

## Chapter NR 154

## AIR POLLUTION CONTROL

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History: Chapter NR 154 as it existed on March 31, 1972 was repealed and a new chapter NR 154 was created, Register, March, 1972, No. 195, effective April 1, 1972.

## FOREWORD

Chapter 144, Stats., directs the department of natural resources to organize a comprehensive program to enhance the quality, management, and protection of the state's air resources. These rules are one part of that program. Chapter 144 also stresses the role of county government in establishing local air pollution control programs in cooperation with the department.

The objectives of these rules are to maintain standards of air quality at a level which will provide adequate protection to public health and welfare, and to prevent detrimental effect on property and our environment.

Nothing in these rules or in ch. 144, Stats., prohibits a county or local jurisdiction from adopting more restrictive ordinances where local conditions indicate their need. These rules, all or in part, may be adopted by reference by a county or municipality.

It shall be the policy of the department to seek reasonable uniformity among local air pollution control ordinances in order to make the statewide comprehensive program more effective and less complicated for all persons concerned.

These rules are subject to periodic revision to reflect advancing control technology, increasing knowledge of the effect on health of sub-acute long term exposure to air pollutants and increased knowledge of the effect of pollutants on plant life, animal life, soils, and water resources.

**NR 154.01 Definitions.** In chs. NR 154 and 155, the following words have the designated meanings, unless a different meaning is expressly provided:

(1) "Accumulator" means the reservoir of a condensing unit receiving the condensate from the condenser. This includes hot wells.

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(1g) "Active waste disposal site" means any disposal site other than an inactive site.

(1r) "Adequately wetted" means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

(2) "Adsorption system" means a device containing adsorbent material (e.g., activated carbon, alumina, silica gel); an inlet and outlet for exhaust gases; and a system to regenerate the saturated adsorbent.

(3) "Affected facility" means any type or class of air contaminant source which is required to submit a notice of intent and plans and specifications to the department prior to construction.

(4) "Air contaminant" means dust, fumes, mist, liquid, smoke, other particulate matter, vapor, gas, odorous substances, or any combination thereof but not including uncombined water vapor.

(5) "Air contaminant source" means any facility, building, structure, equipment, vehicle, or action, or combination thereof which may directly or indirectly result in the emission of any air contaminant.

(6) "Aircraft operation" means a landing or takeoff.

(7) "Air curtain destructor" means an incineration device which utilizes a pit for burning combustible matter, into which air is blown at high velocity through a manifold and nozzle system along one side of the pit to create a turbulent, vortical flow of air and combustible gases in the pit to bring about complete combustion.

(8) "Air dried coating" means coatings which are dried by the use of air or forced warm air. Forced warm air includes processes whereby the coated object is heated above ambient temperature up to a maximum of 90°C (194°F) to decrease drying time.

(9) "Air pollution" means the presence in the atmosphere of one or more air contaminants in such quantities and of such duration as is or tends to be injurious to human health or welfare, animal or plant life, or property or would unreasonably interfere with the enjoyment of life or property.

(10) "Air pollution episode levels" means levels of air quality which are so degraded as to pose imminent danger to public health.

(a) "Alert": The alert level is that concentration of one or more air contaminants at which the first stage control actions begin.

(b) "Warning": The warning level indicates air quality is continuing to degrade and that additional control actions are necessary.

(c) "Emergency": The emergency level indicates that the air quality is continuing to degrade to a level which should never be reached and that the most stringent control actions are necessary.

(11) "Air quality maintenance area" means an area designated pursuant to federal or Wisconsin laws as having the potential for exceeding any of the ambient air quality standards.

(12) "Air region" means an area such as an AQCR designated pursuant to federal or Wisconsin laws in which a program to maintain or achieve air standards is implemented on a regional basis.

(12m) "Alternative method" means any method of sampling and analyzing for an air pollutant which is not a reference or equivalent method but which has been demonstrated to the department's satisfaction to produce, in specific cases, results adequate for the department's determination of compliance.

(13) "Ambient air" means the portion of the atmosphere external to buildings and to which the general public has access.

(13m) "Ambient air increment" or "air increment" means the maximum allowable increase in concentration of an air contaminant above the base line concentration of the air contaminant.

(14) "API" means American Petroleum Institute, 2101 L Street, N.W., Washington, D.C. 20001.

(15) "Application area" means the area where a coating is applied by spraying, dipping or flowcoating techniques.

(16) "Approved" means approved by the department of natural resources.

(17) "AQCR" means air quality control region. Air quality control regions all or part of which lie in Wisconsin are delineated in s. NR 155.02 (2).

(18) "Areawide air quality analysis" means a macroscale analysis utilizing a modeling technique approved by the department.

(19) "Asbestos" means any of the 6 naturally occurring hydrated mineral silicates: actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite.

(b) "Asbestos mill" means any facility engaged in the conversion or any intermediate step in the conversion of asbestos ore into commercial asbestos. Outside storage of asbestos materials is not considered a part of such a facility.

(c) "Asbestos tailings" means any solid waste products of asbestos mining or milling operations which contain asbestos.

(19m) "Asbestos-containing waste material" means any waste which contains commercial asbestos and is generated by a source subject to the provisions of s. NR 154.19(4), including asbestos mill tailings, control device asbestos waste, friable asbestos waste material, and bags or containers that previously contained commercial asbestos.

(20) "ASME" means American Society of Mechanical Engineers, 345 E. 47th Street, New York, New York 10017.

(21) "Asphalt" means a dark-brown to black cementitious material (solid, semisolid, or liquid in consistency) in which the predominating constituents are bitumens which occur in nature as such or which are obtained as residue in refining petroleum.

(22) "Associated parking area" means a parking facility owned or operated in conjunction with an indirect source.

(23) "ASTM" means American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103.

(24) "Automobile" means all passenger cars or passenger car derivatives capable of seating 12 or fewer passengers.

(25) "Average daily traffic" or "ADT" means the total traffic volume during a given time period in whole days greater than one day and less than one year divided by the number of days in that time period.

(26) "Average monthly storage temperature" means an arithmetic average calculated for each calendar month, or portion thereof if storage is for less than a month, from bulk petroleum liquid storage temperatures determined at least once every 7 days.

(27) "Baseline transfer efficiency" means the typical transfer efficiency, as defined by the department, for a specific operation in an industry.

(27m) "Basic emissions unit" means the smallest collection of equipment which in combination emits or is capable of emitting any air contaminant.

(28) "Bead dipping" means the dipping of an assembled tire bead into a solvent based cement.

(28e) "Beryllium" means the element beryllium. Where weights or concentrations are specified, such weights or concentrations apply to beryllium only, excluding the weight or concentration of any other elements.

(28j) "Beryllium alloy" means any metal to which beryllium has been added in order to increase its beryllium content and which contains more than 0.1 percent beryllium by weight.

(28o) "Beryllium-containing waste" means material contaminated with beryllium or beryllium compounds, or both, used or generated during any process or operation performed by a source subject to s. NR 154.19(5).

(28t) "Beryllium ore" means any naturally occurring material mined or gathered for its beryllium content.

(28y) "Beryllium propellant" means any propellant incorporating beryllium.

(29) "Blade coating" means the application of a coating material to a substrate by means of drawing the substrate beneath a straight-edged blade that spreads the coating evenly over the full width of the substrate.

(30) "Boiler" means any device with an enclosed combustion chamber in which fuel is burned to heat a liquid for the primary purpose of producing heat or power by indirect heat transfer.

(31) "Bottom filling" means the filling of a tank truck or stationary storage tank through an opening that is flush with or near the tank bottom.

(32) "Breakdown" means a sudden failure of emission control or emission monitoring equipment to function as a result of wear, failure to repair, breakage, unavoidable damage, or other unintentional causes.

(33) "BTU" means British thermal unit.

(34) "Bulk gasoline plant" means a gasoline storage and distribution facility which receives gasoline from bulk terminals, stores it in stationary storage tanks, and subsequently distributes it to gasoline dispensing facilities.

(35) "Bulk gasoline terminal" means a gasoline storage facility which receives gasoline from refineries primarily by pipeline, ship, or barge, and delivers gasoline to bulk gasoline plants or to commercial or retail accounts primarily by tank truck.

(35m) "Bulk resin" means a resin which is produced by a polymerization process in which no water is used.

(36) "Capture efficiency" means the weight per unit time of an air contaminant entering a capture system and delivered to a control device divided by the weight per unit time of the air contaminant generated by the source, expressed as a percentage.

(37) "Capture system" means the equipment (including hoods, ducts, fans, etc.) used to contain, capture, or transport an air contaminant to a control device.

(38) "Carbon bed breakthrough" means a concentration of VOC in the exhaust from a carbon adsorption device that exceeds 10% weight of the inlet VOC concentration.

(38m) "Cartridge filter" means a perforated canister containing filtration paper or activated carbon, or both, that is used to remove solid particles and fugitive dyes from soil-laden solvent.

(38s) "Cell room" means a structure housing one or more mercury chlor-alkali cells.

(38w) "Ceramic plant" means a manufacturing plant producing ceramic items.

(39) "Class II hardboard paneling finish" means finishes which meet the specifications of Voluntary Product Standard PS-59-73 as approved by the American National Standards Institute.

Note: See National Bureau of Standards, Voluntary Product PS-59-73, "Prefinished Hardwood Paneling." Copies of this document are available for inspection in the offices of the department of natural resources, secretary of state and revisor of statutes, Madison, Wisconsin and may be obtained from National Bureau of Standards, Washington, D.C. 20234.

(40) "Clear coat" means a coating which lacks color and opacity or is transparent and uses the undercoat as a reflectant base or undertone color.

(41) "Coating applicator" means a device or devices used at a single location in a coating line to apply a surface coating of a particular material.

(42) "Coating line" means one or more apparatus or operations, which may include a coating applicator, flash-off area, and oven, wherein a surface coating is applied, dried, or cured.

(43) "Coil coating" means the coating of any flat metal sheet or strip that comes in rolls or coils.

(44) "Cold cleaning" means the batch process of cleaning and removing soils from metal surfaces by spraying, brushing, flushing or immersion while maintaining the solvent below its boiling point. Wipe cleaning is not included in this definition.

(45) "Commence construction" means to engage in a program of on-site construction, including site clearance, grading, dredging or landfilling specifically designed for a stationary source in preparation for the fabrication, erection or installation of the building components of the stationary source.

(46) "Commence modification" means to engage in a program of on-site modification which may include site clearance, grading, dredging or landfilling in preparation for a specific modification of a stationary source.

(47) "Commercial asbestos" means any variety of asbestos which is produced by extracting asbestos from asbestos ore.

(48) "Component" means, for purposes of petroleum refineries, any piece of equipment at a refinery which has the potential to leak VOCs. These pieces of equipment include, but are not limited to, pumping seals, compressor seals, seal oil degassing vents, pipeline valves, flanges and other connections, pressure relief devices, process drains, and open ended pipes. Excluded from these pieces of equipment are valves which have no external controls, such as in-line check valves.

(49) "Condensate" means hydrocarbon liquid separated from natural gas which condenses due to changes in the temperature or pressure and remains liquid at standard conditions.

(50) "Condenser" means any heat transfer device used to liquefy vapors by removing their latent heats of vaporization. Such devices include, but are not limited to, shell and tube, coil, surface, or contact condensers.

(50m) "Condenser stack gases" mean the gaseous effluent evolved from the stack of processes utilizing heat to extract mercury ore.

(51) "Continuous vapor control system" means a vapor control system that destroys or removes vapors, such as those displaced from tanks during filling, on a demand basis without intermediate accumulation.

(52) "Control device" means equipment used to destroy or remove air contaminant in a gas stream prior to emission.

(52m) "Control device asbestos waste" means any asbestos-containing waste material that is collected in a pollution control device.

(53) "Control system" means any number of control devices, including condensers, which are designed and operated to reduce the quantity of air contaminants emitted to the atmosphere.

(54) "Conveyorized degreasing" means the continuous process of cleaning and removing soils from metal surfaces by operating with either cold or vaporized solvents.

(55) "Crude petroleum" means a naturally occurring mixture which consists of hydrocarbons; or sulfur, nitrogen and oxygen derivatives of hydrocarbons, and which is liquid at standard conditions.

(56) "Custody transfer" means the transfer of produced crude petroleum or condensate, after processing or treating in the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportation.

(57) "Cutback asphalt" means asphalt cement which has been liquefied by blending with petroleum solvents (diluent) other than residual oils. Upon exposure to atmospheric conditions the diluents evaporate, leaving the asphalt cement to perform its function. Asphalt which contains less than 5% by weight petroleum solvents (disregarding any residual oils added) is not included in this definition.

(58) "Day" means a 24-hour period beginning at midnight.

(59) "Delivery vessel" means a tank truck or trailer or a railroad tank car equipped with a storage tank used for the transport of gasoline from sources of supply to stationary storage tanks of bulk gasoline plants or gasoline dispensing facilities.

(59g) "Demolition" means the wrecking or taking out of any load-supporting structural member and any related removing or stripping of friable asbestos materials.

(59r) "Denuder" means a horizontal or vertical container which is part of a mercury chlor-alkali cell and in which water and alkali metal amalgam are converted to alkali metal hydroxide, mercury, and hydrogen gas in a short-circuited, electrolytic reaction.

(60) "Department" means the department of natural resources, state of Wisconsin.

(61) "Direct source" means any stationary source which may directly result in the emission of any air contaminant at a fixed location (e.g., building demolition, foundry, grain elevator, gravel or stone quarry, paper mill, power plant, etc.).

(61m) "Dispersion resin" means a resin manufactured in such a way as to form fluid dispersions when dispersed in a plasticizer or a plasticizer and diluent mixture.

(62) "Dose" means the total exposure to a pollutant over a specified time period.

$$\text{Dose} = \int_{T_1}^{T_2} C dt$$

where  $T_1$  is the starting time,  $T_2$  the end of the time period and  $C$  is the pollutant concentration which varies with time,  $C = f(T)$ .

(63) "Dry cleaning facility" means any facility engaged in the cleaning of fabrics or leather in an essentially nonaqueous solvent by means of one or more washes in solvent, extraction of excess solvent by spinning, and drying by tumbling in an airstream. The facility includes but is not limited to any washer, dryer, filter and purification systems, waste disposal systems, holding tanks, pumps, and attendant piping and valves.

(64) "Emergency or reserve equipment" means that equipment used when normal equipment fails, or used only to meet high peak loads.

(64m) "Emergency renovation" means a renovation operation that results from a sudden, unexpected event, and is not a planned renovation. Operations necessitated by non-routine failures of equipment are included.

(65) "Emission" means a release, whether directly or indirectly, of any air contaminant to the ambient air.

(66) "Emission point" means any individual opening at a fixed location through which air contaminants are emitted.

(66m) "Emissions unit" means any part of a stationary source which emits or is capable of emitting any air contaminant.

(67) "Emulsified asphalt" means an emulsion of asphalt cement and water which contains a small amount of an emulsifying agent; a heterogeneous system containing 2 normally immiscible phases (asphalt and water) in which the water forms the continuous phase of the emulsion, and minute globules of asphalt form the discontinuous phase.

(67g) "End box" means one or more containers located on one or both ends of a mercury chlor-alkali electrolyzer which serves as a connection between the electrolyzer and denuder for rich and stripped amalgam.

(67r) "End box ventilation system" means a ventilation system which collects mercury emissions from the end boxes, the mercury pump sumps, and their water collection systems.

(68) "End sealing compound" means a synthetic rubber compound which is coated onto can ends and which functions as a gasket when the end is assembled on the can.

(68m) "Energy intensive control device" means an air pollution control device or system which consumes energy at a rate in excess of what would be required to heat the exhaust gas stream from 70°F to 800°F, taking into account energy recovered in the form of heat or organic compounds.

(69) "Equivalent air-dried kraft pulp" means pulp production which produces a loading of black liquor solids to the recovery furnace equivalent to that loading produced with kraft pulp.

(69m) "Equivalent method" means any method of sampling and analyzing for an air pollutant which has been demonstrated to the department's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.



(70) "Equivalent opacity" means an opacity of 20% per Ringelmann number.

(70g) "Ethylene dichloride plant" includes any plant which produces ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene.

(70r) "Ethylene dichloride purification" includes any part of the process of ethylene dichloride production which follows ethylene dichloride formation and in which finished ethylene dichloride is produced.

(71) "Exterior base coating" means a coating applied to the exterior of a can to provide exterior protection to the metal and to provide background for the lithographic or printing operation.

(71m) "Extraction plant" means a facility chemically processing beryllium ore to beryllium metal, alloy, or oxide, or performing any of the intermediate steps in these processes.

(72) "Extreme performance coatings" means coatings designed for harsh exposure or exposure to one or more of the following: the weather all of the time, temperatures consistently above 95°C, detergents, abrasive and scouring agents, solvents, corrosive atmospheres, or similar environmental conditions.

(72m) "Fabricating" means any processing of a manufactured product containing commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of buildings, structures, facilities or installations.

(73) "Fabric coating" means the coating or printing of a textile substrate with a blade, roll, rotogravure or dip coater, or other coating applicator, to impart properties that are not initially present, such as strength, stability, water or acid repellancy, or appearance.

