

## Introduction and Terminology

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# Introduction and Terminology

## Introduction

The *Michigan Air Use Permit Technical Manual* contains information for preparing air use Permit to Install applications that are submitted to the Michigan Department of Environmental Quality (MDEQ), as well as details on issues surrounding these permits. The purpose of the manual is to organize information on Michigan air issues into a single document which can be supplemented by additional material. The loose leaf format allows updating and customizing by the user.

## **Contents of the Technical Manual**

The technical manual consists of two binders: the original volume and "Volume II." Each manual contains sections or "tabs" which outline such items as when an air permit is required, what the permit application and review process involves compliance issues, and technical guidance modules. The general contents of the manual includes:

## Volume I (Original)

***Introduction and Terminology:*** The first section contains a statement of the purpose of this project and identifies the individuals, agencies, and companies that were instrumental in the development of this manual. Sections include how to use the manual, a general overview of contents, and information on the manual development and updates. Acronyms are frequently used when referring to air quality regulations. This section defines these acronyms and provides definitions of common air quality terms.

***Michigan Guide to Permits to Install:*** This section presents the Permit to Install requirements, the air permit application and review process, and compliance with issued air permits. This general section provides an overview of the permitting process.

***Technical Guidance:*** The *Technical Guidance* sections provide a more in-depth review of issues surrounding air permits. Topics found in these sections include:

- Federal and Michigan Air Quality Legislation
- Federal Air Quality Standards
- Emission Calculations
- Michigan Air Toxics Regulations
- Major Sources
- Control and Pollution Prevention Strategies
- Air Quality Dispersion Modeling
- Complying with Permit and Reporting Requirements
- Continuous Emission Monitoring
- Stack Sampling
- Access to Public Records
- Tax Exemptions for Air Pollution Control
- Sources of Air Permit Information

The Michigan Department of Environmental Quality (MDEQ), Environmental Science and Services Division (ESSD) holds periodic workshops on air issues that are helpful for some of the above areas.

## **Volume II**

### ***Technical Guidance***

- AQD Guidance (Source Specific Guidelines, Operational Memos, etc.)
- Renewable Operating Permits
- CAAP Publications
- Tab 19
- Tab 20

### **Strategy for Use**

All manual users should familiarize themselves with the *Michigan Guide to Permits to Install* section to understand the Michigan Permit to Install program. This section provides guidance for simple permit applications. If more details on specific issues are needed, then the *Technical Guidance* sections in the original manual and in Volume II should be consulted. If answers to questions are not found these sections, additional help is available from the MDEQ permit engineers or various private entities and organizations.

Presently in the state of Michigan, the Permit to Install is the cornerstone of the air quality program. The Permit to Install has important stipulations regulating releases of air pollutants that a facility needs to understand and follow. There are many more facilities that need Permits to Install in Michigan than will need a Renewable (federal Title V) Operating Permit. There are, however, instances where grandfathered or exempt sources without Permits to Install may fall under the Title V of the Clean Air Act Amendments of 1990's Operating Permit Program. If there is doubt about the applicability of the Permit to Install program or the Renewable (Title V) Operating Permit Program to a specific source, the district and Lansing MDEQ staff can be contacted for assistance.

This manual has some details on the Renewable Operating Permit Program. However, there are resources about this program in the manual that can be consulted, specifically the Operational Memoranda in Tab 16 of Volume II. Also, the Michigan Clean Air Assistance Program's *PASS-ROP Workbook* and *Life After ROP* guide serve as additional information resources. The Michigan Clean Air Assistance Program is a part of the MDEQ, ESSD and can be reached at 1-800-662-9278.

Throughout the manual, abbreviations and acronyms are used. For instance, "MDEQ" refers to the Michigan Department of Environmental Quality, "USEPA" is the United States Environmental Protection Agency, and the "CAA" is the Clean Air Act. The *Air Quality Terminology* section (see page 6) should be consulted for other terms. A glossary is also included in this section. Legal definitions of terms can be found in the appropriate sections of the federal Clean Air Act, the Michigan Natural Resources and Environmental Protection Act, Title 40 of the *Code of Federal Regulations*, and the Michigan *Administrative Rules for Air Pollution Control* (P.A. 451 of 1994).

## Manual Updates

There will be yearly updates of this manual that will replace the existing text. Every user of the manual needs to be registered with the MDEQ, ESSD to receive the updates. Please inform the ESSD of any changes in ownership of the manual or changes in address. All new or changes in registration should be directed to:

Michigan Department of Environmental Quality  
Environmental Science and Services Division  
Clean Air Assistance Program  
P.O Box 30457  
Lansing, MI 48909-7957  
Phone: (800) 662-9278  
FAX: (517) 335-4729

In order to keep your manual current, it is imperative to make the changes in the updated pages as soon as they are mailed to you. Each new series of pages will have the current date so you can confirm that the new items have been put in place.

The pages in the manual will have footers which will show the section of the manual, the date, and the page number. When updates are received, the new page(s) should be inserted in the proper place and the old page(s) discarded. For example, if this page was updated, you would receive "Introduction & Terminology (Date of Update) Page 5" to replace this page.

It is also possible that all of the material in a given tab could be replaced, new material could be added to various tabs, and new tabs created. In the case of an update of a whole section, the entire old section would be discarded. Additions to the *MDEQ Guidance* section (i.e. new Operational Memorandums) and *Michigan Air Toxics* sections may not include footers and will have to be replaced in the sequence of these individual documents.

A list of changes in the manual will be provided with each update. This list should be placed after the *Table of Contents* in front of the manual. To further assist you with manual organization, a page index is now provided which indicates the most recent chronological update to each page. You may use this to verify that each page in your manual is current. Those who have recently purchased manuals will have the updates already incorporated into the text.

## Development of the Technical Manual

The *Michigan Air Use Permit Technical Manual* is the result of a collaborative effort between government, industry, trade organizations, and academia to compile resources for understanding the air permit program in Michigan. A Steering Committee has provided oversight and advice for the project, MDEQ staff and others have written significant portions of the manual, and many individuals have devoted time to reviewing the modules. The manual is thus a synthesis of information from multiple sources.

To mention all of the contributors to the manual would risk omitting individuals who have helped with this extensive project. Nevertheless, the core Steering Committee is gratefully acknowledged for their diligence and efforts over the past years to make the manual a reality:

Dennis Armbruster, Air Quality Division, MDEQ

David Fiedler, Environmental Science and Services Division, MDEQ

Chuck Hadden, Michigan Manufacturers Association

Joseph Trombka, The Dow Chemical Company

Gary Walker, Lacks Enterprises

Ronald Ward, Grand Valley State University Water Resources Institute

The Steering Committee has devoted countless hours to the project and has made possible the resources needed to complete the project.

