

**STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR RESOURCES**

AIR POLLUTION CONTROL REGULATION NO. 22

AIR TOXICS



Effective 28 March 1988

Last Amended 19 July 2007

AUTHORITY: These regulations are authorized pursuant to R.I. Gen. Laws § 42-17.1-2(s) and 23-23, as amended, and have been promulgated pursuant to the procedures set forth in the R.I. Administrative Procedures Act, R.I. Gen. Laws Chapter 42-35.

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR RESOURCES

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**RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR RESOURCES
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AIR TOXICS

22.1 Definitions

Unless otherwise expressly defined in this section, the terms used in this regulation shall be defined by reference to the Rhode Island Air Pollution Control General Definitions Regulation. As used in this regulation, the following terms shall, where the context permits, be construed as follows:

- 22.1.1 **"Acceptable Ambient Level"** is the maximum ambient air concentration of a listed toxic air contaminant that may be contributed by a stationary source, at or beyond that facility's property line, as delineated in Tables I and II of this regulation, averaged over the time period specified in those tables.
- 22.1.2 **"Carcinogen"** means a listed toxic substance that, according to Table B of the Rhode Island Air Toxics Guideline, has been classified as a Class A, B1, B2, B2-C or C carcinogen by the EPA or, if the carcinogenicity of a substance has not been characterized by the EPA, has been classified by the International Agency for Research on Cancer as a Class 1, 2A or 2B carcinogen or by the National Toxicology Program (NTP) as Known or Reasonably Expected to be a Human Carcinogen (indicated as K and R in Table B).
- 22.1.3 **"Construction"** means any physical change or change in the method of operation (including fabricating, erecting, locating, modification or demolition of an emissions unit) which would result in a change in actual emissions.
- 22.1.4 **"Existing Source"** means a stationary source which is in existence on the effective date of this Regulation or, for a listed toxic substance that was added to Table I in a subsequent amendment of this regulation, a stationary source that was in existence on the effective date of that amendment.
- 22.1.5 **"Imminent threat"** means a condition in which the emissions of one or more listed toxic air contaminants from a facility can result in ambient air levels that, if not abated in a reasonable time period, as determined by the

Director, have the potential to cause serious health effects to members of the public.

22.1.6 **“Impact”** means the ground level concentration of a pollutant resulting from emissions of that pollutant from a facility. Impact does not include background ambient air concentrations of the pollutant or concentrations of the pollutant resulting from emissions from other facilities.

22.1.7 **“Listed Toxic Air Contaminant”** means any listed toxic substance emitted to the atmosphere as dust, fume, gas, mist, smoke, vapor, or soot.

22.1.8 **“Listed Toxic Substance”** means any substance that is listed in Table I of this regulation.

22.1.9 **“Major fuel-burning modification”** means any physical change or change in the method of operation of a major fuel-burning source that would result in a net emission increase, as defined in Rhode Island Air Pollution Control Regulation No. 9, of air pollutants from the combustion of fuel oil, propane, natural gas, or a combination of those fuels equal to or in excess of:

- (a) 15 tons per year of particulate matter less than 2.5 microns in diameter,
- (b) 25 tons per year of nitrogen oxides or volatile organic compounds,
- (c) 40 tons per year of sulfur dioxide, or
- (d) 100 tons per year of carbon monoxide.

22.1.10 **“Major fuel-burning source”** means any stationary source that emits or has the potential to emit, as defined in Rhode Island Air Pollution Control Regulation No. 9, air pollutants from the combustion of fuel oil, propane, natural gas, or a combination of those fuels equal to or in excess of:

- (a) 50 tons per year of nitrogen oxides or volatile organic compounds or
- (b) 100 tons per year of carbon monoxide, sulfur dioxide or particulate matter less than 2.5 microns in diameter.

22.1.11 **“Modification”** means any physical or operational change to any machine, equipment, device, article or facility which may result in an increased emission rate to the atmosphere of any air contaminant. The

following shall not be considered a modification:

- (a) Routine maintenance, repair, and replacement of any machine, equipment, device, article or facility or parts;
- (b) Increase in production rate of any machine, equipment, device, article or facility based solely upon the capabilities of existing process equipment;
- (c) Increase in hours of operation up to the maximum hours allowed in any federally enforceable air pollution control permit or air toxics operating permit; and
- (d) Use of an alternative fuel or raw material if the machine, equipment, device, article or facility was designed and permitted to accommodate that alternative use.

22.1.12 **"Perchloroethylene Dry Cleaning Facility"** means a facility engaged in the cleaning of clothing, garments, textiles, fabrics, leather goods and/or similar items by means of one or more washes in perchloroethylene, extraction of excess perchloroethylene by spinning, and drying by tumbling in an airstream. The facility includes, but is not limited to, any washer, dryer, filter and purification system, waste disposal system, holding tank, pump, air pollution control equipment and attendant piping, valves and stacks.

22.1.13 **"Reformulation"** means the elimination or reduction of the use of one or more listed toxic substances by replacement with one or more, less toxic substances.

22.2 Applicability and Exemptions

22.2.1 Applicability

The provisions of this regulation shall apply to any stationary source that emits a listed toxic air contaminant, unless exempted below.