(74) "Facility" means an establishment—residential, commercial, institutional or industrial—which emits or causes emissions of air contaminants.

(75) "Firebox" means the chamber or compartment of a boiler or furnace in which materials are burned but does not mean the combustion chamber of an incinerator.

(75m) "Fixed capital cost" means the capital needed to provide all of the depreciable components.

(76) "Flashoff area" means the space between the application area and the oven.

(77) "Flexographic printing" means the application of words, designs or pictures to a substrate by means of a roll printing technique in which the pattern to be applied is raised above the printing roll and the image carrier is made of rubber or other elastomeric materials.

(78) "Floating roof" means a storage tank cover consisting of a double deck or pontoon single deck, which rests upon and is supported by the petroleum liquid being contained, and is equipped with a closure seal or seals to seal the space between the roof edge and tank wall. The floating roof may be either a covered external floating roof in an open storage tank or an internal floating cover beneath a fixed roof.

(79) "Forebays" means the primary sections of a wastewater separator.

(79m) "Foundry" means a facility engaged in the melting or casting of metal or metal alloys.

(80) "Freeboard height" means, for a cold cleaner, the distance from the liquid solvent level in the degreaser tank to the lip of the tank. For a vapor degreaser it means the distance from the top of the vapor zone to the lip of the degreaser tank.

(81) "Freeboard ratio" means the freeboard height divided by the internal width of the degreaser tank.

(81m) "Friable asbestos material" means any material that contains more than one percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure.

(82) "Fuel" means any solid, liquid or gaseous materials used to produce useful heat by burning.

(83) "Fuel gas" means any gas which is generated by a petroleum refinery process unit or by a petroleum liquid transfer operation and which is combusted, or any gaseous mixture of such gas and natural gas which is combusted.

(84) "Fugitive dust" means solid airborne particles emitted from any source other than a flue or stack.

(85) "Fugitive emission" means an emission from any emission point within a facility other than a flue or stack.

(86) "Furniture metal coating" means the surface coating of any furniture made of metal or any metal part which will be assembled with other metal, wood, fabric, plastic or glass parts to form a furniture piece.

(87) "Gasoline" means any petroleum distillate having a Reid vapor pressure of 27.6 kPa (4 psia) or greater.

(88) "Gasoline dispensing facility" means any site where gasoline is dispensed to motor vehicle gasoline tanks from stationary storage tanks.

(89) "Gas service" means petroleum refinery equipment which processes, transfers or contains a VOC or mixture of VOCs in the gaseous phase.

(89m) "Grade of resin" means the subdivision of resin classification which describes it as a unique resin, i.e., the most exact description of a resin with no further subdivision.

(90) "Green tires" means assembled tires before molding and curing have occurred.

(91) "Green tire spraying" means the spraying of green tires, both inside and outside, with release compounds which help remove air from the tire during molding and prevent the tire from sticking to the mold after curing.

(92) "Hardboard" means a panel manufactured primarily from interfelted ligno-cellulosic fibers which are consolidated under heat and pressure in a hot press.

(93) "Hardwood plywood" means a plywood whose surface layer is a veneer of hardwood.

(94) "Heat sensitive material" means materials which cannot consistently be exposed to temperatures greater than 95°C (203°F).

(94m) "Highway" has the meaning given it in s. 340.01 (22), Stats.

(95) "Highway project" means all or a portion of a proposed new or modified section of highway. Where an environmental impact document is to be prepared, the highway project may be taken to cover the same length of highway.

(96) "Hydrocarbon" means any organic compound containing carbon and hydrogen.

(96m) "Hydrogen gas stream" means a hydrogen stream formed in the chlor-alkali cell denuder.

(97) "Hydrophobic substrate" means any substrate that is resistant to or avoids wetting. This may include but is not limited to polyethylene, polypropylene, cellophane, metalized polyester, nylon, and mylar.

(98) "Implementation plan" means a plan adopted to implement, maintain, and enforce air standards within an air region or portion thereof.

(98m) "Inactive waste disposal site" means any disposal site or portion thereof where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.

(99) "Incinerator" means a combustion apparatus designed for high temperature operation in which solid, semisolid, liquid, or gaseous combustible wastes are ignited and burned to produce solid and gaseous residues containing little or no combustible material.

(100) "Indirect source" means any stationary source which conveys motor vehicles or which attracts or may attract mobile source activity and thus indirectly causes the emission of any air contaminant. Such indirect sources include, but are not limited to highways and roads; parking facilities; retail, commercial and industrial facilities; recreation, amusement, sports and entertainment facilities; airports; office and government buildings; apartment and condominium buildings; and education facilities.

(100m) "Inprocess wastewater" means any water which, during manufacturing or processing, comes into direct contact with vinyl chloride or polyvinyl chloride or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product containing vinyl chloride or polyvinyl chloride but which has not been discharged to a wastewater treatment process or discharged untreated as wastewater.

(101) "Interior sheet base coating" means a coating applied by roller coater or spray to the interior side of sheets from which cans are formed to provide a protective lining between the can metal and product.

(102) "Interior body spray" means a coating sprayed on the interior of the can body to provide a protective film between the product and the can.

(103) "Intermittent vapor control system" means a vapor control system that employs an intermediate vapor holder to accumulate vapors displaced from tanks during filling. The control device destroys or removes the accumulated vapors only during automatically controlled cycles.

(103m) "In vinyl chloride service" means a piece of equipment that contains or contacts either a liquid that is at least 10% by weight vinyl chloride or a gas that is at least 10% by volume vinyl chloride.

(104) "Isokinetic sampling" means sampling in which the linear velocity of the gas entering the sampling nozzle is equal to that of the undisturbed gas stream at the same point.

(105) "KPa" means kilo Pascals (1.0 kPa = 0.15 psia).

(106) "Kraft process" means any pulping process which uses an alkaline sulfide solution containing sodium hydroxide and sodium sulfide for a cooking liquor.

(106m) "Laboratory" means a facility or portion of a multi-use facility which does not produce a product for regular commercial use or sale and which is used primarily for scientific or technical experimentation or observation of matter for the purpose of research, development, quality assurance, analysis or teaching.

(107) "Large appliances" means doors, cases, lids, panels and interior support parts of residential and commercial washers, dryers, ranges, refrigerators, freezers, water heaters, dishwashers, trash compactors, air conditioners and other similar products. Not included are products of such weight that they are normally lifted only with powered lifting equipment or products which are intended to be permanently fastened in place.

(107m) "Latex resin" means a resin which is produced by a polymerization process which initiates from free radical catalyst sites and is sold undried.

(108) "Leaking component" means any component at a petroleum refinery which has a VOC concentration exceeding 10,000 ppm when tested in the manner approved by the department.

(109) "Light-duty trucks" means any motor vehicles rated at 3864 kilograms (8500 pounds) gross weight or less which are designed primarily for the purpose of transporting goods and materials, or derivatives of such vehicles.

(110) "Liquid-mounted seal" means a primary floating roof seal mounted in continuous contact with the liquid in a liquid organic compound storage tank between the tank wall and the floating roof around the internal circumference of the tank.

(111) "Liquid service" means petroleum refinery equipment which processes, transfers or contains a VOC or mixture of VOCs in the liquid phase.

(112) "Loading rack" means an aggregation or combination of gasoline loading equipment arranged so that all loading outlets in the combination can be connected to a tank truck or trailer parked in a specific loading space.

(113) "'Lower explosive limit' or 'LEL'" means the lower limit of flammability of a gas or vapor at ordinary ambient temperatures expressed as percent propane in air by volume.

(114) "Low solvent coating or ink" means a coating or ink which contains less organic solvent than the conventional coatings used by the particular industry. Low solvent coatings or inks include water-borne, higher solids, electrodeposition and powder coatings or inks.

(114m) "Machine shop" means a facility performing cutting, grinding, turning, honing, milling, deburring, lapping, electrochemical machining, etching or other similar operations.

(115) "Magnet wire coating" means the process of applying a coating of electrically insulating varnish or enamel to aluminum or copper wire for use in electrical machinery.

(115m) "Manufacturing of asbestos products" means the combining of commercial asbestos, or in the case of woven friction products the combining of textiles containing commercial asbestos, with any other material, including commercial asbestos, and the processing of this combination into a product as specified in s. NR 154.19(4)(c).

(116) "Manufacturing plant" means a facility where parts are manufactured, finished or assembled for eventual inclusion into a finished product ready for sale to retailers. With respect to the manufacture of motor vehicles, customizers, body shops and other repainters are not included in this definition.

(116e) "Mercury" means the element mercury, excluding any other elements, and includes mercury in particulates, vapors, aerosols and compounds.

(116j) "Mercury chlor-alkali cell" means a device which is basically composed of an electrolyzer section and a denuder or decomposer section and utilizes mercury to produce chlorine gas, hydrogen gas, and alkali metal hydroxide.

(116o) "Mercury chlor-alkali electrolyzer" means an electrolytic device which is part of a mercury chlor-alkali cell and utilizes a flowing mercury cathode to produce chlorine gas and alkali metal amalgam.

(116t) "Mercury ore" means a mineral mined specifically for its mercury content.

(116y) "Mercury ore processing facility" means a facility processing mercury ore to obtain mercury.

(117) "Mobile source" means any motor vehicle or equipment other than a semistationary source which is capable of emitting any air con-

tainant while moving (e.g., automobile, bulldozer, bus, locomotive, motorboat, motorcycle, snowmobile, steamship, truck, etc.).

(118) "Modification" has the meaning designated in s. 144.30 (20), Stats.

(118m) "Motor vehicle" or "vehicle" means every self-propelled device, except railroad trains, by which any person or property is or may be transported or drawn upon a highway.

(118n) "Municipality" has the meaning given it in s. 144.01 (6), Stats.

(118s) "Municipal garbage and refuse" means garbage and refuse, as those terms are defined in ch. NR 180, which are primarily generated by residential activities but which may include minor amounts of commercial and industrial garbage and refuse that are in the total waste stream and are not hazardous. Municipal garbage and refuse does not include sludge which is generated from a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant or air pollution control facility.

(119) "Natural finish hardwood plywood panels" means panels whose original grain pattern is enhanced by essentially transparent finishes which may be supplemented by fillers and toners.

(120) "New direct or portable source" means a direct or portable source, the construction or modification of which is commenced after April 1, 1972, or the effective date of promulgation of an emission limit which applies.

(121) "New indirect source" means an indirect source, the construction or modification of which is commenced after July 1, 1975.

(122) "Nitrogen oxides" means all oxides of nitrogen except nitrous oxide.

(123) "Noncondensibles" means gases and vapors from processes that are not condensed with the equipment used in those processes.

(124) "Opacity" means the state of a substance which renders it partially or wholly impervious to rays of light. (20% opacity equals one unit on the Ringlemann Chart.)

(125) "Open burning" means oxidation from which the products of combustion are emitted directly into the ambient air without passing through a stack or chimney.

(126) "Open top vapor degreasing" means the batch process of cleaning and removing soils from metal surfaces by condensing hot solvent vapor on the colder metal parts.

(127) "Operator" means any person who leases, controls, operates or supervises a facility, an air contaminant source, or air pollution control equipment.

(128) "Organic compound" means a compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, metallic carbonates and ammonium carbonate.

(129) "Oven" means, for the purpose of surface coating, a chamber within which heat is used to bake, cure, polymerize, or dry a surface coating.

(130) "Overall emission reduction efficiency" means the weight per unit time of an air contaminant removed by a control device divided by the weight per unit time of the air contaminant generated by the source, expressed as a percentage.

(131) "Overvarnish" means a coating applied directly over ink to reduce the coefficient of friction, to provide gloss and to protect the finish against abrasion and corrosion.

(132) "Ozone season" means the period from May 1 through September 30 of any year.

(133) "Packaging rotogravure printing" means rotogravure printing upon paper, paper board, metal foil, plastic film, or other substrates, which in subsequent operations are formed into packaging products or labels for articles to be sold.

(134) "Paper coating" means application of the uniform coatings put on paper and pressure sensitive tape regardless of substrate. Related web coating processes on plastic fibers and on metal foil are included in this definition but processes such as printing where the coating is not uniform across the web are not included.

(135) "Parking capacity" means the maximum number of vehicles which a parking facility is designed to hold based on an allotment of not more than 350 square feet of stall and aisle area per vehicle.

(136) "Particulate asbestos material" means any finely divided particles of asbestos material.

(137) "Particulate or particulate matter" means:

(a) For an existing direct or portable source, any material which exists as a solid at standard conditions.

(b) For a new direct or portable source, any material which exists as a solid or liquid at standard conditions except uncombined water.

(138) "'Parts per million' or 'ppm'" means parts of a contaminant per million parts of gas by volume.

(139) "Passenger type tire" means agricultural, airplane, industrial, mobile home, light and medium duty truck, and passenger vehicle tires with a bead diameter up to 50.8 cm (20 inches) and cross section dimension up to 32.5 cm (12.8 inches).

(140) "Peak hour volume" means the highest one-hour traffic volume in a calendar year.

(141) "Penetrating prime coat" means an application of low-viscosity liquid asphalt to an absorbent surface to prepare it for an asphalt surface.

(142) "Performance test" means measurements of emissions or other procedures used for the purpose of determining compliance with a standard of performance.

(143) "Person" means any individual, corporation, company, cooperative, owner, tenant, lessee, syndicate, partnership, co-partnership, firm, association, trust, estate, public or private institution, joint stock company, political subdivision of the state of Wisconsin, state agency, or any legal successor, representative, agent or agency of the foregoing.

(144) "Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, coal and coke.

(145) "Petroleum liquid" means crude petroleum, petroleum, condensate and any finished or intermediate products manufactured or extracted in a petroleum refinery or in a facility which produces oils from tar sands, shale, coal or coke.

(146) "Petroleum refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants or other products through distillation of petroleum or through redistillation, cracking, extraction or reforming of unfinished petroleum derivatives.

(147) "Photochemically reactive organic substances" means any of the following:

(a) Group A: Hydrocarbons, alcohols, aldehydes, esters, ethers or ketones, which have olefinic or cyclo-olefinic type unsaturation.

(b) Group B: Aromatic compounds with 8 or more carbon atoms to the molecule, except ethylbenzene.

(c) Group C: Ethylbenzene, toluene, or ketones having branched hydrocarbon structures.

(d) Group D: A solvent or mixture of organic compounds in which any of the following conditions are met:

1. More than 20% of the total volume is composed of any combination of compounds listed in groups A, B or C above.

2. More than 5% of the total volume is composed of any combination of the compounds listed in group A above.

3. More than 8% of the total volume is composed of any combination of the compounds listed in group B above.

(147m) "Planned renovation" means a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Operations that are individually nonscheduled are included, provided a number of such operations can be predicted to occur during a given period of time based on operating experience.

(148) "Pneumatic rubber tire manufacture" means the production of pneumatic rubber passenger type tires on a mass production basis.

(148m) "Polyvinyl chloride plant" includes any plant where vinyl chloride alone or in combination with other materials is polymerized.

(149) "Portable source" means any facility, installation, operation or equipment which may directly result in the emission of any air contaminant only while at a fixed location but is capable of being transported to a



different location (e.g., portable asphalt plant, portable package boiler, portable air curtain destructor, etc.). A modified portable source or a source which has never received a plan approval shall be considered to be a direct stationary source which is subject to the requirements of ss. NR 154.04 and 154.05.

(150) "Prime coat" means the first film of coating applied to a product in a multiple-coat surface coating operation.

(151) "Printed interior panels" means panels whose grain or natural surface is obscured by fillers and basecoats upon which a simulated grain or decorative pattern is printed.

(152) "Process gas" means any gas generated by a petroleum refinery process unit except fuel gas and process upset gas as defined in this section.

(153) "Process line" means one or more actions or unit operations which must function simultaneously or in sequence in order to manufacture or modify a product (e.g. a spray booth, conveyor and drying oven are considered a process line).

(154) "Process upset gas" means any gas generated by a petroleum refinery process unit as a result of start-up, shut-down, upset or malfunction.

(155) "Process weight" means the total weight of all materials introduced into any direct source operation, except liquid fuels, gaseous fuels and air.

(156) "Production equipment exhaust system" means a device for collecting and directing out of the work area fugitive emissions from reactor openings, centrifuge openings, and other vessel openings at a pharmaceutical manufacturing plant.

(156g) "Propellant" means a fuel and oxidizer physically or chemically combined which undergoes combustion to provide rocket propulsion.

(156r) "Propellant plant" means any facility engaged in the mixing, casting or machining of propellant.

(157) "Proportional sampling" means sampling at a rate that produces a constant ratio of flow in the sampling nozzle to stack gas flow rate.

(158) "Psia" means pounds per square inch absolute.

(159) "Publication rotogravure printing" means rotogravure printing upon paper which is subsequently formed into books, magazines, catalogues, brochures, directories, newspaper supplements, and other types of printed materials.

(159m) "Public trafficable area" means any trafficable area which is owned, operated, maintained or controlled by a municipality, interstate agency, state agency or federal agency.

(160) "Quench area" means a chamber where the hot metal exiting the oven is cooled by either a spray of water or a blast of air followed by water cooling.

(161) "Reactor" means a vat or vessel, which may be jacketed to permit temperature control, designed to contain chemical reactions.