Additionally, MDEQ staff and others have contributed greatly to writing the modules. Specific writers are noted in the various modules.

Student research assistants at the Grand Valley State University Water Resources Institute contributed to the manual through their typing efforts and organization of materials for the project.

Project Manager and editor for the Michigan Air Use Permit Guidance Document Project was Janet Vail, Research Associate, Grand Valley State University Water Resources Institute (GVSU-WRI).

Upon completion of the June 1997 manual update, the ESSD's Michigan Clean Air Assistance Program took over the responsibilities of updating the manual and handling registrations. Staff of the MDEQ, Air Quality Division (AQD) will continue to provide technical information for the updates. The AQD Advisory Group now provides oversight and direction of the manual, activities previously performed by the Core Steering Committee.

Questions and comments regarding the manual should be directed to:

Michigan Department of Environmental Quality  
Environmental Science and Services Division  
Clean Air Assistance Program  
P.O Box 30457  
Lansing, MI 48909-7957  
Phone: (800) 662-9278  
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## Air Quality Terminology

### Acronyms

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<b>acfm</b>	actual cubic feet per minute
<b>Act 348</b>	Michigan Air Pollution Act, P.A. 348 of 1965, as amended, (M.C.L.A. § 336.11 to 336.36), repealed in 1995 (See Act 451)
<b>Act 451</b>	Michigan Natural Resources and Environmental Protection Act, P.A. 451 of 1994
<b>APA</b>	Administrative Procedures Act
<b>AQD</b>	Air Quality Division of the Michigan Department of Environmental Quality
<b>BACT</b>	Best Available Control Technology
<b>Btu</b>	British thermal unit. The amount of energy required to raise the temperature of a pound of water one degree Fahrenheit from 39.2 degrees Fahrenheit.
<b>CAA</b>	Federal Clean Air Act
<b>CAAA</b>	Federal Clean Air Act Amendments of 1990
<b>CAAP</b>	Michigan Clean Air Assistance Program
<b>CAS</b>	Chemical Abstract Service
<b>CEM</b>	Continuous Emission Monitor
<b>CFR</b>	Code of Federal Regulations
<b>CTG</b>	Control Technique Guideline
<b>FR</b>	Federal Register
<b>GACT</b>	Generally Available Control Technology
<b>HAP</b>	Hazardous Air Pollutant
<b>LAER</b>	Lowest Achievable Emission Rate
<b>MACT</b>	Maximum Achievable Control Technology
<b>MDEQ</b>	Michigan Department of Environmental Quality (previous to October 1, 1995, a part of the Department of Natural Resources)
<b>MAERS</b>	Michigan Air Emissions Reporting System
<b>MDNR</b>	Michigan Department of Natural Resources
<b>MSDS</b>	Material Safety Data Sheet

<b>NAA</b>	Nonattainment Area
<b>NAAQS</b>	National Ambient Air Quality Standards
<b>NESHAPs</b>	National Emissions Standards for Hazardous Air Pollutants
<b>NO<sub>x</sub></b>	Nitrogen oxides
<b>NSPS</b>	New Source Performance Standards, or Standards of Performance for New Stationary Sources
<b>NSR</b>	New Source Review
<b>PASS-ROP</b>	Permit Application Submittal System for Renewable Operating Permits
<b>PM-10</b>	Particulate matter that measures 10 microns in diameter or less which is a size considered small enough to invade the alveolar regions of the lung. PM-10 is one of the six pollutants for which there is a national ambient air quality standard.
<b>PSD</b>	Prevention of Significant Deterioration
<b>PTE</b>	Potential to Emit
<b>RACM</b>	Reasonably Available Control Measure
<b>RACT</b>	Reasonably Available Control Technology
<b>ROP</b>	Renewable Operating Permit
<b>SCC</b>	Source Classification Code
<b>scfm</b>	standard cubic feet per minute
<b>SIC</b>	Standard Industrial Classification Code
<b>SIP</b>	State Implementation Plan
<b>SO<sub>2</sub></b>	Sulfur dioxide
<b>TAC</b>	Toxic Air Contaminant
<b>T-BACT</b>	Best Available Control Technology for Toxics
<b>tpy</b>	tons per year
<b>USC</b>	United States Code
<b>VOC</b>	Volatile Organic Compound
<b>USEPA</b>	United States Environmental Protection Agency

## Glossary

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The following is a working glossary of air quality terms assembled from a variety of sources (e.g., MDEQ, USEPA). For precise, legal definitions of any of these terms, consult the applicable federal regulations such as the Clean Air Act and its rules, and the Michigan *Natural Resources and Environmental Protection Act, Public Act 451 of 1994* and *Administrative Rules for Air Pollution Control*.

**Abatement:** Reducing the degree or intensity of, or eliminating, pollution.

**Absorption:** The passage of one substance into or through another; e.g. an operation in which one or more soluble components of a gas mixture are dissolved in liquid.

**Acid Deposition:** A complex chemical and atmospheric phenomenon that occurs when emissions of sulfur and nitrogen compounds and other substances are transformed by chemical processes in the atmosphere, often far from the original sources, and then deposited on earth in either a wet or dry form. The wet forms, popularly called "acid rain" can fall as rain, snow, or fog. The dry forms are acidic gases or particulates.

**Act 348:** See Act 451.

**Act 451:** Effective March 1995, most of Michigan's air pollution laws were codified in the *Natural Resources and Environmental Protection Act, Article II, Chapter 1, Part 55 (Air Pollution Control)* of P.A. 451 of 1994. This replaces the old *Air Pollution Act, P.A. 348 of 1965*, as amended.

**Activated Carbon:** A highly adsorbent form of carbon used to remove odors and toxic substances from liquid or gaseous emissions. In waste treatment it is used to remove dissolved organic matter from waste water. It is also used in motor vehicle evaporative control systems.

**Add-on Control Device:** An air pollution control device such as carbon adsorber or incinerator which reduces the pollution in an exhaust gas. The control device usually does not affect the process being controlled and thus is "add-on" technology as opposed to a scheme to control pollution through making some alteration to the basic process.

**Administrative Rules For Air Pollution Control:** The rules for Michigan's air permit program are found in the *Administrative Rules for Air Pollution Control* (Michigan Air Pollution Control Commission General Rules, M.A.C. R 336.1101 et seq.)

**Administrative Procedures Act (APA):** A Michigan Act that provides a comprehensive description of how rules, guidelines and contested cases are requested and handled.

**Aerosol:** A suspension of liquid or solid particles in a gas.

**Afterburner:** In incinerator technology, a burner located so that the combustion gases are made to pass through its flame in order to remove smoke and odors. It may be attached to or be separated from the incinerator proper.

