sup> Test methods are also specified by the rule.

### **4 Other Hazardous Pollutant Control Provisions**

Several other provisions of the Wisconsin rules control airborne toxicants. However, the basis of these rules is, for the most part, federal regulations for National Emission Standards for Hazardous Air Pollutants, Maximum Achievable Control Technology and New Source Performance Standards. A complete review of all of these provisions was not undertaken in this review, but it is expected that the provisions are substantially at the initiative of U.S. EPA federal regulations and do not represent unique state airborne toxicant initiatives.

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<sup>28</sup> NR 446.03 (1)-(3)

Persons dealing with various pollutants and sectors should study these provision carefully, however, to ensure that none are weaker than existing federal regulations, or to take advantage of any more stringent state control initiatives that are present. The provisions affect certain pollutants (i.e. beryllium, asbestos, chlorofluorocarbons, perchloroethylene, lead, etc.) or particular industrial sectors under both MACT and NSPS rules.

Some additional rules merit discussion because of their potential to affect emissions of airborne toxicants.

#### **4.1 Malodorous Emissions and Open Burning under NR 429**

Wisconsin's regulation to control malodorous emissions and open burning will affect state emissions of airborne toxicants. Some airborne toxicants that are volatile organic compounds or reduced sulfur compounds have the potential for serious odor impacts.

Wisconsin's general duty on odors provides:

“No person may cause, allow or permit emission into the ambient air of any substance or combination of substances in such quantities that an objectionable odor is determined to result unless preventive measures satisfactory to the department are taken to abate or control such emissions.”<sup>29</sup>

Wisconsin air management rules provide two tests to determine whether an objectionable odor exists. The first involves an agency determination that such a condition exists based on the nature, intensity, frequency and duration of the odor, considered in light of the type of area involved and other “pertinent factors.”<sup>30</sup> The second threshold criteria occurs when 60% of a random sample of persons exposed to the odor in their place of residence or employment claim it to be objectionable and the nature, intensity, frequency and duration of the odor are considered.<sup>31</sup>

The rules also describe various and appropriate emission control measures to achieve odors reductions.

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<sup>29</sup> NR 429.03(1)

<sup>30</sup> NR 429.03(2)(a)

<sup>31</sup> NR 429.03(2)(b)

Wisconsin's open burning rule purports to prohibit such practices, but the 12 different exceptions provided essentially allow extensive open burning of a variety of waste materials by a variety of parties under a wide variety of conditions.<sup>32</sup>

#### **4.2 Airborne Toxicant Annual Emission Reporting Requirements Under NR 438**

Wisconsin Rule NR 438 provides for a system of annual airborne toxicant emission inventory reporting. Table 1 of NR 438 provides a list of 547 airborne toxicants and common criteria pollutants. Carbon dioxide emissions are also required for reporting. Each listed substance has an associated threshold emission reporting level in pounds per year. If a stationary source of pollution emits an NR 438 Table 1 substance above the reporting threshold, then it must annually report that emission to WDNR.

March 1 is the deadline for reporting emissions during the previous calendar year.

In addition to emissions information, the reports also require a variety of operating, process, production, stack, fuel and other extensive types of information.<sup>33</sup>

#### **4.3 Control of Lead Emissions under NR 427**

Wisconsin has provided a limited and general rules section on the control of airborne lead emissions. It applies to all emitters of lead or lead compounds of whatever size. Under the regulation, lead/lead compound emissions are prohibited that violate an air standard, air increment or that create air pollution.<sup>34</sup> Another provision simply says that emissions of lead/lead compounds that exceed a permit condition issued by the department is a violation.

#### **4.4 Shutting Off Volatile Organic Emission Controls During Non-Ozone Season**

Under NR 425.04(4), sources of airborne toxicants that are volatile organic compounds and which control these emissions through the use of gas-fired afterburners, incinerators and potentially other energy intensive devices are authorize to terminate use

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<sup>32</sup> NR 429.04(1) and (2)

<sup>33</sup> NR 438.04 generally

<sup>34</sup> NR 427.025

of these devices during the non-ozone/smog season. This time is generally regarded as October through April.

Under this rule, a source may turn off such emission controls as long as they are not required to otherwise comply with NR 400-499, with other toxic substance requirements or for the control of malodorous emissions. The rule does not set forth a process for specifically determining these contingent needs, however. As a result, significantly larger emissions may occur from sources using this exception during certain times of the year.

#### **4.5 Stack Test Compliance Testing Requirements Under NR 439**

Aspects of NR 439 that address determination of compliance provide for some fairly stringent stack emission testing requirements. Under provisions of the rule, a variety of sources with permits must perform stack testing for lead, mercury, beryllium, vinyl chloride and total reduced sulfur compounds (among other pollutants and process) every 24 months.<sup>35</sup> The rule also provides a waiver provision by which the WDNR can excuse a source from this requirement, notably if the most recent stack test shows emission are 50% or less of the applicable emission limitation.<sup>36</sup>

A source of lead emissions covered by NR 427.03 and which has an allowable emission limitation of one ton per year or more of lead is subject to the 24 month periodic testing requirement. Sources generally subject to NR 445 through NR 449 may be required to conduct mercury testing under this provision.<sup>37</sup> Pulp mills subject to total reduced sulfur limitations under NR 417.06 shall also test on the 24 month schedule.<sup>38</sup>

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<sup>35</sup> See NR 439.075 generally.

<sup>36</sup> NR 439.075(4)(a)(1)(b)

<sup>37</sup> NR 439.075(2)(b)

<sup>38</sup> NR 439.075(2)(a)(3)