(162) "'Reasonably available control technology' or 'RACT'" means that which provides the lowest emission rate that a particular source is capable of achieving by the application of control technology that is reasonably available considering technological and economic feasibility. Such technology may previously have been applied to similar, but not necessarily identical, source categories.

(162m) "Reconstruction" means the removal of components of a stationary source and the substitution of those components with similar new components to such an extent that the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new stationary source. The term "reconstruction" does not apply to minor sources.

(162s) "Reference method" means any method of sampling and analyzing for an air pollutant, as described in 40 C.F.R. pt. 61, Appendix B.

(163) "Refinery process unit" means any segment of a petroleum refinery in which a specific processing operation is conducted.

(164) "Reid vapor pressure" means the absolute vapor pressure of volatile crude petroleum and volatile nonviscous petroleum liquids except liquefied petroleum gases as determined by ASTM-D-232-72 (reapproved 1977).

(164g) "Relocation" means the removal of a stationary source from one location and the siting of the stationary source at a different location.

(164m) "Renovation" means the removing or stripping of friable asbestos material used on any pipe, duct, boiler, tank, reactor, turbine, furnace or structural member. Operations in which load-supporting structural members are wrecked or taken out are excluded.

(164n) "Replacement" means the physical dismantling of a stationary source and the substitution of that source with a stationary source which is similar in operating capacity and function.

(165) "Ringlemann Chart" means the chart published by the U.S. bureau of mines in which are illustrated graduated shades of grey to black for use in estimating the shade or density of smoke. (One unit on the Ringlemann Chart equals 20% opacity).

Note: See Ringlemann Chart published December, 1950, by the U.S. bureau of mines. Copies of "Fundamentals of Smoke Abatement," December, 1950, Ringlemann Chart, Information Circular 7588, are available for inspection at the offices of the department of natural resources, secretary of state and revisor of statutes, Madison, Wisconsin, and may be obtained for personal use from the U.S. department of interior, Washington, D.C.

(165m) "Roadway" has the meaning given it in s. 340.01 (54), Stats.

(165q) "Roadway areas" means any surface on which motor vehicles travel including, but not limited to, highways, roads, streets, parking areas and driveways.

(165w) "Rocket motor test site" means any building, structure, facility or installation where the static test firing of a beryllium rocket motor or the disposal of beryllium propellant, or both, is conducted.

(166) "Roll coating" means the application of a coating material to a substrate by means of hard rubber or steel rolls.

(167) "Roll printing" means the application of words, designs or pictures to a substrate, usually by means of a series of hard rubber or steel rolls each with only partial coverage.

(168) "Rotogravure coating" means the application of a coating material to a substrate by means of a roll coating technique in which the pattern to be applied is etched on the coating roll. The coating material is transferred to the substrate from the recessed areas on the coating roll.

(169) "Rotogravure printing" means the application of words, designs or pictures to a substrate by means of a roll printing technique which involves an intaglio or recessed image areas in the form of cells.

(169m) "Run" means the net period of time during which an emission sample is collected.

(170) "Secretary" means the secretary of the department of natural resources, state of Wisconsin.

(171) "Semistationary source" means any facility, operation or equipment that has the capability of emitting any air contaminant while moving, but generally does not emit while moving (e.g., diesel cranes, air compressors, and electric generators such as those used at construction sites, etc.).

(172) "Separation operation" means a process that separates a mixture of compounds and solvents into 2 or more components. Specific mechanisms include extraction, centrifugation, filtration, and crystallization.

(173) "Shutdown" means the cessation of operation of a direct or portable source or of emission control equipment.

(174) "Silt content" means that portion by weight of a particulate material which will pass through a no. 200 (75 micron) wire sieve as determined by the dry method in ASTM C136-76 or other method approved by the department.

(175) "Single coat" means a single film of coating applied directly to a metal substrate, omitting the primer application.

(175e) "Slip gauge" means a gauge which has a probe that moves through the gas to liquid interface in a storage or transfer vessel and indicates the level of vinyl chloride in the vessel by the physical state of the material the gauge discharges.

(175m) "Sludge" means sludge produced by a treatment plant that processes municipal or industrial wastewater.

(175s) "Sludge dryer" means a device used to reduce the moisture content of sludge by heating to temperatures above 65°C (ca. 150°F) directly with combustion gases.

(176) "Smoke" means all products of combustion of sufficient density to be observable, including but not limited to carbon, dust, fly ash, and other particles, but not including uncombined water.

(177) "Solvent" means organic materials which are liquid at standard conditions and which are used as solvers, viscosity reducers, or cleaning agents.

(178) "Solvent metal cleaning" means the process of cleaning soils from metal surfaces by cold cleaning or open top vapor degreasing or conveyORIZED degreasing.

(178m) "Solvent recovery dryer" means a dry cleaning dryer that employs a condenser to liquefy and recover solvent vapors evaporated in a closed-loop, recirculating stream of heated air.

(179) "Splash filling" means the filling of a tank truck or stationary storage tank through a pipe or hose whose discharge opening is more than 15.2 centimeters (6 inches) above the bottom of the tank being filled.

(180) "Stack" means any device or opening designed or used to emit air contaminants to the ambient air.

(181) "Standard conditions" means a temperature of 20°C (68°F) and a pressure of 760 millimeters of mercury (29.92 inches of mercury).

(182) "'Standard metropolitan statistical area' or 'SMSA'" means such area as designated by the U.S. bureau of budget in the following publication: *Standard Metropolitan Statistical Areas*, issued in 1967, with subsequent amendments. The following Wisconsin counties are included in SMSA's:

(a) Appleton-Oshkosh, Wisconsin SMSA:

1. Calumet county
2. Outagamie county
3. Winnebago county

(b) Duluth-Superior, Minnesota-Wisconsin SMSA: Douglas county

(c) Eau Claire, Wisconsin SMSA:

1. Eau Claire county
2. Chippewa county

(d) Green Bay, Wisconsin SMSA: Brown county

(e) Kenosha, Wisconsin SMSA: Kenosha county

(f) La Crosse, Wisconsin SMSA: La Crosse county

(g) Madison, Wisconsin SMSA: Dane county

(h) Milwaukee, Wisconsin SMSA:

1. Milwaukee county
2. Ozaukee county
3. Washington county
4. Waukesha county

(i) Minneapolis-St. Paul, Minnesota-Wisconsin SMSA: St. Croix county

(j) Racine, Wisconsin SMSA: Racine county

Note: See *Standard Metropolitan Statistical Areas*, Revised Edition, 1975, executive office of the President, office of management and budget. Copies of this publication are available for inspection in the offices of the department of natural resources, secretary of state and revisor of statutes, Madison, Wisconsin, or may be obtained for personal use from the superintendent of documents, U.S. government printing office, Washington, D.C., 20402.

(182e) "Standard operating procedure" means a formal written procedure officially adopted by the plant owner or operator and available on a routine basis to those persons responsible for carrying out the procedure.

(182m) "Standard pressure" means a pressure of 760 millimeters of mercury (29.92 inches of mercury).

(182s) "Standard temperature" means a temperature of 20°C (69°F).

(183) "Startup" means the setting in operation of an affected facility or its emission control equipment for any purpose which produces emissions.

(184) "Stationary source" means any facility, building, structure, installation, or action, or combination thereof which may directly or indirectly result in the emission of any air contaminant at a fixed location.

(184e) "Stripper" includes any vessel in which residual vinyl chloride is removed from polyvinyl chloride resin, except bulk resin, in the slurry form by the use of heat or vacuum, or both. In the case of bulk resin, stripper includes any vessel which is used to remove residual vinyl chloride from polyvinyl chloride resin immediately following the polymerization step in the plant process flow.

(184m) "Stripping" means taking off friable asbestos materials from any pipe, duct, boiler, tank, reactor, turbine, furnace or structural member.

(184s) "Structural member" means any load-supporting member, such as beams and load-supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls.

(185) "Submerged fill pipe" means any fill pipe with a discharge opening which is entirely submerged when the liquid level is 15.2 centimeters (6 inches) above the tank bottom.

(186) "Surface coating" means the application of a coating to a product in a coating line.

(187) "Synthesized pharmaceutical manufacturing" means manufacture of pharmaceutical products by chemical synthesis.

(188) "Technological infeasibility" means incapable of being accomplished or carried out as a matter of practicality; i.e., technically impracticable rather than technically impossible.

(189) "Thin particleboard" means a manufactured board 0.64 centimeters (1/4 inch) or less in thickness made of individual wood particles which have been coated with a binder and formed into flat sheets by pressure.

(190) "Three-piece can side-seam spray" means a coating sprayed on the exterior and interior of a welded, cemented or soldered seam to protect the exposed metal.

(191) "Tileboard" means paneling that has a colored waterproof surface coating.

(192) "Topcoat" means the final film of coating applied in a multiple coat operation.

(193) "'Total reduced sulfur' or 'TRS'" means any sulfur containing compound in which the oxidation state of sulfur is less than zero. Common examples of such compounds are hydrogen sulfide, mercaptans, and dimethyl disulfide.

(193m) "Trafficable area" means any area, including but not limited to a parking lot or storage area, which is external to a building or structure, is reasonably capable of being traveled by a motor vehicle, and is accessible to a motor vehicle.

(194) "Traffic volume" means the number of vehicles that pass a particular point on the roadway during a specific time period. Volume can be expressed in terms of daily traffic or annual traffic as well as on an hourly basis.

(195) "Transfer efficiency" means the portion of coating solids which adheres to the surface being coated during the application process, expressed as a percentage of the total volume of coating solids delivered to the applicator.

(196) "Tread end cementing" means the application of a solvent based cement to tire tread ends.

(197) "True vapor pressure" means the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods described in American Petroleum Institute Bulletin 2517, *Evaporation Loss from Floating Roof Tanks*, 1962.

(198) "Turnaround" means the procedure of shutting a refinery unit down after a run to do necessary maintenance and repair work and putting the unit back on stream.

(199) "Two-piece can exterior end coating" means a coating applied by roller coating or spraying to the exterior end of a can to provide protection to the metal.

(199m) "Type of resin" means the broad classification of resin referring to the basic manufacturing process for producing that resin, including, but not limited to, the suspension, dispersion, latex, bulk and solution processes.

(200) "Uncombined water" means water not chemically or physically bound to another materials.

(201) "Undertread cementing" means the application of a solvent based cement to the underside of a tire tread.

(202) "Vacuum producing system" means any reciprocating, rotary, or centrifugal blower or compressor, or any jet ejector or device that

takes suction from a pressure below atmospheric and discharges against atmospheric pressure.

(203) "Vapor balance system" means a combination of pipes or hoses which create a closed system between the vapor spaces of an unloading tank and a receiving tank such that vapors displaced from the receiving tank are transferred to the tank being unloaded.

(204) "Vapor collection system" means, for the purpose of liquid organic compound transfer operations, a vapor transport system which uses direct displacement by the liquid loaded to force vapors from the tank into a vapor control system or vapor holding tank.

(205) "Vapor-mounted seal" means any primary floating roof seal mounted so that there is an annular vapor space underneath the seal. The annular vapor space is bounded by the bottom of the primary seal, the tank wall, the liquid surface, and the floating roof.

(206) "Vapor recovery or control system" means a system that gathers organic compound vapors released during the operation of any transfer, storage, or process equipment and processes the vapors so as to prevent their emission into the ambient air.

(206e) "Vinyl chloride purification" includes any part of the process of vinyl chloride production which follows vinyl chloride formation and in which finished vinyl chloride is produced.

(206j) "Vinyl chloride plant" includes any plant which produces vinyl chloride by any process.

(206o) "Vinyl chloride reactor" includes any vessel in which vinyl chloride is partially or totally polymerized into polyvinyl chloride.

(206t) "Vinyl chloride reactor opening loss" means the emission of vinyl chloride occurring when a reactor is vented to the atmosphere for any purpose other than an emergency relief discharge as defined in s. NR 154.19(6)(f)l.c. and (g)l.

(207) "Vinyl coating" means applying a decorative or protective topcoat or printing on vinyl coated fabric or vinyl sheets.

(207m) "Visible asbestos emissions" means any emissions which are visually detectable without the aid of instruments and which contain particulate asbestos material.

(208) "Volatile organic compound" or "VOC" means any compound of carbon that has a vapor pressure greater than 0.1 millimeter of mercury (0.0019 psia) at standard conditions, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

(209) "Wastewater (oil-water) separator" means any device or piece of equipment which utilizes the difference in density between oil and water to remove oil and associated chemicals from water. This includes any device, such as a flocculation tank, clarifier, etc., which removes petroleum derived compounds from wastewater.

(209m) "Wastewater treatment process" includes any process which modifies characteristics such as biological or chemical oxygen demand,

total suspended solids, or pH, usually for the purpose of meeting effluent guidelines and standards but does not include any process the purpose of which is to remove vinyl chloride from water to meet requirements of s. NR 154.19(6).

(210) "Water based sprays" means release compounds, sprayed on the inside and outside of green tires, in which solids, water, and emulsifiers have been substituted for all organic solvents.

(211) "Waxy, heavy pour crude petroleum" means a crude petroleum with a pour point of 10°C (50°F) or higher as determined by the ASTM standard D97-66, "Test For Pour Point of Petroleum Oils."

History: Cr. Register, March, 1972, No. 195, eff. 4-1-72, renum. (41) (a) 6 to be (41) (c); am. (41)(c) 3. and 4., Register, December, 1972, No. 204, eff. 1-1-73; r. and recr., Register, June, 1975, No. 234, eff. 7-1-75; renum. (3)(b) and (c) to be (3)(c) and (d), renum. (3)(a) 3. to be (3)(b) and am., am. (38) (intro.), Register, April, 1977, No. 256, eff. 5-1-77; r. and recr., Register, July, 1979, No. 283, eff. 8-1-79; am. Register, March, 1981, No. 303, eff. 4-1-81; cr. (118m) and (193m), Register, March, 1982, No. 315, eff. 4-1-82; cr. (94m), (118n), (159m) and (165m), Register, October, 1982, No. 322, eff. 11-1-82; cr. (intro.), (13m), (27m), (66m), (75m), (106m), (118s), (162m), (164g) and (164m), r. and recr. (118), Register, April, 1983, No. 328, eff. 5-1-83; cr. (68m), Register, July, 1983, No. 331, eff. 8-1-83; cr. (38m) and (178m) and am. (63), Register, November, 1983, No. 335, eff. 12-1-83; cr. (1g), (1r), (12m), (19m), (28e), (28j), (28o), (28t), (28y), (35m), (38s), (38w), (50m), (52m), (59g), (59r), (61m), (64m), (67g), (67r), (69m), (70g), (70r), (71m), (72m), (79m), (81m), (89m), (96m), (98m), (100m), (103m), (107m), (114m), (115m), (116e), (116j), (116o), (116t), (116y), (147m), (148m), (156g), (156r), (162s), (164m), (165q), (165w), (169m), (175e), (175m), (175s), (182e), (182m), (182s), (184e), (184m), (184s), (199m), (206e), (206j), (206o), (206t), (207m), and (209m), Register January, 1984, No. 337, eff. 2-1-84.

NR 154.02 **Applicability, delayed compliance, variances.** (1) **APPLICABILITY.** The provisions of this chapter govern the release of air contaminants to the ambient air and the regulation of air contaminant sources by the department.

(2) **DELAYED COMPLIANCE ORDERS.** The department may, by order issued under s. 144.35 (1) (b), [144.423 (1) (b)] Stats., authorize a source not in compliance with an emission limitation prescribed in this chapter to achieve compliance as expeditiously as practicable but not later than 3 years after such requirement became applicable. The department shall hold a public hearing in accordance with its rules prior to authorizing any period of delayed compliance which exceeds 30 days in duration. No such order shall be issued unless:

(a) The cause of the violation was a malfunction, equipment failure, act of God, or some other condition beyond the entity's control, when using all prudent planning;

(b) The air contaminant source is located so that it will not delay attainment or affect maintenance of an ambient air quality standard at any point beyond the property line of the entity;

(c) Good faith efforts have been made to comply with this chapter;

(d) If the violation was caused by a malfunction or equipment failure, any plan required to be prepared by s. NR 154.06 (9) was complied with;

(e) The air contaminant for which a deferral is sought is not a hazardous pollutant for which an emission standard has been established by the administrator of the U.S. environmental protection agency.