**Air Changes Per Hour (ACH):** The movement of a volume of air in a given period of time; if a house has one air change per hour, it means that all of the air in the house will be replaced in a one-hour period.

**Air Contaminant:** Any particulate matter, gas, or combination thereof, other than water vapor or natural air. (See: air pollutant)

**Air Monitoring:** (See: monitoring)

**Air Pollutant:** Any substance in air which could, if in high enough concentration, harm man, other animals, vegetation, or material. Pollutants may include almost any natural or artificial composition of matter capable of being airborne. They may be in the form of solid particles, liquid droplets, gases, or in combination of these forms. Generally they fall into two main groups (1) those emitted directly from identifiable sources and (2) those produced in the air interaction between two or more primary pollutants, or by reaction with normal atmospheric constituents, with or without photoactivation.

**Air Pollution Episode:** A period of abnormally high concentration of air pollutants, often due to low winds and temperature inversion, that can cause illness and death.

**Air Pollution:** The presence of contaminant or pollutant substances in the air that do not disperse properly and interfere with human health or welfare or produce other harmful environmental effects.

**Air Quality Control Region (AQCR):** An area designated by the federal government in which communities share a common pollution problem. Sometimes several states are involved.

**Air Quality Criteria:** The levels of pollution and lengths of exposure above which adverse health and welfare may occur.

**Air Quality Standards:** The level of pollutants prescribed by regulations that may not be exceeded during a specified time in a defined area.

**Air Toxics:** Any air pollutant for which a national ambient air quality standard (NAAQS) does not exist (i.e. excluding ozone, carbon monoxide, lead, PM-10, sulfur dioxide, nitrogen dioxide) that may reasonably be anticipated to cause cancer, developmental effects, reproductive dysfunctions, neurological disorders, heritable gene mutations or other serious or irreversible chronic or acute health effects in humans. (See: hazardous air pollutants)

**Airborne Particulates:** Total suspended particulate matter found in the atmosphere as solid particles or liquid droplets. Chemical composition of particulates varies widely, depending on location and time of year. Airborne particulates include: windblown dust, emissions from industrial processes, smoke from burning of wood and coal, and the exhaust of motor vehicles.

**Airborne release:** Release of any chemical into the air.

**Alternative Method:** Any method of sampling and analyzing for an air pollutant which is not a reference or equivalent method but which has been demonstrated in specific cases to the USEPA's satisfaction to produce results adequate for compliance.

**Ambient Air Quality:** (See: Criteria Pollutants and National Ambient Air Quality Standards)

**Ambient Air:** Any unconfined portion of the atmosphere: open air, surrounding air.

**Anti-Degradation Clause:** Part of federal air quality and water quality requirements prohibiting deterioration where pollution levels are above the legal limit.

**Area Source:** Any small source of non-natural air pollution that is released over a small area but which cannot be classified as a point source. Such sources may include vehicles, fireplaces, woodstoves, and small fuel combustion engines.

**Aromatics:** A type of hydrocarbon, such as benzene or toluene, added to gasoline in order to increase octane. Some aromatics are toxic.

**Attainment Area:** An area to be considered to have air quality as good as or better than the national ambient air quality standards as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a nonattainment area for others.

**Attenuation:** The process by which a compound is reduced in concentration over time, through adsorption, degradation, dilution, and/or transformation.

**Baffle Chamber:** In incinerator design, a chamber designed to promote the settling of fly ash and coarse particulate matter by changing the direction and/or reducing the velocity of the gases produced by the combustion of the refuse or sludge.

**Baghouse Filter:** Large fabric bag, usually made of glass fibers, used to eliminate intermediate and large (greater than 20 microns in diameter) particles. This device operates in a way similar to the bag of an electric vacuum cleaner, passing the air and smaller particulate matter, while entrapping the larger particles.

**Banking:** A system for recording qualified air emission reductions for later use in bubble, offset, or netting transactions. (See: emissions trading)

**Best Available Control Technology (BACT):** An emission limitation based on the maximum degree of emission reduction which (considering energy, environmental, and economic impacts and other costs) is achievable through application processes and available methods, systems, and techniques. In no event does BACT permit emissions in excess of those allowed under any applicable Clean Air Act provisions. Use of the BACT concept is allowable on a case by case basis from major new or modified emissions sources in attainment areas and applies to each regulated pollutant. BACT is also required for new or modified sources of VOCs under Rule 702.

**Btu:** British thermal unit. The amount of energy required to raise the temperature of a pound of water one degree Fahrenheit from 39.2 degrees Fahrenheit.

**Bubble Policy:** (See: emissions trading)

**Bubble:** A system under which existing emissions sources can propose alternate means to comply with a set of emissions limitations; under the bubble concept, sources can control more than required at one emission point where control costs are relatively low in return for a comparable relaxation of controls at a second emission point where costs are higher.

**By-product:** Material, other than the principal product, that is generated as a consequence of an industrial process.

**Capture Efficiency:** The fraction of vapors generated by a process that are directed to an abatement or recovery device.

**Carbon Adsorber:** An add-on control device which uses activated carbon to adsorb volatile organic compounds from a gas stream.

**Carbon Dioxide (CO<sub>2</sub>):** A colorless, odorless, non-poisonous gas, which results from fossil fuel combustion and is normally a part of the ambient air. One of six compounds that have a NAAQS.

**Carbon Monoxide (CO):** A colorless, odorless, poisonous gas produced by incomplete fossil fuel combustion.

**Catalytic Converter:** An air pollution abatement device that removes pollutants from motor vehicle exhaust, either by oxidizing them into carbon dioxide and water or reducing them to nitrogen and oxygen.

**Catalytic Incinerator:** A control device that oxidizes volatile organic compounds (VOCs) by using a catalyst to promote the combustion process. Catalytic incinerators require lower temperatures than conventional thermal incinerators, with resultant fuel and cost savings.

**Category I, II, III:** One of three categories of facilities for determination of annual air quality fees.

**Chlorinated Solvent:** An organic solvent containing chlorine atoms, e.g. methylene chloride and 1,1,1-trichloromethane which are used in aerosol spray containers and in traffic paint.

**Chlorofluorocarbons (CFCs):** A family of inert, nontoxic and easily liquefied chemicals used in refrigeration, air conditioning, packaging, insulation, or as solvents and aerosol propellants. Because CFCs are not destroyed in the lower atmosphere they drift into the upper atmosphere where their chlorine components destroy ozone.

**Class I, II, and III:** (1) Under the Clean Air Act, clean air areas are divided into three classes. Very little pollution increase is allowed in Class I areas, some increase in Class II areas and more in Class III areas. National parks and wilderness areas receive mandatory Class I protection. All other areas start out as Class II. States can reclassify Class II areas up or down, subject to federal requirements.

**Clean Coal Technology:** Any technology not in widespread use as of the date of enactment of the Clean Air Act amendments which will achieve significant reductions on pollutants associated with the burning of coal.

**Clean Fuels:** Blends and/or substitutes for gasoline fuels. These include compressed natural gas, methanol, ethanol, and others.

**Closed-loop recycling:** Reclaiming or reusing wastewater for non-potable purposes in an enclosed process.

**Code of Federal Regulations (CFR):** A series of volumes where federal regulations have been codified (e.g., Title 40 = Protection of the Environment).

**Coke Oven:** An industrial process which converts coal into coke which is one of the basic materials used in blast furnaces for the conversion of iron ore into iron.

**Combustion Product:** Substance produced during the burning or oxidation of a material.

**Combustion:** Burning, or rapid oxidation, accompanied by release of energy in the form of heat and light. A basic cause of air pollution.

**Compliance Coating:** A coating whose volatile organic compound content does not exceed that allowed by regulation.

**Compliance Schedule:** A negotiated agreement between a pollution source and a government agency that specifies dates and procedures by which a source will reduce emissions and, thereby, comply with a regulation.

**Consolidated Metropolitan Statistical Area:** A statistical area that contains one million people or more in addition to other criteria.

**Construction:** Constructing a new building and installing emission units within the building.

**Construction Waiver:** A waiver of the requirements of Rule 201 to begin construction of a source prior to receipt of an approved Permit to Install.

**Contaminant:** Any physical, chemical, biological, or radiological substance or matter that has an adverse affect on air, water, or soil.

**Contested case:** A challenge to decisions made by an State agency through a formal hearing process called for by the Administrative Procedures Act (APA).

**Control Technique Guidelines (CTG):** A series of USEPA documents designed to assist states in defining reasonably available control technology (RACT) for major sources of volatile organic compounds (VOCs).

**Cost-Effective Alternative:** An alternative control or corrective method identified after analysis as being the best available in terms of reliability, permanence, and economic considerations. Although costs are one important consideration, when regulatory and compliance methods are being considered, such analysis does not require an agency to choose the least expensive alternative.

**Criteria Pollutants:** The 1970 amendments to the Clean Air Act required the USEPA to set National Ambient Air Quality Standards for certain pollutants known to be hazardous to human health. The USEPA has identified and set standards to protect human health and welfare for six pollutants: ozone, carbon monoxide, total suspended particulates, sulfur dioxide, lead, and nitrogen oxide. The term, "criteria pollutants" derives from the requirement that the USEPA must describe the characteristics and potential health and welfare effects of these pollutants. It is on the basis of these criteria that standards are set or revised.

**Criteria:** Descriptive factors taken into account by the USEPA in setting standards for various pollutants. These factors are used to determine limits on allowable concentration levels, and to limit the number of violations per year. When issued by the USEPA, the criteria provide guidance to the states on how to establish standards.

**Cubic Feet Per Minute (CFM):** A measure of the volume of a substance flowing through air within a fixed period of time.

**Cyclone Collector:** A device that uses centrifugal force to pull large particles from polluted air.

**Designated Pollutant:** An air pollutant which is neither a criteria nor hazardous pollutant, as described in the Clean Air Act, but for which new source performance standards exist. The Clean Air Act does not require states to control these pollutants, which include acid mist, total reduced sulfur (TRS), and fluorides.

**Ecological Impact:** The effect that a man-made or natural activity has on living organisms and their non-living environment.

**Electrostatic Precipitator (ESP):** An air pollution control device that removes particles from a gas stream (smoke) after combustion occurs. The ESP imparts an electrical charge to the particles, causing them to adhere to metal plates inside the precipitator. Rapping on the plates causes the particles to fall in a hopper for disposal.

**Emission Factors:** The relationship between the amount of pollution produced and the amount of raw material processed. For example, an emission factor for a blast furnace making iron would be the number of pounds of particulates per ton of raw materials.

**Emission trading:** USEPA policy that allows a plant complex with several facilities to decrease pollution from some facilities while increasing it from others, so long as total results are equal or better than previous limits. Facilities where this is done are treated as if they exist in a bubble where total emissions are averaged out. Complexes that reduce emissions substantially may "bank" their "credits" or sell them to other industries. Michigan has a state emission trading program.

**Emission:** Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities; from residential chimneys; and from motor vehicle, locomotive, or aircraft exhausts.

**Enforcement:** USEPA, state, or local legal action to obtain compliance with environmental laws, rules, regulations, or agreements and/or obtain penalties or criminal sanctions for violations. Enforcement procedures may vary depending on the specific requirements of different environmental laws and related implementing regulatory requirements.

**Emission unit:** Any part of a stationary source that emits or has the potential to emit an air contaminant. An emission unit is a collection of one or more process devices, zero or more control devices and related stacks. Examples of emission units include a fossil fuel steam generating plant; topcoat painting line; solid waste incinerator; clinker cooler at a portland cement company; and process unit at a chemical plant. (See AQD's Operational Memorandum #6).

**Enhanced Inspection & Maintenance (Enhanced I&M):** An improved automobile inspection and maintenance program that includes, as a minimum, increased in coverage of vehicle types and model years, tighter stringency of inspections and improved management practices to ensure more effectiveness. This may also include annual, computerized, or centralized inspections; under-the-hood inspections to detect tampering with pollution control equipment; and increased repair waiver cost.

**Environmental Impact Statement:** A document required of federal agencies by the National Environmental Policy Act for major projects or legislative proposals significantly affecting the environment. A tool for decision making, it describes the positive and negative effects of the undertaking and lists alternative actions.

**Episode (Pollution):** An air pollution incident in a given area caused by a concentration of atmospheric pollution reacting with meteorological conditions that may result in a significant increase in illnesses or deaths. Although most commonly used in relation to air pollution, the term may also be used in connection with either kinds of environmental events such as a massive water pollution situation.

**Exceedance:** Violation of environmental protection standards by exceeding allowable limits or concentration levels.

**Exempt Solvents:** Specific organic compounds that are not subject to requirement of regulation because they have been deemed by the USEPA to be of negligible photochemical reactivity.

**Exposure:** The amount of radiation or pollutant present in an environment which represents a potential health threat to the living organisms in that environment.

**Extremely Hazardous Substance:** Any of 406 chemicals identified by the USEPA on the basis of toxicity and listed under Title III of the Superfund Amendments and Reauthorization Act. The list is subject to revision.

**Fabric Filter:** A cloth device that catches dust particles from industrial emissions.

**Federal Implementation Plan (FIP):** A federally implemented plan to achieve attainment of an air quality standard used when a State is unable to develop an adequate plan.

**Federal Register (FR):** A daily publication of the federal government that contains, among other things, proposed and final rules.