(f) The conditions listed in s. NR 154.09 (1), if applicable, are met;

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(g) The order contains:

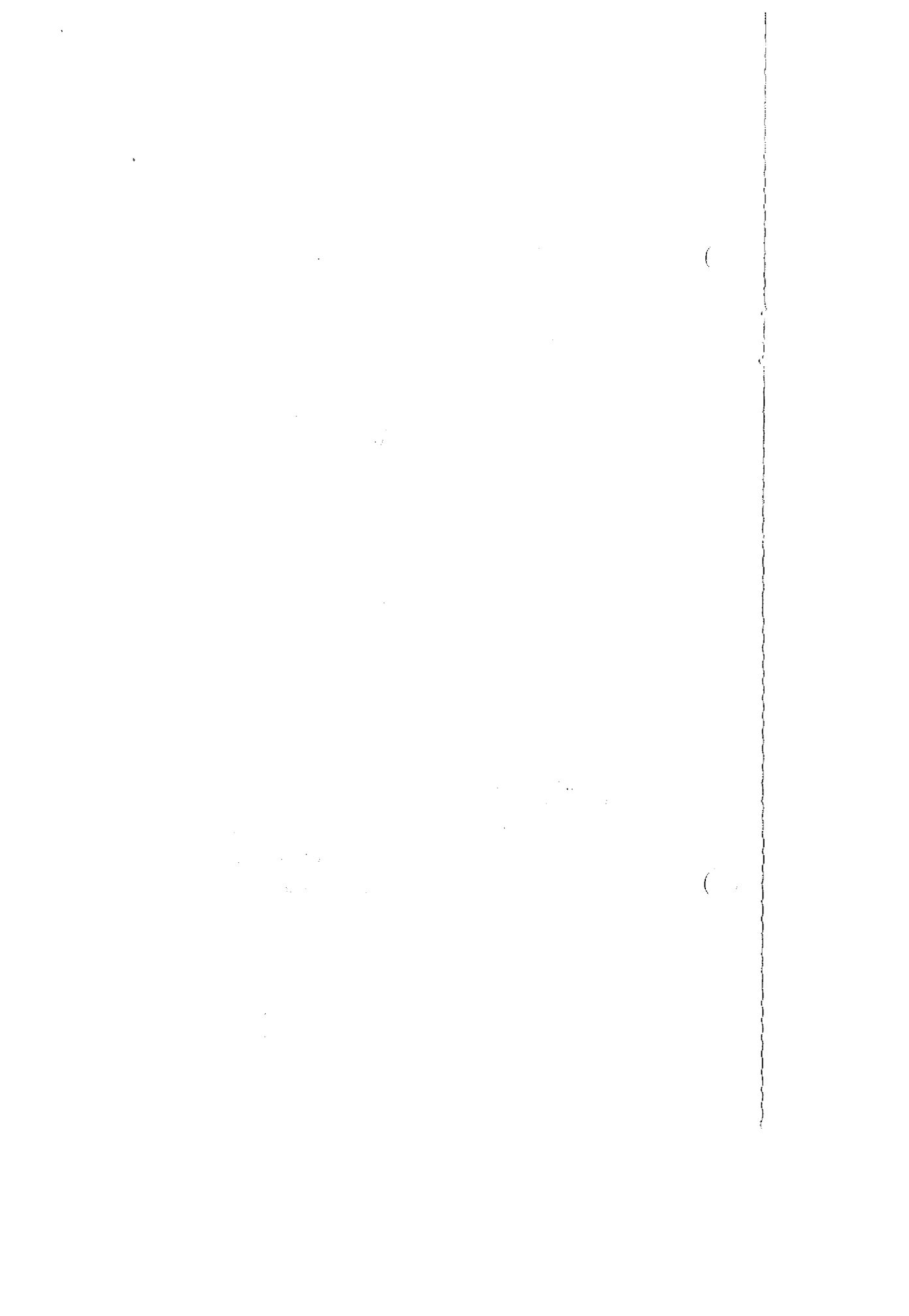
1. An express provision whereby the order recipient consents to its issuance;
2. A requirement that the order recipient employ reasonable emission monitoring techniques to assess compliance with any interim requirements imposed by the order;
3. A requirement for submittal of reports showing whether any interim requirements, increments of progress, and final compliance have been achieved;
4. A provision prohibiting the reduction of employe wages where supplemental, intermittent or other dispersion-dependent control methods are to be used;
5. In the case of a major stationary source, a notice that it may be required to pay administrative noncompliance penalties for failure to comply with the order and that no order issued under this subsection shall be effective until it is approved by the administrator of the U.S. environmental protection agency or designee.

(h) All reasonably available alternative operating procedures and interim control measures to minimize emissions shall be utilized by the air contaminant source during the period of delayed compliance.

(3) RACT VARIANCES. (a) The department may grant source-specific revisions to the state implementation plan setting alternate compliance schedules or alternate emission limitations, or both, where compliance with general RACT requirements of this chapter are shown to be technologically or economically infeasible, provided that:

1. The revision will not delay attainment or prevent maintenance of any ambient air quality standard, as determined by methods acceptable to the department.
2. Construction or modification of the air contaminant source for which a revision is requested was commenced on or before October 1, 1979.
3. The owner or operator of the air contaminant source for which a revision is requested demonstrates that all direct or portable sources owned or operated in the state by such person are in compliance with all applicable requirements of this chapter or are on a schedule for compliance with such requirements.
4. The owner or operator submits to the department information concerning the conditions or special circumstances which demonstrates, to the department's satisfaction, that the applicable general RACT re-

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any direct source on which construction or modification was commenced prior to November 1, 1979 in amounts greater than:

1. Any fossil fuel fired steam generating boiler rated at more than 25 million BTU heat input per hour but less than 100 million BTU heat input per hour firing solid fossil fuel or solid fossil fuel in combination with solid, liquid or gaseous fuels: 7.0 pounds of sulfur dioxide per million BTU heat input.

2. Any fossil fuel fired steam generating boiler rated at equal to or greater than 100 million BTU heat input per hour firing solid fossil fuel or solid fossil fuel in combination with solid, liquid or gaseous fuels:

a. Any electrical utility boiler: 4.25 pounds of sulfur dioxide per million BTU heat input.

b. Any other boiler:

1) Height above ground of emission point of less than 180 feet: 2.5 pounds of sulfur dioxide per million BTU heat input.

2) Height above ground of emission point of 180 to 220 feet: X pounds of sulfur dioxide per million BTU heat input, where  $X = 10 [0.0089 (\text{Emission Point Height}) - 1.18]$ .

3) Height above ground of emission point of more than 220 feet: 5.8 pounds of sulfur dioxide per million BTU heat input.

3. Any fossil fuel fired steam generating boiler rated at more than 25 million BTU heat input per hour firing liquid fossil fuel or liquid fossil fuel in combination with liquid or gaseous fuels:

a. Distillate fuel oil; that occurring from firing a distillate fuel oil with a sulfur content equal to or less than 0.5% by weight.

b. Residual fuel oil; that occurring from firing a residual fuel oil with a sulfur content equal to or less than 1.1% sulfur by weight.

(b) When a source is subject to the emission limitations of par. (a), the owner or operator shall not exceed the following increments of progress in achieving compliance, commencing with the nonattainment determination under s. NR 154.03 (1):

1. Submit plans for achieving compliance within 6 months.

2. Award any necessary contracts within 9 months.

3. Where physical alteration of the source is necessary to achieve compliance, commence construction within 12 months and complete construction within 30 months.

4. Where only fuel modification or switching is necessary to achieve compliance, commence operation using new fuel within 21 months.

5. Achieve final compliance with the applicable emission limitations and so certify to the department within 3 months of completion of construction or commencement of operation using new fuel.

6. Notwithstanding the increments of progress specified in this paragraph, all boilers to which par. (a) applies shall achieve final compliance and so certify to the department on or before December 31, 1982.

(6) MILWAUKEE RACT SULFUR LIMITATIONS. (a) No person may cause, allow or permit sulfur dioxide to be emitted to the ambient air within the corporate boundaries of the city of Milwaukee, Milwaukee county, from any direct source on which construction or modification was commenced prior to December 1, 1983, averaged over any 24-hour period in amounts greater than specified in this paragraph.

1. Any electrical utility installation rated at more than 250 million BTU heat input per hour:

a. 3.28 pounds sulfur dioxide per million BTU heat input to any stack for solid fossil fuel, 1.60 pounds sulfur dioxide per million BTU heat input to any stack for residual fuel oil and 0.50 pounds sulfur dioxide per million BTU heat input to any stack for all other fuels, or

b. Q, when different fuels are burned in combination. Q is determined by the following equation:

$$Q = \frac{X(3.28) + Y(1.60) + Z(0.5)}{X + Y + Z}$$

where Q is the sulfur dioxide emission limit expressed in pounds sulfur dioxide per million BTU heat input to any stack, X is the percent of total heat input to any stack derived from solid fossil fuel, Y is the percent of total heat input to any stack derived from residual fuel oil, and Z is the percent of total heat input to any stack derived from all other fuels.

(b) When a source is subject to the emission limitations of par. (a), the owner or operator may not exceed the following increments of progress in achieving compliance, commencing on December 1, 1983:

1. Submit plans for achieving compliance within 6 months.
2. Award any necessary contracts within 9 months.
3. Where physical alteration of the source is necessary to achieve compliance, commence construction within 12 months and complete construction by November 9, 1985.
4. Where only fuel modification or switching is necessary to achieve compliance, commence operation using new fuel by August 9, 1985.
5. Achieve final compliance with the applicable emission limitations and so certify to the department by November 9, 1985.

(7) GREEN BAY AND DE PERE RACT SULFUR LIMITATIONS. (a) No person may cause, allow or permit sulfur dioxide to be emitted to the ambient air within the corporate boundaries of the cities of Green Bay and De Pere, Brown county, from any direct source on which construction or modification was commenced prior to February 1, 1984 in amounts greater than those specified in this paragraph and par. (b).

1. Any electric utility shall comply with the following emission limitations:

a. Any electric utility boiler with the emission point at a height above ground of not less than 377 feet: 5.58 pounds of sulfur dioxide per million BTU heat input from the boiler to any stack.

b. Any electric utility boiler with the emission point at a height above ground of less than 377 feet: 0.5 pounds of sulfur dioxide per million BTU heat input from the boiler to any stack.

2. Any ammonia based sulfite pulp and paper mill shall comply with the following emission limitations:

a. Any steam generating boiler capable of firing coal, spent sulfite liquor or other fuels: except as provided in subpar. b., 5.95 pounds of sulfur dioxide per million BTU heat input from the boiler to any stack.

b. If a fluidized bed combustor is operated at 106 million BTU per hour heat input or higher and its exhaust gases are vented to the stack servicing the steam generating boilers described in subpar. a., then: 10.74 pounds of sulfur dioxide per million BTU heat input from the boiler to any stack.

c. Any pulp digester blow stack: 6.03 pounds of sulfur dioxide per hour.

d. All brown stock washers: a total of 23.18 pounds of sulfur dioxide per hour, from all washers.

e. All paper dryers: a total of 94.13 pounds of sulfur dioxide per hour, from all dryers.

f. All other sources not described in subpars. a. to f.: a total of 15.71 pounds of sulfur dioxide per hour.

3. Any paper mill in Green Bay located between milepoints 3.3 and 4.0 on the Fox river shall comply with the following emission limitations:

a. Fossil fuel fired steam generating boilers with the emission point at a height above ground of not less than 355 feet: 4.55 pounds of sulfur dioxide per million BTU heat input from the boilers to any stack.

b. Fossil fuel fired steam generating boilers with the emission point at a height above ground of less than 355 feet: 0.5 pounds of sulfur dioxide per million BTU heat input from the boilers to any stack.

c. All paper dryers: a total of 26.51 pounds of sulfur dioxide per hour from all dryers.

4. Any paper mill in DePere located between milepoints 7.0 and 7.4 on the Fox river shall comply with the following emission limitations:

a. Any fossil fuel fired steam generating boiler rated at less than or equal to 100 million BTU per hour: 2.54 pounds of sulfur dioxide per million BTU heat input from the boiler to any stack.

b. Any fossil fuel fired steam generating boiler rated at greater than 100 million BTU per hour with the emission point at a height above ground of not less than 211 feet: 3.20 pounds of sulfur dioxide per million BTU heat input from the boiler to any stack.

c. Any fossil fuel fired steam generating boiler rated at greater than 100 million BTU per hour with the emission point at a height above ground of less than 211 feet: 0.5 pounds of sulfur dioxide per million BTU heat input from the boiler to any stack.

5. Any neutral sulfite semichemical pulp and paper mill shall comply with the following emission limitations:

a. Steam generating boilers with the emission point at a height above ground of not less than 212 feet: 3.88 pounds of sulfur dioxide per million BTU heat input from the boilers to any stack when the boilers are fired at or below 158 million BTU per hour; 3.15 pounds of sulfur dioxide per million BTU heat input from the boilers to any stack when the boilers are fired at a rate greater than 158 million BTU per hour and less than 309 million BTU per hour; and 2.87 pounds of sulfur dioxide per million BTU heat input from the boilers to any stack when the boilers are fired at a rate of 309 million BTU per hour or greater.

b. Steam generating boilers with the emission point at a height above ground of less than 212 feet: 0.5 pounds of sulfur dioxide per million BTU heat input from the boilers to any stack.

6. Any calcium based sulfite pulp and paper mill and any calcium based lignin chemical processing facility shall comply with the following emission limitations:

a. Fossil fuel fired steam generating boilers: 2.10 pounds of sulfur dioxide per million BTU heat input from the boilers to any stack when the boilers are fired above 360 million BTU per hour; and 2.31 pounds of sulfur dioxide per million BTU heat input from the boilers to any stack when the boilers are fired at or below 360 million BTU per hour.

b. All Jennsen acid towers: a total of 9.21 pounds of sulfur dioxide per hour from all towers.

c. All brown stock washers: a total of 37.86 pounds of sulfur dioxide per hour from all washers.

d. All spent sulfite liquor spray dryers: a total of 25.71 pounds of sulfur dioxide per hour from all dryers.

7. Any paper mill in Green Bay located between milepoints 0.4 and 0.7 on the East river shall comply with the following emission limitations:

a. Any fossil fuel fired steam generating boiler: 1.50 pounds of sulfur dioxide per million BTU heat input from the boiler to any stack.

b. All paper dryers: a total of 27.25 pounds of sulfur dioxide per hour from all dryers.

(b) In addition to the emission limitations specified in par. (a), the following sources within the corporate boundaries of the cities of Green Bay and DePere, Brown county, shall comply with the annual emission limitations in this paragraph during the period from January 1, 1984 to December 31, 1988.

1. Any electric utility: The total emissions of sulfur dioxide from all electric utility boilers may not exceed 55,995 tons of sulfur dioxide per calendar year.

2. Any ammonia based sulfite pulp and paper mill: The total emissions of sulfur dioxide from all steam generating boilers may not exceed 28,000 tons of sulfur dioxide per calendar year.

3. Any paper mill in Green Bay located between milepoints 3.3 and 4.0 on the Fox river: The total emissions of sulfur dioxide from all steam generating boilers may not exceed 28,000 tons of sulfur dioxide per calendar year.

4. Any paper mill in DePere located between milepoints 7.0 and 7.4 on the Fox river: The total emissions of sulfur dioxide from all steam generating boilers may not exceed 3,000 tons of sulfur dioxide per calendar year.

5. Any neutral sulfite semichemical pulp and paper mill: The total emissions of sulfur dioxide from all steam generating boilers may not exceed 4,300 tons of sulfur dioxide per calendar year.

6. Any calcium based sulfite pulp and paper mill: The total emissions of sulfur dioxide from all steam generating boilers may not exceed 3,780 tons of sulfur dioxide per calendar year.

7. Any paper mill in Green Bay located between milepoints 0.4 and 0.7 on the East river: The total emissions of sulfur dioxide from all steam generating boilers may not exceed 1,100 tons of sulfur dioxide per calendar year.

(c) When a source is subject to the emission limitations of par. (a), the owner or operator shall meet the following deadlines in achieving compliance with those emission limitations:

1. Submit plans for achieving compliance within 6 months after February 1, 1984.

2. Award any necessary contracts within 9 months after February 1, 1984.

3. Where physical alteration of the source is necessary to achieve compliance, commence construction within 12 months after February 1, 1984 and complete construction on or before November 9, 1985.

4. Where only fuel modification or switching is necessary to achieve compliance, commence operation using new fuel on or before August 9, 1985.

5. Achieve final compliance with the applicable emission limitations in par. (a) and so certify to the department on or before November 9, 1985.

(d) For purposes of determining compliance with the emission limitations of pars. (a) and (b), the owner or operator of a source described in par. (a) or (b) shall outline the specific methods for demonstrating compliance with the emission limitations to the satisfaction of the department in the compliance plans submitted under par. (c)1. The compliance demonstrations shall include, but not be limited to, the following requirements:

1. Any facility which has solid fossil fuel fired or spent sulfite liquor fired steam generating boilers with a combined rated heat input capacity of greater than 500 million BTU per hour shall install, calibrate, maintain and operate a continuous emission monitor, utilizing equipment and procedures reviewed and approved by the department.

2. Any facility which has solid fossil fuel fired steam generating boilers with a combined rated heat input capacity of less than 500 million BTU per hour shall collect and analyze a daily, as-fired sample of fuel used, utilizing equipment and procedures reviewed and approved by the department.

3. Any facility which has liquid fossil fuel fired steam generating boilers shall collect and analyze a daily, as-fired sample of fuel used, utilizing equipment and procedures reviewed and approved by the department.

4. Emissions from all other sources shall be determined by annual stack emissions testing or by such other appropriate methods reviewed and approved by the department.

5. Quarterly reports in duplicate shall be submitted to the department's Lake Michigan District Headquarters, Box 3600, Green Bay, Wisconsin 54303. The quarterly reports shall include, but not be limited to, excess emission reports for facilities with continuous emission monitors, amounts of fuel used, and fuel sampling and analysis reports for compliance under subds. 2 and 3.

6. Each facility shall maintain complete records of emissions data and calculations used to verify emissions data at their premises and shall make such records available for inspection upon request by authorized representatives of the department during regular business hours.

(e) For purposes of determining the applicability of the boiler sizes and source capacities outlined in pars. (a) and (d), the capacity of a source and the size of a boiler of a described source shall be determined as of May 31, 1983.

History: Cr. Register, March, 1972, No. 195, eff. 4-1-72; cr. (3), Register, June, 1975, No. 234, eff. 7-1-76; cr. (2) (c), Register, April, 1976, No. 244, eff. 5-1-76; cr. (6), Register, November, 1979, No. 287, eff. 12-1-79; cr. (4), Register, January, 1980, No. 289, eff. 2-1-80; am. (4) (a), Register, December, 1982, No. 324, eff. 1-1-83; cr. (6), Register, November, 1983, No. 335, eff. 12-1-83; cr. (7), Register, January, 1984, No. 337, eff. 2-1-84.

**NR 154.13 Control of organic compound emissions. (1) GENERAL LIMITATIONS.** (a) No person shall cause, allow or permit organic compound emissions into the ambient air which substantially contribute to the exceeding of an air standard or cause air pollution.

(b) No person shall cause, allow or permit organic compounds to be used or handled without using good operating practices and taking reasonable precautions to prevent the spillage, escape or emission of organic compounds, solvents or mixtures. Such precautions shall include, but are not limited to:

1. Use of caution to prevent spillage or leakage when filling tanks, trucks or trailers.

2. Use of caution when filling automobile tanks to prevent spillage.

(c) Disposal of VOC wastes. 1. Effective August 1, 1979, no person shall cause, allow, or permit the disposal of more than 5.7 liters (1.5 gallons) of any liquid VOC waste, or of any liquid, semisolid or solid waste materials containing more than 5.7 liters (1.5 gallons) of any VOC, in any one day from a facility in a manner that would permit their evaporation into the ambient air during the ozone season. This includes, but is not limited to, the disposal of VOC which must be removed from VOC



control devices so as to maintain the control devices at their required operating efficiency.

2. Disposal during the ozone season shall be by methods approved by the department, such as incineration, recovery for reuse, or transfer in closed containers to an acceptable disposal facility, such that the quantity of VOC which evaporates into the ambient air does not exceed 15% (by weight) or 5.7 liters (1.5 gallons) in any one day, whichever is larger.

(2) STORAGE OF ORGANIC COMPOUNDS. (a) Storage of petroleum liquids. 1. Applicability. a. The storage, monitoring and maintenance requirements of subds. 2., 3. and 4. apply to all storage vessels for petroleum liquids of more than 151,412 liter (40,000 gallon) capacity on which construction or modification is commenced after July 1, 1975, with the exception of:

1) Storage vessels being used for number 2 through number 6 fuel oils as specified in ASTM-D-396-73, gas turbine fuel oils numbers 2-GT through 4-GT as specified in ASTM-D-2880-71, or diesel fuel oils numbers 2-D and 4-D as specified in ASTM-D975-73.

Note: See American Society for Testing and Materials, Part 17, 1973. Copies of applicable standards from Part 17; Petroleum Products - Fuels, Solvents, Burner Fuel Oils, Lubricating Oils, Cutting Oils, Lubricating Greases, Hydraulic Fluids; are available for inspection at the offices of the department of natural resources, secretary of state and revisor of statutes, Madison, Wisconsin, and may be obtained for personal use from ASTM, 1916 Race Street, Philadelphia, PA 19103.

2) Storage vessels for the crude petroleum or condensate stored, processed or treated at a drilling and production facility outside a standard metropolitan statistical area prior to custody transfer.

3) Pressure vessels which are designed to operate at pressures in excess of 104 kPa (15 psig) without emissions except under emergency conditions.

4) Subsurface caverns or porous rock reservoirs.

5) Underground tanks if the total volume of petroleum liquids added to and taken from a tank annually does not exceed twice the volume of the tank.

b. Effective July 1, 1980, the maintenance requirements of subd. 4. apply to all storage vessels for petroleum liquids of more than 7,571 liter (2,000 gallon) capacity.

c. Effective August 1, 1979, subd. 5. applies, subject to the provisions of sub. (12), to all fixed roof storage vessels with capacities greater than 151,412 liters (40,000 gallons) with the exception of those having capacities less than 1,600,000 liters (416,000 gallons) used to store crude petroleum and condensate prior to custody transfer.

d. Effective April 1, 1981, subd. 6. applies, subject to the provisions of sub. (12) (d) or (e), to all storage vessels equipped with external floating roofs having capacities greater than 151,412 liters (40,000 gallons) with the exception of:

1) Storage vessels having capacities less than 1,500,000 liters (396,270 gallons) used to store crude petroleum and condensate prior to custody transfer.

- 2) Storage vessels used to store waxy, heavy pour crude petroleum.
  - 3) Storage vessels used solely for petroleum liquids with a true vapor pressure of less than 10.5 kPa (1.52 psia).
  - 4) Storage vessels used solely for petroleum liquids with a true vapor pressure of less than 27.6 kPa (4.0 psia), and which are of welded construction, and presently possess a metallic-type shoe seal, a liquid-mounted foam seal, a liquid-mounted liquid filled type seal, or equally effective alternative control, approved by the department.
  - 5) Storage vessels of welded construction, equipped with metallic-type shoe primary seal which has a secondary seal from the top of the shoe seal to the tank wall.
    - e. Effective April 1, 1981, subd. 7. applies to all storage vessels with capacities greater than 151,412 liters (40,000 gallons) equipped with external floating roofs without secondary seals or their approved equivalent.
2. Storage requirements. The owner or operator of any storage vessel to which this subdivision applies shall store petroleum liquids as follows:

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(TRS) in excess of the following limitations: all emission standards in this section are based on average daily emissions.

(a) The emission of TRS from all recovery furnace stacks shall not exceed one-half pound of sulfur (as sulfur) per equivalent ton of air-dried kraft pulp, or from each recovery furnace stack 17 and one-half ppm, expressed as hydrogen sulfide on a dry gas basis, whichever is the more restrictive. New direct sources shall meet such other limit of TRS that proves to be reasonably attainable utilizing the latest in design of recovery furnace equipment, controls, and procedures. All direct sources shall be in compliance with this requirement by not later than July, 1976.

(b) Noncondensibles from digesters and multiple-effect evaporators shall be treated to reduce the emission of TRS equal to the reduction achieved by thermal oxidation in a lime kiln. All existing direct sources shall be in compliance with this requirement by not later than July, 1973.

(c) No extensions beyond these time limits for implementation may be granted without formal application to the department which determines adequate justification.

History: Cr. Register, March, 1972, No. 195, eff. 4-1-72; am. (1) (a) and (2), Register, June, 1975, No. 234, eff. 7-1-75.

**NR 154.19 Control of hazardous pollutants. (1) GENERAL LIMITATIONS.** No person may cause, allow, or permit emissions into the ambient air of hazardous substances in such quantity, concentration, or duration 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 the following materials, their mixtures, or compounds: asbestos, beryllium, cadmium, chromium, chlorine, fluorine, mercury, pesticides, or radioactive material.

(2) **HAZARDOUS POLLUTANT LIMITATIONS.** Limitations of emissions of hazardous pollutants shall follow general or special orders issued by the department.

(3) **CONTROL OF MERCURY EMISSIONS.** (a) No person shall cause, suffer, allow or permit emissions of mercury:

1. In such quantity and duration as to cause the ambient air concentration to exceed 1  $\mu\text{g}/\text{m}^3$ , averaged over a 30-day period;

2. In quantities greater than 2,300 grams (5.07 pounds) per 24-hour period from mercury cell chlor-alkali plants, or mercury ore processing facilities.

3. In quantities greater than 3,200 grams of mercury per 24-hour period from sludge incineration plants, sludge drying plants, or a combination of these that process wastewater treatment plant sludges.

(b) *Stack sampling.* 1. 'Mercury ore processing facility'. a. Unless a waiver of emission testing is requested and obtained from the department, each owner or operator of a facility processing mercury ore on which construction or modification commenced after February 1, 1984 shall test emissions from the source within 90 days after startup.

b. The department shall be notified at least 30 days prior to a stack or performance test to afford it the opportunity to have a representative

present to witness the testing procedures. The notice shall include a test plan in accordance with s. NR 154.06(5).

c. Samples shall be taken over such a period as is necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation may be made which would potentially increase emissions above that determined by the most recent source test until the new emission level has been estimated by calculation and the results reported to the department.

d. All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the source test. Each determination shall be reported to the department by registered letter dispatched before the close of the next business day following the determination.

e. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by a department representative for a minimum of 2 years.

2. 'Mercury chlor-alkali plant-hydrogen and end box ventilation gas streams'. a. Unless a waiver of emission test is requested and obtained from the department, each owner or operator of a mercury chlor-alkali cell on which construction or modification commenced after February 1, 1984 shall test emissions from the source within 90 days after startup.

b. The department shall be notified at least 30 days in advance of stack or performance tests to afford it the opportunity to have a representative present to witness the testing procedures. The notice shall include a test plan in accordance with s. NR 154.06(5).

c. Samples shall be taken over such a period as is necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation may be made which would potentially increase emissions above that determined by the most recent source test until the new emission level has been estimated by calculation and the results reported to the department.

d. All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the source test. All determinations shall be reported to the department by registered letter dispatched before the close of the next business day following the determination.

e. Records of emissions test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by a department representative for a minimum of 2 years.

3. 'Mercury chlor-alkali plants — cell room ventilation system'. a. Stationary sources using mercury chlor-alkali cells may test cell room emissions in accordance with subpar. b., or demonstrate compliance with subpar. d. and assume ventilation emissions of 1,300 grams per day of mercury.

b. Unless a waiver of emission test is requested and obtained from the department, each owner or operator of a new or modified chlor-alkali plant shall pass all cell room air in forced gas streams through stacks suitable for testing and shall test emissions from the cell room within 90 days after startup.

c. The department shall be notified at least 30 days in advance of stack or performance tests to afford it the opportunity to have a representative present to witness the testing procedures. The notice shall provide a test plan in accordance with s. NR 154.06(5).

d. An owner or operator may carry out design, maintenance and housekeeping practices approved by the department.

4. 'Sludge incineration and drying plants'. a. Unless a waiver of emission testing is requested and obtained from the department, each owner or operator of sludge incineration plants and drying plants on which construction or modification commenced after February 1, 1984 shall test emissions from the source within 90 days of startup. The tests shall be conducted in accordance with Method 101A or Method 105 in 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), using the procedures in subpar. f.

b. The department shall be notified at least 30 days in advance of stack or performance tests to afford it the opportunity to have a representative present to witness the testing procedures. The notice shall include a test plan in accordance with s. NR 154.06(5).

c. Samples shall be taken over such a period as is necessary to determine accurately the maximum emissions which will occur in a 24-hour period. No changes may be made in the operation which would potentially increase emissions above the level determined by the most recent stack tests until the new emission level has been estimated by calculation and the results reported to the department.

d. All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the stack test. All determinations shall be reported to the department by registered letter dispatched before the close of the next business day following the determination.

e. Records of emission test results and other data needed to determine total emissions shall be retained at the source and shall be made available for inspection by a department representative for a minimum of 2 years.

f. If an owner or operator uses Method 105 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), the following procedures shall be adhered to, in addition to Method 105:

1) The sludge shall be sampled after dewatering and before incineration or drying, at a location that provides a representative sample of the sludge that is charged to the incinerator or dryer. Eight consecutive grab samples shall be obtained at intervals of between 45 and 60 minutes and thoroughly mixed into one sample. Each of the 8 grab samples shall have a volume of at least 200 milliliters but not more than 400 milliliters. A total of 3 composite samples shall be obtained within an operating period of 24 hours. When the 24-hour operating period is not continuous, the total sampling period may not exceed 72 hours after the first grab sample is obtained. Samples may not be exposed to any condition that may result in mercury contamination or loss.

2) The maximum 24-hour period sludge incineration or drying rate shall be determined by use of a flow rate measurement device that can measure the mass rate of sludge charged to the incinerator or dryer with an accuracy of plus or minus 5% over its operating range. Other methods

of measuring sludge mass charging rates may be used if they have received prior approval by the department.

3) The handling, preparation and analysis of sludge samples shall be accomplished according to Method 105.

4) The mercury emissions shall be determined by use of the following equation:

$$E_{Hg} = 1 \times 10^{-3} cQ$$

where:

$E_{Hg}$  is the mercury emissions, grams/day

$c$  is the mercury concentration of sludge on a dry solids basis, microgram/gram (parts per million)

$Q$  is the sludge charging rate, kilogram/day

5) No changes in the operation of a plant may be made after a sludge test has been conducted which would potentially increase emissions above the level determined by the most recent sludge test, until the new emissions level has been estimated by calculation and the results reported to the department.

6) All sludge samples shall be analyzed for mercury content within 30 days after the sludge sample is collected. Each determination shall be reported to the department by registered letter dispatched before the close of the next business day following the determination.

7) Records of sludge sampling, charging rate determination and other data needed to determine mercury content of wastewater treatment plant sludges shall be retained at the source and made available for inspection by a department representative for a minimum of 2 years.

(c) *Emission monitoring.* All wastewater treatment plant sludge incineration and drying plants for which mercury emissions exceed 1600 grams/day, demonstrated either by stack sampling or sludge sampling according to par. (b)4., shall monitor mercury emissions at intervals of at least once per year by use of Method 105 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), or the procedures specified in par. (b)4.f. The results of monitoring shall be reported to the department by registered letter dispatched before the close of the next business day following the monitoring. The results shall be retained at the source and shall be made available for inspection by a department representative for a minimum of 2 years.

(4) CONTROL OF ASBESTOS EMISSIONS. (a) *Asbestos mills.* There may be no visible asbestos emissions to the outside air from any asbestos mill except as provided in par. (f).

(b) *Roadway areas.* The surfacing of roadway areas with asbestos tailings or with asbestos containing waste that is generated by any source subject to par. (c), (d), (e) or (h) is prohibited, except for temporary roadway areas on asbestos ore deposits. The deposition of asbestos tailings or asbestos-containing waste on roadway areas covered with snow or ice is considered "surfacing".

(c) *Manufacturing of asbestos products.* There may be no visible asbestos emissions to the outside air, except as provided in par. (f), from any of the operations listed in this paragraph if they use commercial asbestos or from any building or structure in which manufacturing of asbestos products is conducted.

1. The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap or other textile materials.
2. The manufacture of cement products.
3. The manufacture of fireproofing and insulating materials.
4. The manufacture of friction products.
5. The manufacture of paper, millboard and felt.
6. The manufacture of floor tile.
7. The manufacture of paints, coatings, caulks, adhesives and sealants.
8. The manufacture of plastics and rubber materials.
9. The manufacture of chlorine.
10. The manufacture of shotgun shells.
11. The manufacture of asphalt concrete.

(d) *Demolition and renovation.* Any owner or operator of a demolition or renovation operation who intends to demolish any institutional, commercial or industrial building (including apartment buildings having more than 4 dwelling units), structure, facility, installation, or portion thereof which contains any boiler, pipe, duct, tank, reactor, turbine, furnace or load-supporting structural member that is insulated or fireproofed with friable asbestos material, except as provided in subd. 1.; or who intends to renovate any institutional, commercial or industrial building, structure, facility, installation or portion thereof where more than 80 meters (ca. 260 feet) of pipe covered or coated with friable asbestos material are stripped or removed, or more than 15 square meters (ca. 160 square feet) of friable asbestos material used to cover or coat any duct, boiler, tank, reactor, turbine, furnace or structural member are stripped or removed shall comply with the requirements set forth under subds. 2. and 5.

1. The owner or operator of a demolition operation is exempted from the requirements of this paragraph provided:

a. The amount of friable asbestos material in the building or portion thereof to be demolished is less than 80 meters (ca. 260 feet) used to insulate pipes, and less than 15 square meters (ca. 160 square feet) used to insulate or fireproof any duct, boiler, tank, reactor, turbine, furnace or structural member; and

b. The notification requirements of subd. 2. are met. This written notification shall be postmarked or delivered to the department at least 20 days prior to commencement of demolition, shall include the information listed under subd. 2.a., b., d., and e., and shall state the measured or estimated amount of friable asbestos material which is present. Techniques of estimation shall be explained in the notification.

2. Notice of intention to demolish or renovate shall be provided to the department by the owner or operator of the demolition or renovation operation. The notice shall be postmarked or delivered to the department at least 10 days prior to commencement of such demolition, or as early as possible prior to commencement of emergency demolition, subject to subd. 6., and as early as possible prior to commencement of renovation. The notice shall include the following information:

- a. Name of owner or operator.
- b. Address of owner or operator.
- c. Description of the building, structure, facility or installation to be demolished or renovated, including the size, age, and prior use of the structure, and the approximate amount of friable asbestos materials present.
- d. Address or location of the building, structure, facility or installation.
- e. Scheduled starting and completion dates of demolition or renovation.
- f. Nature of planned demolition or renovation and methods to be employed.
- g. Procedures to be employed to meet the requirements of this paragraph and par. (j).
- h. Name and address or location of the waste disposal site where the friable asbestos waste will be deposited.
- i. Name, title, and authority of the state or local government representative who has ordered a demolition which is subject to subd. 6.