**Flue Gas Desulfurization:** A technology which uses a sorbent, usually lime or limestone, to remove sulfur dioxide from the gases produced by burning fossil fuels. Flue gas desulfurization is the current state-of-the-art technology in use by major SO<sub>2</sub> emitters, e.g., power plants.

**Flue Gas:** The air coming out of a chimney, or stack, after combustion in the burner it is venting. It can include nitrogen oxides, carbon oxides, water vapor, sulfur oxides, particles and many chemical pollutants.

**Fluorocarbon (FCs):** Any number of organic compounds analogous to hydrocarbons in which one or more hydrogen atoms are replaced by fluorine. Once used in the United States as a propellant on aerosols, they are now primarily used in coolants and some industrial processes. FCs containing chlorine are called chlorofluorocarbons (CFCs). They are believed to be modifying the ozone layer in the stratosphere, thereby allowing more harmful solar radiation to reach the Earth's surface.

**Fly Ash:** Non-combustible residual particles from combustion carried by flue gas.

**Fugitive Emissions:** Emissions not caught by a capture system.

**Fume:** Tiny particles that are trapped in a vapor in a gas stream.

**General Permit:** A permit applicable to a class or category of dischargers.

**Generally Available Control Technology (GACT):** Technology authorized as an alternative to MACT for area sources of hazardous air pollutants.

**Generator:** A facility or mobile source that emits pollutants into the air or releases hazardous waste into water or soil.

**Grandfathered Sources:** Under the Michigan Permit to Install program, existing sources of air contaminants installed before August 15, 1967 that are not required to apply for a Permit to Install unless the equipment or production processes are or have been modified.

**Guideline:** An agency statement of policy, binding only on the agency.

**Hazardous Air Pollutants (HAPs):** Air pollutants that are not covered by ambient air quality standards but which, as defined in the Clean Air Act, may reasonably be expected to cause or contribute to irreversible illness or death. Such pollutants include asbestos, beryllium, mercury, benzene, coke oven emissions, radionuclides, vinyl chloride, and a list of 188 other air pollutants.

**Hazardous Substance:** (1) Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive or chemically reactive. (2) Any substance designated by the USEPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or if otherwise emitted to the environment.

**Hazards Analysis:** The procedures involved in (1) identifying potential sources of hazardous material released from facilities or transportation accidents; (2) determining the vulnerability of a geographical area to a hazardous materials release; and (3) comparing hazards to determine which present greater or lesser risks to a community.

**Hydrocarbons (HC):** Chemical compounds that consist entirely of carbon and hydrogen.

**Hydrogen Sulfide (H<sub>2</sub>S):** Gas emitted during organic decomposition. Also a byproduct of oil refining and burning. Hydrogen sulfide smells like rotten eggs and, in heavy concentration, can cause illness, and/or death.

**Immediately Dangerous to Life and Health (IDLH):** The maximum level to which a healthy individual can be exposed to a chemical for 30 minutes and escape without suffering irreversible health effects or impairing symptoms. Used as a "level of concern" (See: level of concern.)

**Incineration:** (1) Burning of certain types of solid, liquid or gaseous materials. (2) A treatment technology involving destruction of waste by controlled burning at high temperatures. e.g. burning sludge to remove the water and reduce the remaining residues to a safe, non-burnable ash which can be disposed of safely on land, in some waters or in underground locations.

**Incinerator:** A furnace for burning wastes under controlled conditions.

**Inspection and Maintenance (I/M):** (1) Activities to assure proper emissions-related operation of mobile sources of air pollutants, particularly automobile emission controls. (2) Also applies to wastewater treatment plants and other anti-pollution control facilities and processes.

**Installation:** Installing an emission unit in an existing building.

**LC<sub>50</sub>/Lethal Concentration:** Median level concentration, a standard measure of toxicity. It tells how much of a substance is needed to kill half a group of experimental organisms at a specific time of observation. (See LD<sub>50</sub>)

**Lead (Pb):** A heavy metal that is hazardous to health if breathed or swallowed. Its use in gasoline, paints, and plumbing compounds has been sharply restricted or eliminated by federal laws and regulations. One of the compounds that has a NAAQS.

**Limestone Scrubbing:** Process in which sulfur gases moving towards a smokestack are passed through a limestone and water solution to remove sulfur before it reaches the atmosphere.

**Low NO<sub>x</sub> Burners:** One of several combustion technologies used to reduce emissions of nitrogen oxides (NO<sub>x</sub>).

**Lowest Achievable Emission Rate (LAER):** Under the Clean Air Act and Michigan Rules, this is the rate of emissions that reflects (a) the most stringent emission limitation which is contained in the implementation plan of any state for such source unless the owner or operator of the proposed source demonstrates such limitations are not achievable; or (b) the most stringent emission limitation achieved in practice by the source's category. Application of this term does not permit a proposed new or modified source to emit pollutants in excess of existing new source performance standards.

**MAERS:** A software and database developed and maintained by the MDEQ, AQD that lists, by source, the amount of air pollutants discharged into the atmosphere of a community. It is used to establish emission standards.

**Major Modification:** This term is a modification with respect to Prevention of Significant Deterioration and New Source Review under the Clean Air Act and refers to modifications to major stationary sources of emissions and provides significant pollutant increase levels below which a modification is not considered major.

**Major Offset Sources:** A stationary source that has a potential to emit of 100 or more tons of air contaminants per year, or a particular change at a minor source that results in an increase in the potential to emit of 100 or more tons per year. This term is used for sources in nonattainment areas.

**Major Stationary Source or Major Source:** Term used to determine the applicability of Prevention of Significant Deterioration and new source regulations. In a nonattainment area in Michigan, any stationary pollutant source that has a potential to emit more than 100 tons per year is considered a major stationary source. In attainment areas the cutoff level may be either 100 or 250 tons, depending upon the type of source.

**Maximum Achievable Control Technology (MACT):** Emission limitations based on the best demonstrated control technology or practices in similar sources to be applied to major sources emitting one or more of the listed hazardous air pollutants.

**Media:** Specific environments-air, water, soil,- which are the subject of regulatory concern and activities.

**Method 18:** A USEPA test method which uses gas chromatographic techniques to measure the concentration of the individual VOCs in a gas stream.

**Method 24:** A USEPA reference method to determine density, water content and total volatile content (water and VOC) of coatings.

**Method 25:** A USEPA reference method to determine the VOC concentrations on a gas stream.

**Mobile Source:** A moving producer of air pollution, mainly forms of transportation such as cars, trucks, motorcycles, and airplanes.

**Model Plant:** A description of a typical but theoretical plant used for developing economic, environmental impact and energy impact analyses as support for regulations or regulatory guidelines.