3. For purposes of determining whether a planned renovating operation constitutes a renovation within the meaning of this paragraph, the amount of friable asbestos material to be removed or stripped shall be:

- a. For planned renovating operations involving individually non-scheduled operations, the total amount of friable asbestos material that can be predicted will be removed or stripped, at a source over the maximum period of time for which a prediction can be made. The period shall be not less than 30 days and not longer than one year.
- b. For each planned renovating operation not covered by subpar. a., the total amount of friable asbestos material that can be predicted will be removed or stripped at a source.

4. For purposes of determining whether an emergency renovating operation constitutes a renovation within the meaning of this paragraph, the amount of friable asbestos material to be removed or stripped shall be the total amount of friable asbestos material that will be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.

5. The procedures of this subdivision shall be used to prevent emissions of particulate asbestos material to outside air.

a. Friable asbestos materials used to insulate or fireproof any pipe, duct boiler, tank, reactor, turbine, furnace, or load-supporting structural



member shall be wetted and removed from any building, structure, facility or installation subject to this paragraph. Such removal shall occur before wrecking or dismantling of any portion of such building, structure, facility or installation that would break up the friable asbestos materials and before wrecking or dismantling of any other portion of such building, structure, facility or installation that would preclude access to such materials for subsequent removal. Removal of friable asbestos materials used on any pipe, duct or structural member which are encased in concrete or other similar structural material is not required prior to demolition, but such material shall be adequately wetted whenever exposed during demolition.

b. Friable asbestos materials used on pipes, ducts, boilers, tanks, reactors, turbine, furnaces, or structural members shall be adequately wetted during stripping, except as provided in subpars. d., f. and g.

c. Pipes, ducts, boilers, tanks, reactors, turbines, furnaces or structural members that are covered or coated with friable asbestos materials may be taken out of any building, structure, facility or installation subject to this paragraph as units or in sections, provided the friable asbestos materials exposed during cutting or disjoints are adequately wetted during the cutting or disjoints operation. The units may not be dropped or thrown to the ground but shall be carefully lowered to ground level.

d. The stripping of friable asbestos materials used on any pipe, duct, boiler, tank, reactor, turbine, furnace or structural member that has been removed as a unit or in sections as provided in subpar. c. shall be performed in accordance with subpar. b. Rather than comply with the wetting requirement of subpar. b., a local exhaust ventilation and collection system may be used to prevent emissions to the outside air. The local exhaust ventilation systems shall be designed and operated to capture the asbestos particulate matter produced by the stripping of friable asbestos material. There may be no visible asbestos emissions to the outside air from such local exhaust ventilation and collection systems except as provided in par. (f).

e. All friable asbestos materials that have been removed or stripped shall be adequately wetted to ensure that the materials remain wet during all remaining stages of demolition or renovation and related handling operations. The materials may not be dropped or thrown to the ground or a lower floor. Such materials that have been removed or stripped more than 50 feet above ground level, except those materials removed as units or in sections, shall be transported to the ground via dust-tight chutes or containers.

f. Except as specified in this subparagraph, the wetting requirements of this paragraph are suspended when the temperature at the point of wetting is below 0°C (32°F). When friable asbestos materials are not wetted due to freezing temperatures, the materials on pipes, ducts, boilers, tanks, reactors, turbines, furnaces or structural members shall, to the maximum extent possible, be removed as units or in sections prior to wrecking. In no case may the requirements of subpar. d. or e. be suspended due to freezing temperatures.

g. For renovation operations, local exhaust ventilation and collection systems may be used, instead of wetting as specified in subpar. b., to prevent emissions of particulate asbestos material to outside air when

damage to equipment resulting from the wetting would be unavoidable. Upon request and supply of adequate information, the department shall determine whether damage to equipment resulting from wetting to comply with the provisions of this paragraph would be unavoidable. Local exhaust ventilation systems shall be designed and operated to capture the asbestos particulate matter produced by the stripping and removal of friable asbestos material. There may be no visible emissions to the outside air from the local exhaust ventilation and collection systems, except as provided in par. (f).

6. The demolition of a building, structure, facility or installation, pursuant to an order of an authorized representative of a state or local governmental agency, issued because that building is structurally unsound and in danger of imminent collapse is exempt from all but the following requirements of this paragraph.

a. The notification requirements specified by subd. 2.;

b. The requirements of stripping of friable asbestos materials from previously removed units or sections as specified in subd. 5.d.;

c. The wetting, as specified by subd. 5.e. of friable asbestos materials that have been removed or stripped;

d. The portion of the structure being demolished that contains friable asbestos materials shall be adequately wetted during the wrecking operation.

(e) *Spraying.* There may be no visible asbestos emissions to the outside air from the spray-on application of materials containing more than one percent asbestos, on a dry weight basis, used on equipment and machinery except as provided in par. (f). Materials sprayed on buildings, structures, pipes and conduits shall contain less than one percent asbestos on a dry weight basis.

1. Any owner or operator who intends to spray asbestos materials which contain more than one percent asbestos on a dry weight basis to insulate or fireproof equipment and machinery shall report this intention to the department at least 20 days prior to the commencement of the spraying operation. The report shall include the following information:

a. Name of owner or operator.

b. Address of owner or operator.

c. Location of spraying operation.

d. Procedures to be followed to meet the requirements of this paragraph.

2. The spray-on application of materials in which the asbestos fibers are encapsulated with a bituminous or resinous binder during spraying and which are not friable after drying is exempted from the requirements of this paragraph.

(f) *Alternatives.* Rather than meet the no-visible-asbestos-emission requirements of pars. (a), (c), (d), (e), (h), (j) and (k), an owner or operator may elect to use the methods specified in subsd. 1. to 4. to clean emis-

sions containing particulate asbestos material before such emissions escape to, or are vented to, the outside air.

1. Fabric filter collection devices shall be used, except as noted in subds. 2. and 3. The devices shall be operated at a pressure drop of no more than 4 inches water gauge as measured across the filter fabric. The airflow permeability, as determined by ASTM method D737-75, incorporated by reference in sub. (7), may not exceed 30 ft<sup>3</sup>/min/ft<sup>2</sup> for woven fabrics or 35 ft<sup>3</sup>/min/ft<sup>2</sup> for felted fabrics, except that 40 ft<sup>3</sup>/min/ft<sup>2</sup> for woven and 45 ft<sup>3</sup>/min/ft<sup>2</sup> for felted fabrics is allowed for filtering air from asbestos ore dryers. Each square yard of felted fabric shall weigh at least 14 ounces and be at least one-sixteenth inch thick throughout. Synthetic fabrics may not contain fill yarn other than that which is spun.

2. If the use of fabric filters creates a fire or explosion hazard, the department may authorize the use of wet collectors designed to operate with a unit contacting energy of at least 40 inches water gauge pressure.

3. The department may authorize the use of filtering equipment other than that described in subds. 1. and 2. if the owner or operator demonstrates to the satisfaction of the department that the filtering of particulate asbestos material is equivalent to that of the described equipment.

4. All air-cleaning equipment authorized by this paragraph shall be properly installed, used, operated and maintained. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

(g) *Presence of uncombined water.* Where the presence of uncombined water is the sole reason for failure to meet the no-visible-asbestos-emission requirements of pars. (a), (c), (d), (e), (h), (j) and (k), the failure is not a violation of the emission requirements.

(h) *Fabricating.* There may be no visible asbestos emissions to the outside air, except as provided in par. (f), from any of the operations listed in this paragraph, if they use commercial asbestos, or from any building or structure in which the operations are conducted.

1. The fabrication of cement building products.

2. The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

3. The fabrication of cement or silicate board for ventilation hoods, ovens, electrical panels, laboratory furniture, bulkheads, partitions and ceilings for marine construction, and flow control devices for the molten metal industry.

(i) *Insulating.* Molded insulating materials which are friable and wet-applied insulating materials which are friable after drying, installed after February 1, 1984 may not contain commercial asbestos. The provisions of this paragraph do not apply to insulating materials which are spray applied.

Note: Such materials are regulated under par. (e).

(j) *Waste disposal for manufacturing of asbestos products, fabricating, demolition, renovation and spraying operations.* The owner or operator of

any source covered under the provisions of par. (c), (d), (e) or (h) shall meet the standards of this paragraph.

1. There may be no visible asbestos emissions to the outside air, except as provided in subd. 3., during the collection, processing including incineration, packaging, transporting, or deposition of any asbestos-containing waste material which is generated.

2. All asbestos-containing waste material shall be deposited at waste disposal sites which shall be operated in accordance with the following requirements:

a. There may be no visible asbestos emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, except as provided in subpar. e.

b. Warning signs shall be displayed at all entrances, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited, at intervals of 100 meters (ca. 330 ft.) or less except as specified in subpar. e. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs shall conform to the requirements of 20" x 14" upright format signs specified in 29 C.F.R. s. 1910.145 (d) (4), incorporated by reference in sub. (7), and this paragraph. The signs shall display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

#### LEGEND

##### ASBESTOS WASTE DISPOSAL SITE

##### DO NOT CREATE DUST

Breathing Asbestos is Hazardous to Your Health

##### NOTATION

1" Sans Serif, Gothic or Block

¾" Sans Serif, Gothic or Block

14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the 2 lines.

c. The perimeter of the disposal site shall be fenced in order to adequately deter access to the general public except as specified in subpar. d.

d. Warning signs and fencing are not required where the requirements of subpar. e.1) are met, or where a natural barrier adequately deters access to the general public. Upon request and supply of appropriate information, the department will determine whether a fence or a natural barrier adequately deters access to the general public.

e. Rather than meet the requirement of subpar. a., an owner or operator may elect to meet either of the requirements of subpar. e.1) or 2), or may use an alternative control method for emissions from active waste disposal sites which has received prior approval by the department.

1) At the end of each operating day or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day

or previous 24-hour period shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material.

2) At the end of each operating day, or at least once every 24-hour period while the disposal site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion. The agent shall be used as recommended for the particular dust by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the department. For purposes of this subparagraph, waste crankcase oil is not considered a dust suppression agent.

3. Rather than meet the requirement of subd. 1, an owner or operator may elect to use either of the disposal methods specified under subpars. a. and b., or an alternative disposal method which has received prior approval by the department.

a. Treatment of asbestos-containing waste material with water.

1) Control device asbestos waste shall be thoroughly mixed with water into a slurry and other asbestos-containing waste material shall be adequately wetted. There may be no visible asbestos emissions to the outside air from the collection, mixing, and wetting operations, except as provided in par. (f).

2) After wetting, all asbestos-containing waste material shall be sealed into leak-tight containers while wet and such containers shall be deposited at waste disposal sites which are operated according to subd. 2.

3) The containers specified under subpar. a.2) shall be labeled with a warning label that states:

**CAUTION**

Contains Asbestos  
Avoid Opening or  
Breaking Container

Breathing Asbestos is Hazardous  
to Your Health

Alternatively, warning labels specified by occupational safety and health standards of the department of labor, occupational safety and health administration (OSHA) under 29 C.F.R. s. 1910.93a(g)(2)(ii), incorporated by reference in sub. (7), may be used.

b. Processing of asbestos-containing waste material into non-friable forms:

1) All asbestos-containing waste material shall be formed into non-friable pellets or other shapes and deposited at waste disposal sites which are operated according to subd. 2.

2) There may be no visible asbestos emissions to the outside air from the collection and processing of asbestos-containing waste material except as specified in par. (f).

4. For the purposes of this paragraph, the term all asbestos-containing waste material as applied to demolition and renovation operations covered by par. (d) includes only friable asbestos waste and control device asbestos waste.

(k) *Waste disposal for asbestos mills.* The owner or operator of any source covered under par. (a) shall meet the following standard:

1. There may be no visible asbestos emissions to the outside air except as provided in subd. 3., during the collection, processing, packaging, transporting or deposition of any asbestos-containing waste material which is generated by any source covered under par. (a).

2. All asbestos-containing waste material shall be deposited at waste disposal sites which are operated according to par. (j)2.

3. Rather than meet the requirement of subd. 1., an owner or operator may elect to meet the requirements in subpars. a. and b., or use an alternative disposal method which has received prior approval by the department.

a. There may be no visible asbestos emissions to the outside air from the transfer of control device asbestos waste to the tailings conveyor, except as provided in par. (f). The waste shall be subsequently processed either as specified in subpar. b. or as specified in par. (j)3.

b. All asbestos-containing waste material shall be adequately mixed, with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, prior to deposition at a waste disposal site. The agent shall be used as recommended for the particular dust by the manufacturer of the agent. There may be no discharge of visible asbestos emissions to the outside air from the wetting operation except as specified in par. (f). Wetting may be suspended when the ambient temperature at the waste disposal site is less than  $-9.5^{\circ}\text{C}$  (ca.  $15^{\circ}\text{F}$ ). The ambient air temperature shall be determined by a measurement method with an accuracy of plus or minus  $1^{\circ}\text{C}$  (ca. plus or minus  $2^{\circ}\text{F}$ ) and recorded at least at hourly intervals during the period that the operation of the wetting system is suspended. Records of the temperature measurements shall be retained at the source for a minimum of 2 years and made available for inspection by a department representative.

(l) *Inactive asbestos waste disposal sites.* The owner of any inactive waste disposal site, which was operated by sources covered under par. (a), (c) or (h) and where asbestos-containing waste material produced by these sources was deposited, shall meet the standards of this paragraph.

1. There may be no visible asbestos emissions to the outside air from an inactive waste disposal site subject to this paragraph, except as provided in subd. 5.

2. Warning signs shall be displayed at all entrances, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited, at intervals of 100 meters (ca. 330 ft.) or less, except as specified in subd. 4. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this subdivision shall conform to the requirements of  $20'' \times 14''$  upright format signs specified in 29 C.F.R. s. 1910.145 (d) (4), incorporated by reference in sub. (7), and this

paragraph. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this subdivision.

LEGEND

ASBESTOS WASTE DISPOSAL SITE

DO NOT CREATE DUST

Breathing Asbestos is Hazardous  
to Your Health

NOTATION

1" Sans Serif, Gothic or Block  
3/4" Sans Serif, Gothic or Block

14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the 2 lines.

3. The perimeter of the site shall be fenced in a manner adequate to deter access by the general public except as specified in subd. 4.

4. Warning signs and fencing are not required where the requirements of subd. 5.a. or b. are met, or where a natural barrier adequately deters access by the general public. Upon request and supply of appropriate information, the department will determine whether a fence or a natural barrier adequately deters access to the general public.

5. Rather than meet the requirement of subd. 1., an owner may elect to meet the requirements of this subdivision or may use an alternative control method for emissions from inactive waste disposal sites which has received prior approval by the department.

a. The asbestos-containing waste material shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material, and a cover of vegetation shall be grown and maintained on the area adequate to prevent exposure of the asbestos-containing waste material; or

b. The asbestos-containing waste material shall be covered with at least 60 centimeters (ca. 2 feet) of compacted non-asbestos-containing material and maintained to prevent exposure of asbestos containing waste; or

c. For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion shall be applied. The agent shall be used as recommended for the particular asbestos tailings by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the department. For purposes of this subparagraph, waste crankcase oil is not considered a dust suppression agent.

(5) CONTROL OF BERYLLIUM EMISSIONS. (a) Emissions to the atmosphere shall not exceed 10 grams of beryllium over a 24-hour period from:

1. Extraction plants, ceramic plants, foundries, incinerators and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys or beryllium-containing waste, and:

2. Machine shops which process beryllium, beryllium oxides or any alloy when such alloy contains more than 5% beryllium by weight.

(b) The burning of beryllium and/or beryllium-containing waste, except propellants, is prohibited except in incinerators, emissions from which must comply with par. (a).

(c) *Stack sampling.* 1. Unless a waiver of emission testing is obtained from the department, each owner or operator of a source covered under par. (a) on which construction or modification commenced after February 1, 1984 shall test emissions from the source within 90 days of startup.

2. The department shall be notified at least 30 days prior to an emission test to afford it the opportunity to have a representative present to witness the testing procedures.

3. Samples shall be taken over such a period as is necessary to accurately determine the maximum emissions which will occur in any 24-hour period. Where emissions depend upon the relative frequency of operation of different types of processes, operating hours, operating capacities or other factors, the calculation of maximum 24-hour-period emissions will be based on that combination of factors which is likely to occur during the subject period and which result in the maximum emissions. No changes in the operation may be made which would potentially increase emissions above that determined by the most recent source test until a new emission level has been estimated by calculation and the results reported to the department.

4. All samples shall be analyzed and beryllium emissions shall be determined within 30 days after the source test. All determinations shall be reported to the department by registered letter dispatched before the close of the next business day following the determinations.

5. Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by a department representative for a minimum of 2 years.

(d) Emission to the atmosphere from rocket-motor test sites shall not cause time-weighted atmospheric concentration of beryllium to exceed 75 microgram minutes per cubic meter of air within the limits of 10 to 60 minutes, accumulated during any 2 consecutive weeks, in any area in which an effect adverse to public health could occur.