**Modeling:** An investigative technique using a mathematical or physical representation of a system. When emissions could cause exceedance of the ambient air quality standards, modeling may be required as part of an Permit to Install application to determine the ground level concentration of an air contaminant. Air quality dispersion models provide an estimate of the relationship between emission concentrations and the expected pollutant concentration levels at any point (receptor).

**Modification:** This defined in Michigan Rule 113(j) as a physical or operational change to an existing emission unit that results in an increase in emissions "not allowed" or an emission of a new toxic air contaminant.

**Monitoring:** Periodic or continuous surveillance or testing to determine the level of compliance with statutory requirements and/or pollutant levels in various media or in humans, animals, and other living things.

**Montreal Protocol:** An international environmental agreement to control chemicals that deplete the ozone layer. The protocol, which was renegotiated on June 1990, calls for a phase-out of CFCs, halons, and carbon tetrachloride by the year 2000, a phase-out of chloroform by 2005, and provides financial assistance to help developing countries make the transition from ozone-depleting substances.

**National Ambient Air Quality Standards (NAAQS):** Air quality standards established by the USEPA that apply to outside air throughout the country. Primary standards are designed to protect human health, secondary standards to protect public welfare. (See: criteria pollutants, state implementation plans).

**National Emissions Standards for Hazardous Air Pollutants (NESHAPs):** Emissions standards set by the USEPA for air pollutants not covered by NAAQS that may cause an increase in deaths or in a serious illness.

**New Source Performance Standards (NSPS):** Uniform national USEPA air regulations that limit the amount of pollution allowed from specific new sources or from existing sources that have been modified.

**New Source:** Any stationary source that is built or modified after publication of final or proposed regulations that prescribe a standard of performance which is intended to apply to that type of emission source.

**Nitric Oxide (NO):** A gas formed by combustion under high temperature and high pressure in an internal combustion engine. It changes into nitrogen dioxide in the ambient air and contributes to photochemical smog.

**Nitrogen Dioxide (NO<sub>2</sub>):** A gas that results from nitric acid combining with oxygen in the atmosphere. A major component of photochemical smog. One of the six compounds that has a NAAQS.

**Nitrogen Oxide (NO<sub>x</sub>):** Gaseous products of combustion from transportation and stationary sources and major contributor to the formation of ozone in the troposphere and acid deposition. (See nitric oxide and nitrogen dioxide.)

**Nonattainment Area:** Geographic area that does not meet one or more of the National Ambient Air Quality Standards for the criteria pollutants designated in the Clean Air Act.

**Opacity:** The amount of light obscured by a particulate pollution in the air; clear window glass has a zero opacity, a brick wall has a 100 percent opacity. Opacity is used as an indicator of changes in performance of particulate matter and NO<sub>x</sub> pollution control systems.

**Oxidant:** A substance containing oxygen that reacts chemically in air to produce a new substance. The primary ingredient of photochemical smog.

**Ozone (O<sub>3</sub>):** An unstable oxygen compound found in two layers of the atmosphere, the stratosphere and the troposphere. In the stratosphere (the atmospheric layer beginning 7 to 10 miles above the earth's surface) ozone provides a protective layer shielding the earth from ultraviolet radiation's harmful health effects on humans and the environment. In the troposphere (the layer extending up 7 to 10 miles from the earth's surface), ozone is a chemical oxidant and a major component of photochemical smog. Ozone can seriously affect the human respiratory system and is one of the most prevalent and widespread of all the criteria pollutants for which the Clean Air Act required the USEPA to set standards. Ozone in the troposphere is produced through complex chemical reactions of nitrogen oxides, which are among the primary pollutants emitted by combustion, handling and processing of petroleum products; and sunlight.

**Ozone Depletion:** Destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to biological life. This destruction of ozone is caused by the breakdown of certain chlorine and/or bromine containing compounds (chlorofluorocarbons or halons) which break down when they reach the stratosphere and catalytically destroy ozone molecules.

**Ozone Transport region:** Ozone pollution is carried from one state to another by prevailing winds, particularly in the Northeast. The Clean Air Act Amendments of 1990 require establishment of ozone transport regions where certain emissions control measures are required.

**Particulate Loading:** The mass of particulates per unit volume of air or water.

**Particulates:** Fine liquid or solid particles such as dust, smoke, mist, fumes, or smog found in air or emission.

**PASS-ROP:** A computer-based system, developed and maintained by the MDEQ's Air Quality Division, that is used to complete an initial Renewable Operating Permit (ROP) application or a ROP renewal application.

**Permit To Install:** The basic nonrenewable Michigan permit for sources of air contaminants as specified in the *Administrative Rules for Air Pollution Control* (Michigan Air Pollution Control Commission General Rules, M.A.C. R 336.1201).

**Permit To Operate:** A Michigan air permit beyond the Permit to Install. Currently, a source is required to apply for a Permit to Operate, as specified in the *Administrative Rules for Air Pollution Control* (Michigan Air Pollution Control Commission General Rules, M.A.C. R 336.1208). A Permit to Operate is now referred to as the Renewable Operating Permit or Title V Permit.

**Permit:** An authorization, license, or equivalent control document issued by the USEPA or an approved state agency to implement the requirements of an environmental statute; e.g., a permit to operate a wastewater treatment plant or to operate a facility that may generate harmful emissions.

**Photochemical Smog:** Air pollution caused by chemical reactions of various pollutants emitted from different sources.

**Plume:** A visible or measurable discharge of a contaminant from a given point of origin. Can be visible or thermal in water, or visible in the air as, for example a plume of smoke.

**PM-10:** Particulate matter that measures 10 microns in diameter or less- a size considered small enough to invade the alveolar regions of the lung. PM-10 is one of the six pollutants for which there is a national ambient air quality standard.

**Point Source:** A stationary location or fixed facility from which pollutants are discharged or emitted. Also, any single identifiable source of pollution, e.g. a pipe, ditch, ship, ore pit, factory smokestack.

**Pollutant Standard Index (PSI):** Measure of adverse health effects of air pollution levels in major cities.

**Pollutant:** Generally any substance introduced into the environment that adversely affects the usefulness of a resource.

**Pollution Prevention:** The use of materials, processes, or practices that reduce, minimize or eliminate the creation of pollutants or wastes. It includes practices that reduce the use of toxic or hazardous materials, energy, water, and/or other resources.

**Potential To Emit:** The rate of emission of an air contaminant of a process or process equipment while being operated at its maximum rated capacity. Certain physical or operational limits that are legally enforceable can decrease the potential to emit.

**ppm/ppb:** Parts per million/parts per billion, a way of expressing concentrations of pollutants in air, water, soil, human tissue, food, or other products. It is usually indicated by volume in air, and weight in other substances.

**Precipitators:** Air pollution control devices that collect particles from an emission.

**Precursor:** In photochemical terminology, a compound such as volatile organic compound (VOC) that "precedes" an oxidant. Precursors react in sunlight to form ozone or other photochemical oxidants.