(e) If combustion products from the firing of beryllium propellant are collected in a closed tank, emissions from such tank shall not exceed 2 grams per hour and a maximum of 10 grams per day.

(f) *Emission testing — rocket firing or propellant disposal.* 1. Ambient air concentrations shall be measured during and after firing of a rocket motor or propellant disposal and in such a manner that the effect of these emissions can be compared with the standard set in par. (d). The sampling techniques shall be approved by the department.

2. All samples shall be analyzed and results shall be calculated within 30 days after samples are taken and before any subsequent rocket motor



firing or propellant disposal at the same site. All results shall be reported to the department by registered letter dispatched before the close of the next business day following determination of the results.

3. Records of air sampling test results and other data needed to determine integrated intermittent concentrations shall be retained at the source and made available for inspection by a department representative for a minimum of 2 years.

4. The department shall be notified at least 30 days in advance of an air sampling test to have a representative present to witness the testing procedures.

(g) *Stack sampling — rocket motor firing.* 1. Sources subject to par. (e) shall be continuously sampled during the release of combustion products from the tank so that compliance with the standards can be determined. The tests shall be conducted in accordance with:

a. Method 104 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), or

b. Method 103 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7).

2. All samples shall be analyzed and beryllium emissions shall be determined within 30 days after samples are taken and before any subsequent rocket motor firing or propellant disposal at the same site. All determinations shall be reported to the department by registered letter dispatched before the close of the next business day following the determination.

3. Records of emission test results and other data needed to determine total emissions shall be retained at the source and shall be made available for inspection by a department representative for a minimum of 2 years.

4. The department shall be notified at least 30 days prior to an emission test to afford it the opportunity to have a representative present to witness the testing procedures.

(6) CONTROL OF VINYL CHLORIDE EMISSIONS. (a) *Applicability.* This subsection applies to plants which produce:

1. Ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene,

2. Vinyl chloride by any process,

3. One or more polymers containing any fraction of polymerized vinyl chloride and

4. Any combination of the products listed in subds. 1. through 3.

(b) *Exemption.* This subsection does not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of no more than 0.19 cubic meters (50 gallons).

(c) *Partial exemption.* Paragraphs of this subsection other than pars. (f)1.a., 2., 3., and 4., (i), (j), (k), (l), and (m) do not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of greater than

0.19 cubic meters (50 gallons) and no more than 4.07 cubic meters (1100 gallons).

(d) *Emission standards for ethylene dichloride plants.* 1. 'Ethylene dichloride purification'. The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in ethylene dichloride purification may not exceed 10 parts per million, except as provided in par. (g) 1. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in par. (g) 2.f.1) before being opened.

2. 'Oxychlorination reactor'. Except as provided in par. (g) 1., emissions of vinyl chloride to the atmosphere from each oxychlorination reactor may not exceed 0.2 gram/kilogram (0.0002 pound/pound) of the 100% ethylene dichloride product from the oxychlorination process.

(e) *Emission standard for vinyl chloride plants.* An owner or operator of a vinyl chloride plant shall comply with the requirements of this paragraph and par. (g).

1. 'Vinyl chloride formation and purification'. The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in vinyl chloride formation or purification, or both, may not exceed 10 parts per million, except as provided in par. (g) 1. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in par. (g) 2.f.1) before being opened.

2. [Reserved]

(f) *Emission standards for polyvinyl chloride plants.* An owner or operator of a polyvinyl chloride plant shall comply with the requirements of this paragraph and par. (g).

1. 'Requirements for vinyl chloride reactors'. a. The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each vinyl chloride reactor may not exceed 10 parts per million, except as provided in pars. (f)1.b. and (g)1.

b. The vinyl chloride reactor opening loss from each vinyl chloride reactor may not exceed 0.02 gram vinyl chloride/kilogram (0.00002 pound vinyl chloride/pound) of polyvinyl chloride product, with the product determined on a dry solids basis. This requirement applies to any vessel which is used as a vinyl chloride reactor or as both a vinyl chloride reactor and a stripper. In the bulk process, the product means the gross product of prepolymerization and postpolymerization.

c. Except for an emergency manual vent valve discharge, there may be no discharge to the atmosphere from any manual vent valve on a polyvinyl chloride reactor in vinyl chloride service. An emergency manual vent valve discharge means a discharge to the atmosphere which could not have been avoided by taking measures to prevent the discharge. Within 10 days of any discharge to the atmosphere from any manual vent valve, the owner or operator of the source from which the discharge occurs shall submit to the department a report in writing containing information on the source, nature and cause of the discharge, the method used for determining the vinyl chloride loss, the action that was taken to abate the discharge, and measures adopted to prevent future discharges.

2. 'Requirement for strippers.' The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each stripper may not exceed 10 parts per million, except as provided in par. (g)1. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in par. (g)2.f.1) before being opened.

3. 'Requirement for mixing, weighing, and holding containers.' The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each mixing, weighing, or holding container in vinyl chloride service which precedes the stripper, or the reactor if the plant has no stripper, in the plant process flow may not exceed 10 parts per million, except as provided in par. (g)1. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in par. (g)2.f.1) before being opened.

4. 'Requirement for monomer recovery systems.' The concentration of vinyl chloride in any exhaust gases discharged to the atmosphere from each monomer recovery system may not exceed 10 parts per million, except as provided in par. (g)1. This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in par. (g)2.f.1) before being opened.

5. 'Requirements for sources following strippers.' The following requirements apply to emissions of vinyl chloride to the atmosphere from the combination of all sources following strippers, or vinyl chloride reactors if the plant has no strippers, in the plant process flow including but not limited to, centrifuges, concentrators, blend tanks, filters, dryers, conveyor air discharges, baggers, storage containers, and inprocess wastewater.

a. In polyvinyl chloride plants using stripping technology to control vinyl chloride emissions, the weighted average residual vinyl chloride concentration in all grades of polyvinyl chloride resin processed through the stripping operation on each calendar day, measured immediately after the stripping operation is completed, may not exceed:

1) 2000 parts per million for polyvinyl chloride dispersion resins, excluding latex resins;

2) 400 ppm for all other polyvinyl chloride resins, including latex resins, averaged separately for each type of resin; or

b. In polyvinyl chloride plants controlling vinyl chloride emissions with technology other than stripping or in addition to stripping, emissions of vinyl chloride to the atmosphere may not exceed:

1) 2 grams/kilogram (0.002 pound/pound) product from the strippers (or vinyl chloride reactors if the plant has no strippers) for dispersion polyvinyl chloride resins, excluding latex resins, with the product determined on a dry solids basis;

2) 0.4 gram/kilogram (0.0004 pound/pound) product from the strippers (or vinyl chloride reactors if the plant has no strippers) for all other polyvinyl chloride resins, including latex resins, with the product determined on a dry solids basis.

(g) *Emission standards for ethylene dichloride, vinyl chloride and polyvinyl chloride plants.* An owner or operator of an ethylene dichloride, vinyl

chloride, or polyvinyl chloride plant shall comply with the requirements of this paragraph.

1. 'Relief valve discharge'. Except for an emergency relief discharge, there may be no discharge to the atmosphere from any relief valve on any equipment in vinyl chloride service. An emergency relief discharge means a discharge which could not have been avoided by taking measures to prevent the discharge. Within 10 days of any relief valve discharge, the owner or operator of the source from which the relief valve discharge occurs shall submit to the department a report in writing containing information on the source, nature and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during the discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and measures adopted to prevent future discharges.

2. 'Fugitive emission sources'. a. Vinyl chloride emissions from loading and unloading lines in vinyl chloride service which are opened to the atmosphere after each loading and unloading operation shall be minimized as follows:

1) After each loading and unloading operation and before opening a loading or unloading line to the atmosphere, the quantity of vinyl chloride in all parts of each loading or unloading line that are to be opened to the atmosphere shall be reduced so that the parts combined contain no greater than 0.0038 cubic meter (0.13 cubic feet) of vinyl chloride, at standard temperature and pressure; and

2) Any vinyl chloride removed from a loading or unloading line in accordance with subpar. a.1) shall be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

b. During loading or unloading operations, the vinyl chloride emissions from each slip gauge in vinyl chloride service shall be minimized by ducting any vinyl chloride discharged from the slip gauge through a control system from which the concentration of vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

c. 1) Rotating pumps. Vinyl chloride emissions from seals on all rotating pumps in vinyl chloride service shall be minimized by installing seal-less pumps, pumps with double mechanical seals, or equivalent as provided in par. (h). If double mechanical seals are used, vinyl chloride emissions from the seals shall be minimized by maintaining the pressure between the 2 seals so that any leak that occurs is into the pump, by ducting any vinyl chloride between the 2 seals through a control system from which the concentration of vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

2) Reciprocating pumps. Vinyl chloride emissions from seals on all reciprocating pumps in vinyl chloride service shall be minimized by installing double outboard seals, or equivalent as provided in par. (h). If double outboard seals are used, vinyl chloride emissions from the seals shall be minimized by maintaining the pressure between the 2 seals so that any leak that occurs is into the pump, by ducting any vinyl chloride between the 2 seals through a control system from which the concentration of

vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

3) Rotating compressors. Vinyl chloride emissions from seals on all rotating compressors in vinyl chloride service shall be minimized by installing compressors with double mechanical seals, or equivalent as provided in par. (h). If double mechanical seals are used, vinyl chloride emissions from the seals shall be minimized by maintaining the pressure between the 2 seals so that any leak that occurs is into the compressor, by ducting any vinyl chloride between the 2 seals through a control system from which the concentration of vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

4) Reciprocating compressors. Vinyl chloride emissions from seals on all reciprocating compressors in vinyl chloride service shall be minimized by installing double outboard seals, or equivalent as provided in par. (h). If double outboard seals are used, vinyl chloride emissions from the seals shall be minimized by maintaining the pressure between the 2 seals so that any leak that occurs is into the compressor, by ducting any vinyl chloride between the 2 seals through a control system from which the concentration of vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

5) Agitators. Vinyl chloride emissions from seals on all agitators in vinyl chloride service shall be minimized by installing agitators with double mechanical seals, or equivalent as provided in par. (h). If double mechanical seals are used, vinyl chloride emissions from the seals shall be minimized by maintaining the pressure between the 2 seals so that any leak that occurs is into the agitated vessels, by ducting any vinyl chloride between the 2 seals through a control system from which the concentration of vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

d. Vinyl chloride emissions due to leakage from each relief valve on equipment in vinyl chloride service shall be minimized by installing a rupture disk between the equipment and the relief valve, by connecting the relief valve discharge to a process line or recovery system, or equivalent as provided in par. (h).

e. Except as provided in par. (f) 1.c., all gases which are manually vented from equipment in vinyl chloride service shall be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

f. Vinyl chloride emissions from opening of equipment (including loading or unloading lines that are not opened to the atmosphere after each loading or unloading operation) shall be minimized as follows:

1) Before opening any equipment for any reason, the quantity of vinyl chloride shall be reduced so that the equipment contains no more than 2% by volume vinyl chloride or 0.0950 cubic meter (25 gallons) of vinyl chloride, whichever is larger, at standard temperature and pressure, and

2) Any vinyl chloride removed from the equipment in accordance with subpar. f.1) shall be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

g. Unused portions of samples containing at least 10% by weight vinyl chloride shall be returned to the process, and sampling techniques shall be such that sample containers in vinyl chloride service are purged into a closed process system.

h. Vinyl chloride emissions due to leaks from equipment in vinyl chloride service shall be minimized by instituting and implementing a formal leak detection and elimination program. The owner or operator of a source on which construction or modification commenced after February 1, 1984 shall submit a description of the program to the department for approval. The program shall be submitted within 45 days after startup unless a waiver is granted by the department. If a waiver of compliance is granted, the program is to be submitted on a date scheduled by the department. Approval of a program shall be granted by the department provided it finds:

1) It includes a reliable and accurate vinyl chloride monitoring system for detection of major leaks and identification of the general area of the plant where a leak is located. A vinyl chloride monitoring system means a device which obtains air samples from one or more points on a continuous sequential basis and analyzes the samples with gas chromatography or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride, with infrared spectrophotometry flame ion detection, or an equivalent or alternative method.

2) It includes a reliable and accurate portable hydrocarbon detector to be used routinely to find small leaks and to pinpoint the major leaks indicated by the vinyl chloride monitoring system. A portable hydrocarbon detector means a device which measures hydrocarbons with a sensitivity of at least 10 parts per million and is of such design and size that it can be used to measure emissions from localized points.

3) It provides for an acceptable calibration and maintenance schedule for the vinyl chloride monitoring system and portable hydrocarbon detector. For the vinyl chloride monitoring system, a daily span check shall be conducted with a concentration of vinyl chloride equal to the concentration defined as a leak according to subpar. h.6). The calibration shall be done with either:

a) A calibration gas mixture prepared from the gases specified in section 5.2.1 and 5.2.2 and in accordance with section 7.1 of Test Method 106 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), or

b) A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard shall have been certified by the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than plus or minus 5% from the certified value. The date of gas cylinder preparation, certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7). The requirements in sections 5.2.3.1 and 5.2.3.2 of Test

Method 106 for certification of cylinder standards and for establishment and verification of calibration standards shall be followed.

4) The location and number of points to be monitored and the frequency of monitoring provided for in the program are acceptable when they are compared with the number of pieces of equipment in vinyl chloride service and the size and physical layout of the plant.

5) It contains an acceptable plan of action to be taken when a leak is detected.

6) It contains a definition of leak which is acceptable when compared with the background concentrations of vinyl chloride in the areas of the plant to be monitored by the vinyl chloride monitoring system. Measurement of background concentrations of vinyl chloride in the areas of the plant to be monitored by the vinyl chloride monitoring system shall be included with the description of the program. The definition of leak for a given plant may vary among the different areas within the plant and is also to change over time as background concentrations in the plant are reduced.

i. Vinyl chloride emissions to the atmosphere from inprocess wastewater shall be reduced as specified in this subparagraph.

1) The concentration of vinyl chloride in each inprocess wastewater stream containing greater than 10 parts per million vinyl chloride measured immediately as it leaves a piece of equipment and before being mixed with any other inprocess wastewater stream shall be reduced to no more than 10 parts per million by weight before being mixed with any other inprocess wastewater stream which contains less than 10 parts per million vinyl chloride, before being exposed to the atmosphere, before being discharged to a wastewater treatment process, or before being discharged untreated as a wastewater. This subparagraph does apply to water which is used to displace vinyl chloride from equipment before it is opened to the atmosphere in accordance with par. (f)1.b. or subpar. f., but does not apply to water which is used to wash out equipment after the equipment has already been opened to the atmosphere in accordance with par. (f)1.b. or subpar. f.

2) Any vinyl chloride removed from the inprocess wastewater in accordance with subpar. i.1) shall be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases may not exceed 10 parts per million, or equivalent as provided in par. (h).

3. 'Standard operating procedure'. The requirements in subpars. a., b., e., f., g., and h., shall be incorporated into a standard operating procedure and made available upon request for inspection by a department representative. The standard operating procedure shall include provisions for measuring the vinyl chloride in equipment 4.75 cubic meters (1,250 gallons) in volume for which an emission limit is prescribed in subpar. f.1) prior to opening the equipment and using Test Method 106 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), a portable hydrocarbon detector, or an equivalent or alternative method. The method of measurement shall meet the requirements in par. (i)7.e.1)a) or b).

(h) *Equivalent equipment and procedures.* Upon written application from an owner or operator, the department may approve use of equip-

ment or procedures which have been demonstrated to the department's satisfaction to be equivalent in terms of reducing vinyl chloride emissions to the atmosphere to those prescribed for compliance with a specific paragraph of this subsection. Any request for using an equivalent method shall be submitted to the department with the application for a permit to construct or modify and operate the vinyl chloride source.

(1) *Emission tests.* 1. Unless a waiver of emission testing is obtained from the department, each owner or operator of a source to which this subsection applies on which construction or modification commenced after February 1, 1984 shall test emissions from the source within 90 days of startup.

2. The department shall be notified at least 30 days prior to a stack or performance test to afford the department the opportunity to have a representative present to witness the testing procedures.

3. Any emission test shall be conducted while the equipment being tested is operating at the maximum production rate at which the equipment will be operated and under other relevant conditions as may be specified by the department based on the representative performance of the source.

4. [Reserved]

5. When at all possible, each sample shall be analyzed within 24 hours, but in no case in excess of 72 hours of sample collection. Vinyl chloride emissions shall be determined within 30 days after the emission test. The owner or operator shall report the determinations to the department by registered letter dispatched before the close of the next business day following the determination.

6. The owner or operator shall retain at the plant and make available, upon request, for inspection by a department representative, for a minimum of 2 years, records of emission test results and other data needed to determine emissions.

7. Unless otherwise specified, the owner or operator shall use Test Methods of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), for each test as required by subpars. a., b., c., d. and e. unless an equivalent method or an alternative method has been approved by the department. If the department finds reasonable grounds to dispute the results obtained by an equivalent or alternative method, the department may require the use of a reference method. If the results of the reference and equivalent or alternative methods do not agree, the results obtained by the reference method prevail, and the department may notify the owner or operator that approval of the method previously considered to be equivalent or alternative is withdrawn.

a. Test Method 106 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), shall be used to determine the vinyl chloride emissions from any source for which an emission limit is prescribed in par. (d) 1. or 2., (e) 1., (f) 1.a., 2., 3., or 4., or from any control system to which reactor emissions are required to be ducted in par. (f) 1.b. or to which fugitive emissions are required to be ducted in par. (g) 2.a.2), b., e., f. 2), or i.2).