**Prevention Of Significant Deterioration:** A program used in development of permits for new or modified sources in an area that is already in attainment. The intent is to prevent an area from experiencing significant deterioration of air quality.

**Process Weight:** Total weight of all materials including fuel, used in a manufacturing process. It is used to calculate the allowable particulate emission rate from the process.

**Public notice:** An announcement of a public comment period and/or hearing for a proposed project or permit.

**Radionuclide:** Radioactive element characterized according to its atomic mass and atomic number that can be man-made or naturally occurring.

**Reasonably Available Control Measures (RACM):** A broadly defined term referring to technologies and other measures that can be used to control pollution; includes Reasonably Available Control Technology and other measures. In the case of particulate matter (PM-10), it refers to approaches for controlling small or dispersed source categories such as road dust, woodstoves, and open burning.

**Reasonably Available Control Technology (RACT):** The lowest emissions limit that a particular source is capable of meeting by the application of control technology that is both reasonably available, as well as technologically and economically feasible. RACT usually is applied to existing sources in nonattainment areas.

**Reconstructed Source:** An existing facility in which components are replaced to such an extent that the fixed capital cost of the new component exceed 50 percent of the capital cost that would be required to construct a comparable entirely new facility. New Source Performance Standards may be applied to sources which are reconstructed after the proposal of the standard if it is technologically and economically feasible to meet the standard.

**Reconstruction:** Replacement of components of an existing facility so that the fixed capital cost of the new components is more than 50 percent of the fixed capital cost that would be required to construct a comparable entirely new emission unit and so that it is technologically and economically feasible to meet the applicable requirement.

**Renewable Operating Permit:** A facility-wide permit mandated under the Clean Air Amendments of 1990 for major stationary sources, "affected sources," and sources defined by the USEPA. Now required under Michigan Administrative Rules for Air Pollution Control, Part 2.

**Residual Risk:** The quality of health risk remaining after application of MACT (Maximum Achievable Control Technology).

**Ringleman Chart:** a series of shaded illustrations used to measure the opacity of air pollution emissions. The chart ranges from light grey through black and is used to set and enforce emissions standards.

**Risk Assessment:** The qualitative and quantitative evaluation performed in an effort to define the risk posed to human health and/or the environment by the presence or potential presence and/or use of pollutants.

**Rule:** A statement of a state agency that implements the law. The agency is required by law to follow its rules.

**Sanctions:** Actions taken against a State or local government by the Federal government for failure to plan or to implement a State Implementation Plan (SIP). Examples include withholding highway funds and construction bans on new sources.

**Scrubber:** An air pollution control device that uses a spray of water or reactant or a dry process to trap pollutants in emissions.

**Significant Deterioration:** Pollution resulting from a new source in previously "clean" areas that results in impacts greater than that allowed by the PSD regulations. (See: Prevention of Significant Deterioration.)

**Significant Violations:** Violations by point source dischargers of sufficient magnitude and/or duration to be a regulatory priority.

**Smog:** Air pollution associated with oxidants.

**Smoke:** Particles suspended in air after incomplete combustion of materials.

**Solvent:** Substance (is usually liquid) capable of dissolving or dispersing one or more substances.

**Sorption:** The action of soaking up attracting substances. A process used in many pollution control systems.

**Source:** The term is given a dual meaning. It can be an entire industrial facility that must aggregate emissions to meet the size cut-offs for application of the control and permit requirements. More commonly, however, the term "source" applies to each point at which emissions are released.

**Stack:** A chimney or smokestack; a vertical pipe that discharges used air.

**Standards:** Prescriptive norms which govern action and actual limits on the amount of pollutants or emissions produced. The USEPA, under most of its responsibilities, establishes minimum standards. States are allowed to be more strict.

**State Implementation Plans (SIP):** USEPA approved state plans for establishment, regulation, and enforcement of air pollution standards.

**Stationary Source:** A fixed, non-moving producer of pollution, mainly power plants, manufacturing facilities, refineries, and other facilities that emit air pollutants.

**Sulfur Dioxide (SO<sub>2</sub>):** A heavy, pungent, colorless, gaseous air pollutant formed primarily by the combustion of fossil plants. One of the six compounds that has a NAAQS.

**Threshold Limit Value (TLV):** Represents the air concentrations of chemical substances to which it is believed that workers may be daily exposed without adverse effect.

**Toxic Air Contaminant:** Any air contaminant for which there is no national ambient air quality standard and which is or may become harmful to public health or the environment when present in the outdoor atmosphere in sufficient quantities and duration.

**Toxic:** Harmful to living organisms.

**Transportation Control Measures (TCMs):** Steps taken by a locality to adjust traffic patterns (e.g., bus lanes, right turn on red) or reduce vehicle use (ridesharing, high-occupancy vehicle lanes) to reduce vehicular emissions of air pollutants.

**Vapor:** The gaseous phase of substances that are liquid or solid at atmosphere temperature and pressure, e.g. steam.

**Vapor Capture System:** Any combination of hoods and ventilation systems that captures or contains organic vapors in order that they maybe directed to an abatement or recovery device.

**Volatile Organic Compound (VOC):** Any organic compound that participates in atmospheric photochemical reactions except for those designated by the USEPA Administrator as having negligible photochemical reactivity.

**Volatile:** Description of any substance that evaporates readily.

**Waste:** (1) Unwanted materials left over from a manufacturing process. (2) Refuse from places of human or animal habitation.

**Wood-Burning Stove Pollution:** Air pollution caused by emission of particulate matter, carbon monoxide, total suspended particulates, and polycyclic organic matter from wood-burning stoves.

## **Michigan Air Pollution Control Laws and Rules**

Michigan Air Pollution Control Laws and Rules have been in a state of flux for the past few years because of state as well as federal activities. Through an executive order in 1993, the Governor of Michigan abolished the Air Pollution Control Commission. This necessitated re-delegation of commission powers to the Michigan Department of Natural Resources (now the MDEQ). This is reflected in the latest version of the Michigan *Administrative Rules for Air Pollution Control*. More recently, Executive Order no. 1995-18 transferred these duties and powers to the new Department of Environmental Quality, effective October 1, 1995.

Another change was the codification of the Michigan environmental legislation. In 1994, the Michigan legislature codified the environmental protection and resource management laws by enacting the *Natural Resources and Environmental Protection Act, Public Act 451 of 1994*. This Act came into effect on March 30, 1995. It repeals all previous natural resources and environmental protection laws including the *Air Pollution Act, Public Act 348 of 1965*, as amended. When referring to air pollution control, the new citation will be *Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994*. This part is in the Air Resources Protection subheading. Since Act 451 also contains other environmental acts such as the former Act 64 (hazardous waste management), Act 641 (solid waste management), and Act 245 (water resources protection), the proper reference to air pollution control should be *P.A. 451 of 1994, Part 55*.