1) For each run, one sample shall be collected. The sampling site shall be at least 2 stack or duct diameters downstream and one-half diameter upstream from any flow disturbance such as a bend, expansion, contraction or visible flame. For a rectangular cross section an equivalent diameter shall be determined from the following equation:

$$\text{equivalent diameter} = 2 (\text{length})(\text{width})/\text{length} + \text{width}$$

The sampling point in the duct shall be at the centroid of the cross section. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The sample shall be taken over a minimum of one hour, and shall contain a minimum volume of 50 liters corrected to standard conditions.

2) Each emission test shall consist of 3 runs. For the purpose of determining emissions, the average of results of all runs shall apply. The average shall be computed on a time weighted basis.

3) For gas streams containing more than 10% oxygen the concentration of vinyl chloride as determined by Test Method 106 shall be corrected to 10% oxygen (dry basis) for determination of emissions by using the following equation:

$$C_b(\text{corrected}) = C_b \frac{10.9}{20.9} - \text{percent } O_2$$

where:

$C_b(\text{corrected})$  is the concentration of vinyl chloride in the exhaust gases, corrected to 10% oxygen,  $C_b$  is the concentration of vinyl chloride as measured by Test Method 106

20.9 equals the percent oxygen in the ambient air at standard conditions

10.9 is the percent oxygen in the ambient air at standard conditions minus the 10% oxygen to which the correction is being made

percent  $O_2$  is the percent oxygen in the exhaust gas as measured by Reference Method 3 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in sub. (7)

4) For those emission sources where the emission limit is prescribed in terms of mass rather than concentration, mass emissions in kilograms/100 kilograms product shall be determined by using the following equation:

$$C_{BX} = [C_b(2.60) Q 10^{-6}] [100]/Z$$

where:

$C_{BX}$  equals the kilograms vinyl chloride/100 kilograms product

$C_b$  is the concentration of vinyl chloride as measured by Test Method 106

2.60 equals the density of vinyl chloride at one atmosphere and 20°C in kilograms/cubic meter

Q is the volumetric flow rate in cubic meters/hour as determined by Reference Method 2 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in sub. (7)

$10^{-6}$  is the conversion factor for parts per million

Z is the production rate (kilograms/hour)

b. Test Method 107 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), shall be used to determine the concentration of vinyl chloride in each inprocess wastewater stream for which an emission limit is prescribed in par. (g) 2. i. 1).

c. Where a stripping operation is used to attain the emission limit in par. (f)5., emissions shall be determined using Test Method 107 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), as follows:

1) The number of strippers and samples and the types and grades of resin to be sampled shall be determined by the department for each individual plant at the time of the test based on the plant's operation.

2) Each sample shall be taken immediately following the stripping operation.

3) The corresponding quantity of material processed by each stripper shall be determined on a dry solids basis and by a method submitted to and approved by the department.

4) At the prior request of the department, the owner or operator shall provide duplicates of the samples required in subpar. c.1).

d. Where control technology other than or in addition to a stripping operation is used to attain the emission limit in par. (f)5., emissions shall be determined as follows:

1) Test Method 106 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), shall be used to determine atmospheric emissions from all of the process equipment simultaneously. The requirements of subpar. a. shall be met.

2) Test Method 107 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), shall be used to determine the concentration of vinyl chloride in each inprocess wastewater stream subject to the emission limit prescribed in par. (f)5. The mass of vinyl chloride in kilograms/100 kilograms product in each inprocess wastewater stream shall be determined by using the following equation:

$$C_{BX} = [C_d R 10^{-6}] (100)/Z$$

where:

$C_{BX}$  equals to kilogram vinyl chloride/100 Kg product

$C_d$  is the concentration of vinyl chloride as measured by Test Method 107 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7)

R is the water flow rate in liters/hour determined in accordance with a method which has been submitted to and approved by the department

$10^{-6}$  is the conversion factor for parts per million

Z is the production rate (kilograms/hour), determined in accordance with a method which has been submitted and approved by the department

e. The vinyl chloride reactor opening loss for which an emission limit is prescribed in par. (f)1.b. shall be determined. The number of reactors for which the determination shall be made shall be specified by the department for each individual plant at the time of the determination based on the plant's operation. For a vinyl chloride reactor that is also used as a stripper, the determination may be made immediately following the stripping operation.

1) Except as provided in subpar. e.2), the vinyl chloride reactor opening loss shall be determined using the following equation:

$$C = W(2.60)(10^{-6})(C_b).YZ$$

where:

C equals the kilogram vinyl chloride emissions/kilogram product

W is the capacity of the vinyl chloride reactor in cubic meters

2.60 is the density of vinyl chloride at one atmosphere and 20°C in kilogram/cubic meters

$10^{-6}$  is the conversion factor for parts per million

$C_b$  equals parts per million by volume vinyl chloride as determined by Test Method 106 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), or by a portable hydrocarbon detector which measures hydrocarbons with a sensitivity of at least 10 parts per million

Y is the number of batches since the vinyl chloride reactor was last opened to the atmosphere

Z is the average kilogram of polyvinyl chloride produced per batch in the number of batches since the vinyl chloride reactor was last opened to the atmosphere

a) If Method 106 is used to determine the concentration of vinyl chloride ( $C_b$ ), the sample shall be withdrawn at a constant rate with a probe of sufficient length to reach the vessel bottom from the manhole. Samples shall be taken for 5 minutes within 6 inches of the vessel bottom, 5 minutes near the vessel center, and 5 minutes near the vessel top.

b) If a portable hydrocarbon detector is used to determine the concentration of vinyl chloride ( $C_b$ ), a probe of sufficient length to reach the vessel bottom from the manhole shall be used to make the measurements. One measurement shall be made within 6 inches of the vessel bottom, one near the vessel center and one near the vessel top. Measurements shall be made at each location until the reading is stabilized. All hydrocarbons measured shall be assumed to be vinyl chloride.

c) The production rate of polyvinyl chloride (Z) shall be determined by a method submitted to and approved by the department.

2) A calculation based on the number of evacuations, the vacuum involved, and the volume of gas in the reactor is hereby approved by the department as an alternative method for determining reactor opening loss for past polymerization reactors in the manufacture of bulk resins.

(j) *Emission monitoring.* 1. A vinyl chloride monitoring system shall be used to monitor on a continuous basis the emissions from the sources for which emission limits are prescribed in pars. (d) 1. and 2., (e) 1., and (f) 1.a., 2., 3., and 4., and for any control system to which vinyl chloride reactor emissions are required to be ducted in par. (f) 1.b. or to which fugitive emissions are required to be ducted in par. (g) 2.a.2), b., e., f. 2) and i. 2).

2. The vinyl chloride monitoring system used to meet the requirement in subd. 1. shall be a device which obtains air samples from one or more points on a continuous sequential basis and analyzes the samples with gas chromatography or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride, with infrared spectrophotometry, flame ion detection, or an equivalent or alternative method. The vinyl chloride monitoring system used to meet the requirements in par. (g) 2.h.2) may be used to meet the requirements of this paragraph.

3. A daily span check shall be conducted for each vinyl chloride monitoring system used. For all of the emission sources listed in subd. 1., except the one for which an emission limit is prescribed in par. (d) 2., the daily span check shall be conducted with a concentration of vinyl chloride equal to 10 parts per million. For the emissions source for which an emission limit is prescribed in par. (d) 2., the daily span check shall be conducted with a concentration of vinyl chloride which is determined to be equivalent to the emission limit for that source based on the emission test required by par. (i). The calibration shall be done with:

a. A calibration gas mixture prepared from the gases specified in sections 5.2.1 and 5.2.2 and in accordance with section 7.1 of Test Method 106 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), or

b. A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard shall have been certified by the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than plus or minus 5% from the certified value. The date of gas cylinder preparation, certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7). The requirements in sections 5.2.3.1 and 5.2.3.2 of Test Method 106 for certification of cylinder standards and for establishment and verification of calibration standards shall be followed.

(k) *Initial report.* 1. The owner or operator of any source to which this subsection applies and on which construction or modification is commenced after February 1, 1984 shall notify the department in writing

that the equipment and procedural specifications in par. (g) 2.a. through h. are being implemented.

2. The statement shall be submitted to the department within 90 days of the initial startup date. The statement shall contain the information specified in this subdivision.

- a. A list of the equipment installed for compliance,
- b. A description of the physical and functional characteristics of each piece of equipment,
- c. A description of the methods which have been incorporated into the standard operating procedures for measuring or calculating the emissions for which emission limits are prescribed in par. (g) 2.a.1) and f.1), and
- d. A statement that each piece of equipment is installed and that each piece of equipment and each procedure is being used.

(1) *Semiannual report.* 1. The owner or operator of any source subject to this subsection shall submit to the department on September 15 and March 15 of each year a report in writing containing the information required by this paragraph.

2. The first semiannual report shall be submitted within 180 days of the initial startup date of a source on which construction or modification commenced after February 1, 1984.

3. Unless otherwise specified, the owner or operator shall use the Test Methods of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), to conduct emission tests as required by subpars. b. and c., unless an equivalent or an alternative method has been approved by the department. If the department finds reasonable grounds to dispute the results obtained by an equivalent or alternative method, the department may require the use of a reference method. If the results of the reference and equivalent or alternative methods do not agree, the results obtained by the reference method prevail, and the department may notify the owner or operator that approval of the method previously considered to be equivalent or alternative is withdrawn.

a. The owner or operator shall include in the report a record of any emissions which averaged over any hour period (commencing on the hour) are in excess of the emission limits prescribed in par. (d) 1. or 2., (e) 1., or (f) 1.a., 2., 3., or 4., or for any control system to which reactor emissions are required to be ducted in par. (g) 2.a.2), b., e., f.2), or i.2). The emissions shall be measured in accordance with par. (j).

b. In polyvinyl chloride plants for which a stripping operation is used to attain the emission level prescribed in par. (f) 5., the owner or operator shall include in the report a record of the vinyl chloride content in the polyvinyl chloride resin. Test Method 107 of 40 C.F.R. pt. 61, Appendix B, incorporated by reference in sub. (7), shall be used to determine vinyl chloride content in accordance with this subparagraph.

1) If batch stripping is used, one representative sample of polyvinyl chloride resin shall be taken from each batch of each grade of resin immediately following the completion of the stripping operation and identified by resin type and grade and the date and time the batch is completed.

The corresponding quantity of material processed in each stripper batch shall be recorded and identified by resin type and grade and the date and time the batch is completed.

2) If continuous stripping is used, one representative sample of polyvinyl chloride resin shall be taken for each grade of resin processed, whichever is more frequent. The sample shall be taken as the resin flows out of the stripper and identified by resin type and grade and the date and time the sample was taken. The corresponding quantity of material processed by each stripper over the time period represented by the sample during the 8-hour period shall be recorded and identified by resin type and grade and the date and time it represents.

3) The quantity of material processed by the stripper shall be determined on a dry solids basis and by a method submitted to and approved by the department.

4) At the prior request of the department, the owner or operator shall provide duplicates of the samples required in subpar. b. 1) and 2).

5) The report to the department by the owner or operator shall include the vinyl chloride content found in each sample required by subpar. b. 1) and 2), averaged separately for each type of resin, over each calendar day and weighted according to the quantity of each grade of resin processed by the stripper or strippers that calendar day, according to the following equation:

$$A_{T_i} = \frac{\sum_i^n P_{G_i} M_{G_i}}{Q_{T_i}} = \frac{P_{G_1} M_{G_1} + P_{G_2} M_{G_2} + \dots + P_{G_n} M_{G_n}}{Q_{T_i}}$$

where:

A is the 24-hour average concentration of type  $T_i$  resin in ppm (dry weight basis)

Q is the total production of type  $T_i$  resin over the 24-hour period in kilograms

$T_i$  is the type of resin

$i = 1, 2 \dots m$  where  $m$  is total number of resin types produced during the 24-hour period

M is the concentration of vinyl chloride in one sample of grade  $G_i$  resin in parts per million

P is the production of grade  $G_i$  resin represented by the sample in kilograms

$G_i$  is the grade of resin (e.g.,  $G_1$ ,  $G_2$  and  $G_3$ )

$n$  is the total number of grades of resin produced during the 24-hour period

6) Records of all data needed to furnish the information required by subpar. b.5) shall be retained at the source and made available for in-

spection by a department representative for a minimum of 2 years. The records shall contain:

a) The vinyl chloride content found in all the samples required in sub-par. b.1) and 2), identified by the resin type and grade and the time and date of the sample, and

b) The corresponding quantity of polyvinyl chloride resin processed by the stripper or strippers identified by the resin type and grade and the time and date it represents.

c. The owner or operator shall include in the report a record of the emissions from each reactor opening for which an emission limit is prescribed in par. (f)1.b. Emissions shall be determined in accordance with par. (i)7.e., except that emissions for each reactor are to be determined. For a reactor that is also used as a stripper, the determination may be made immediately following the stripping operation.

(m) *Recordkeeping.* The owner or operator of any source subject to this subsection shall retain the information specified in this paragraph at the source and make it available for inspection by a department representative for a minimum of 2 years.

1. A record of the leaks detected by the vinyl chloride monitoring system, as required by par. (g) 2.h., including the concentrations of vinyl chloride measured, analyzed, and recorded by the vinyl chloride detector, the location of each measurement and the date and approximate time of each measurement.

2. A record of the leaks detected during routine monitoring with the portable hydrocarbon detector and the action taken to repair the leaks, as required by par. (g)2.h.

3. A record of emissions measured in accordance with par. (j).

4. A daily operating record for each polyvinyl chloride reactor, including pressure and temperatures.

(7) INCORPORATION BY REFERENCE. (a) *Code of federal regulations.* The federal regulations or appendix materials in effect on June 30, 1983 listed in this paragraph are incorporated by reference in the corresponding subsections of this section. Copies of these materials are available for inspection in the offices of the department of natural resources, secretary of state and revisor of statutes, Madison, Wisconsin or may be purchased for personal use from the superintendent of documents, U.S. government printing office, Washington D.C. 20402.

1. Appendix B of 40 C.F.R. pt. 61 for subs. (3), (4), (5) and (6).

2. Test Method 3, Appendix A of 40 C.F.R. pt. 60 for sub. (6) (i) 7.a.3).

3. Test Method 5, Appendix A of 40 C.F.R. pt. 60 for Test Method 101, Appendix B, 40 C.F.R. pt. 61.

4. 29 C.F.R. s. 1910.145 (d) (4) for sub. (4) (j) 2.b. and (1) 2.

5. 29 C.F.R. s. 1910.93a (g) (2) (ii) for sub. (4) (j) 3.a.3).

(b) *Other materials.* The materials listed in this paragraph are incorporated by reference in the corresponding subsections noted. Some of the materials are also incorporated in Appendix B of 40 C.F.R. pt. 61 as in effect on June 30, 1983. Since Appendix B is incorporated by reference in this subsection by par. (a), materials incorporated by reference in that Appendix are hereby also incorporated by reference and made a part of this subsection. The materials are available for inspection in the offices of the department of natural resources, secretary of state and revisor of statutes, Madison, Wisconsin or may be purchased for personal use at the corresponding address noted.

1. The following materials are available for purchase from at least one of the following addresses: American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103, or the University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

a. ASTM D737-75, Standard Test Method for Air Permeability of Textile Fabrics, for sub. (4) (f) 1.

b. ASTM D1193-74, Standard Specifications for Type I Reagent Water, for 40 C.F.R. pt. 61, Appendix B, Method 101, par. 6.1.1.

c. ASTM D2986-71 (Reapproved 1978), Standard Method for Evaluation of Air, Assay Media by the Monodisperse DOP (Dioctyl Phthalate) Smoke Test, for 40 C.F.R. pt. 60, Appendix A, Method 5, par. 3.1.1.

2. [Reserved]

History: Cr. Register, March, 1972, No. 195, eff. 4-1-72; cr. (3), Register, December, 1972, No. 204, eff. 1-1-73; cr. (4) and (5), Register, June, 1975, No. 234, eff. 7-1-75; am. (1), Register, April, 1983, No. 328, eff. 5-1-83; renum. (3) (intro.), (a) and (b) to be (a), 1. and 2., (5)(c) and (d) to be (5)(d) and (e), cr. (3)(a), (b) and (c), (5)(c) (f) and (g), (6) and (7), r. and recr. (4), Register, January 4, 1984, No. 337, eff. 2-1-84.

**NR 154.20 Emergency episode levels and emergency emission control action programs.** (1) **EMERGENCY EPISODE LEVELS.** (a) "Alert": The alert level is that concentration of pollutants at which first stage control actions are to begin. An alert will be declared when any pollutant reaches the alert level specified below at any monitoring site and meteorological conditions are such that the pollutant concentrations can be expected to remain at the alert level for 12 or more hours or increase or,

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