The federal Clean Air Act Amendments of 1990 have also impacted heavily on air pollution legislation in the state of Michigan. New rules implementing the Renewable Operating Permit program in Michigan were promulgated on July 26, 1995. These rules also changed some of the applicable requirements for new source review permits.

### **Natural Resources and Environmental Protection Act**

The Natural Resources and Environmental Protection Act is available on the Internet. To view the Act, go to [www.michigan.gov/deq](http://www.michigan.gov/deq) and click on "Assistance & Support Services," "Laws and Rules," "Laws," and the "Natural Resources and Environmental Protection Act." To view the state air laws, click on "451-1994-II (Article II Pollution Control)," "451-1994-II-1 (Chapter 1 Point Source Pollution Control)," and then "451-1994-II-1-Air Resources Protection."

## Administrative Rules for Air Pollution Control

A permit applicant will need the most current copy of Part 55 of the Michigan *Natural Resources and Environmental Protection Act, Act 451, P.A. of 1994*, and the *Administrative Rules for Air Pollution Control* (Michigan Air Pollution Control Commission General Rules, M.A.C. R 336.1101 et seq.), as amended, which can be obtained through the MDEQ Air Quality Division for a charge to cover printing and mailing costs. The initial effective date of the rules was August 15, 1967. New rules are continuously being promulgated so it is important to use only the most recent update of Act 451 and the rules. Act 250 of 1965, as amended, which is the Tax Exemption Act, should also be obtained. Certain air pollution control equipment may be eligible for a tax exemption. See the *Tax Exemptions for Air Pollution Control* section of this manual for further information.

An outline of Part 55 of Act 451 and major sections of the rules can be found in Appendices A and B of this section. The complete Act 451 outline is found in the *Federal and Michigan Air Quality Legislation* section of this manual.

The contact number for these publications is (517) 373-7023, or write to:

MDEQ Air Quality Division  
P.O. Box 30260  
Lansing, MI 48909-7528

MDEQ air quality information is available via the Internet at [www.michigan.gov/deq](http://www.michigan.gov/deq) by selecting the heading, "Air," from the left menu.

Air Quality Division personnel have been assigned various responsibilities to implement air quality regulations. Changes in rules and procedures are being spearheaded by the MDEQ Air Quality Division in Lansing. The Lansing staff is managing the Permit to Install program while the district staff manages the Renewable Operating Permit program. See the *Federal and Michigan Air Quality Legislation* and the *Sources of Air Permit Information* sections of this manual for more details.

Appendix A.

**Act No. 451, P.A. of 1994  
Article II Pollution Control  
Chapter 1: Point Source Pollution Control**

**Air Resources Protection**

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## **Administrative Rules for Air Pollution Control**

The Michigan administrative rules that were first promulgated under the Air Pollution Act, became effective on August 15, 1967. The Michigan *Administrative Rules for Air Pollution Control* are regulations written by the Air Quality Division that implement or apply the Act. Just as the Act has been amended to implement new federal requirements, so have the administrative rules. The Michigan *Administrative Rules for Air Pollution Control* are divided into "parts." The bulk of the regulations are outlined in the following parts:

*Part 1 - General Provisions* - contains definitions of key terms used throughout the rules. Referring back to the definitions greatly increases one's understanding of the rules.

*Part 2 - Air Use Approval* - requires a "permit to install" prior to the installation or modification of a source of air pollution. Certain equipment and activities are exempt from the permit to install requirements. The Part 2 rules contain the requirements for sources locating in areas of the state in violation of National Ambient Air Quality standards and the requirements for sources emitting toxic air contaminants. The Part 2 rules were revised to address and implement the federal Title V renewable operating permit requirements. These revisions became effective on July 26, 1995.

*Part 3 - Particulate Matter* - establishes particulate emission limitations for various process equipment. Open burning and the density of visible emissions from a vent or smokestack are regulated. Certain facilities may be required to develop plans to control fugitive dust emissions.

*Part 4 - Sulfur Bearing Compounds* - establishes sulfur dioxide emission limitations on boilers and other fuel burning equipment. The sulfur content of fuels, such as coal and fuel oil, must fall within prescribed percentages.

*Part 6 - Existing Sources of Volatile Organic Compound Emissions* - establishes volatile organic emission limitations and requirements for "existing" sources. The definition of "existing" source is dependent upon the type of process and quantity of its volatile organic compound emissions.

*Part 7 - New Sources of Volatile Organic Compound Emissions* - establishes volatile organic emission limitations and requirements for "new" sources. A "new" source is defined as any process placed in service on or after July 1, 1979, or for which an application for a permit to install is made on or after July 1, 1979.

*Part 8- Emission Limitations and Prohibitions - Oxides of Nitrogen* - establishes applicable limits and restrictions for stationary sources of nitrogen oxide emissions, and outlines the participation of such sources in the budget trading (emissions trading) program.

*Part 9 - Miscellaneous* - contains requirements that could pertain to any facility, regardless of the type(s) of air contaminant emitted. Air contaminants cannot be emitted in quantities that unreasonable interference with the comfortable enjoyment of life and property. Businesses can be required to prepare written plans that will prevent, detect, and correct malfunctions of equipment resulting in the exceedance of an emission standard.

*Part 10 - Intermittent Testing and Sampling* - provides the Michigan Department of Environmental Quality the authority to require facilities to quantify their air emissions to verify compliance with emission standards. The testing must be performed in accordance with established testing methods.

*Part 11 - Continuous Emission Monitoring* - requires certain large emission sources to operate continuous emission monitoring equipment to verify compliance with applicable emission standards.

*Part 12 - Emission Averaging and Emission Reduction Credit Trading* - outlines Michigan's voluntary emission averaging and emission reduction credit trading program. This program is designed to improve air quality, credit market-based incentives for making emission reductions and to encourage early emission reductions and technological innovations to reduce and quantify emissions.

*Part 13 - Air Pollution Episodes* - this part was rescinded May 28, 1997.

*Part 14 - Clean Corporate Citizen Program* - outlines Michigan's voluntary Clean Corporate Citizen Program. This program allows sources that have demonstrated environmental stewardship and a strong environmental ethic to receive public recognition and air quality permit processing benefits.

*Part 16 - Organization, Operation, and Procedures* - identifies the procedures a person must follow to request a declaratory ruling regarding a statute, rule, order, or permit administered by the department. It includes a description of the time frames for the department to respond to such requests.

*Part 17 - Hearings* - outlines the hearing process and time schedules for hearings and decisions on orders, voluntary agreements, performance contracts, stipulations, consent orders, and contested cases.