22.2.2 Exemptions

The following shall be exempt from the provisions of this regulation:

- (a) The application of any pesticide or herbicide regulated under authority of the Federal Insecticide, Fungicide, Rodenticide Act (86

statute 973 et seq, as amended) or the Rhode Island Pesticide Control Act (23-25-1, et seq), with the exception of the use of ethylene oxide for fumigation or sterilization, shall be exempted from this regulation. It shall be the responsibility of the owner or operator of a source claiming to be exempt from the provisions of this regulation to demonstrate that the facility's use of a listed substance is regulated under the above-mentioned laws,

- (b) Gasoline filling stations
- (c) Fuel burning equipment where the emission of listed toxic air contaminants is solely from the combustion of fuel oil, propane or natural gas; except that:
 - (1) New major fuel-burning sources and major fuel-burning modifications that begin operation after April 27, 2004 shall not be exempt from this regulation and
 - (2) Major fuel-burning sources that began operation prior to April 27, 2004 shall be subject to this regulation on and after April 27, 2009.
- (d) Perchloroethylene emissions from perchloroethylene dry cleaning facilities;
- (e) Sodium hydroxide emissions generated by the addition of sodium hydroxide to an air pollution control system according to its design specifications;
- (f) Asbestos abatement projects subject to the Rhode Island Department of Health "Rules and Regulations for Asbestos Control" (R23-24.5-ASB);
- (g) Lead paint hazard reduction projects and lead paint hazard control projects subject to the Rhode Island Department of Health "Rules and Regulations for Lead Paint Poisoning Prevention" (R23-24.6-PB); and
- (h) Lead paint removal operations subject to Rhode Island Department of Environmental Management Air Pollution Control Regulation No. 24, "Removal of Lead Based Paint from Exterior Surfaces."

22.3 Requirements for Permits to Construct, Install or Modify

- 22.3.1 No person shall construct, install, or modify or cause construction, installation, or modification of any stationary source which has the potential to increase emissions of a listed toxic air contaminant by an amount greater than the Minimum Quantity for that contaminant specified in Table III of this regulation without first obtaining an approved permit to construct, install or modify from the Director.
- 22.3.2 All permits to construct, install or modify shall be issued in accordance with the provisions and limitations of Rhode Island Air Pollution Control Regulation No. 9.
- 22.3.3 Except as specified in Subsection 22.3.4, no permit to construct, install or modify will be issued for a stationary source subject to this regulation unless it can be demonstrated, in accordance with the procedures outlined in the Rhode Island Guideline for Air Quality Modeling for Air Toxics Sources, that:
- (a) The emissions of any listed toxic air contaminant from the proposed facility shall not cause an impact, at or beyond the property line of the facility, which exceeds the Acceptable Ambient Levels for that contaminant specified in Table I; or
 - (b) The proposed facility is designed to achieve LAER and emissions of any listed toxic air contaminant from the facility shall not cause an impact, at or beyond the property line of the facility, which exceeds the Acceptable Ambient Levels with LAER for that contaminant specified in Table II.
- 22.3.4 The Director may, at his discretion, modify the modeling analysis requirements specified in Subsection 22.3.3 by:
- (a) Allowing the owner or operator to exclude from the analysis impacts from the facility in an area that is not accessible to the public, provided that the owner or operator first demonstrates to the Director that public access to that area is precluded; or
 - (b) Allowing the owner or operator to use an adjusted annual or 24-hour average Acceptable Ambient Level to determine the acceptability of impacts in an area, provided that the owner or operator first demonstrates to the Director that land use or other factors limit the potential duration of public exposure to the contaminant in that area; or

- (c) Requiring the owner or operator to evaluate one-hour and 24-hour average impacts in areas of the facility's property to which members of the public have unrestricted access.

22.4 Requirement for Registration

22.4.1 The owner or operator of a stationary source which emits a listed toxic air contaminant in an amount greater than the Minimum Quantity for that substance specified in Table III during a calendar year shall register in writing with the Department on or before 15 April of the following calendar year. The registration shall be signed by the owner or operator of the stationary source.

22.4.2 Registrations shall include, at a minimum, the following information:

- (a) The name and address of the facility;
- (b) The name and telephone number of the owner or operator of the facility and of a technical contact person for the facility; and
- (c) For each of the listed toxic air contaminants emitted by the facility in an amount greater than the Minimum Quantity for that substance during the previous calendar year:
 - (1) The name of the substance;
 - (2) The process that emitted the substance;
 - (3) The amount of the substance used at the facility during the previous calendar year,
 - (4) The amount of the substance emitted by the facility during the previous calendar year, and
 - (5) The method used to calculate emissions from the facility.

22.4.3 Any listed toxic substance that is present in a mixture shall be included in the registration provided that:

- (a) The substance is listed on the Material Safety Data Sheet (MSDS) for that mixture prepared pursuant to the OSHA Hazard Communication Standard (29CFR1910.1200). If the chemical manufacturer claims on the MSDS that the content of the mixture is proprietary information, it is the responsibility of the owner or

the operator of the facility using that mixture to determine whether the mixture contains listed toxic substances. A certification from the manufacturer shall be deemed an acceptable determination of whether the mixture contains listed toxic substances; or

- (b) For a mixture which does not have a MSDS, the concentration of the listed toxic substance in the mixture is at least 1%. A listed toxic substances that is a carcinogen, as defined in this regulation, shall be included in the registration if the concentration of that substance is at least 0.1% of the mixture.

22.5 Requirement for Air Toxics Operating Permits

22.5.1 No person shall operate a facility subject to this regulation if:

- (a) An application for an Air Toxics Operating Permit (ATOP) for that facility is not completed in accordance with the provisions of Subsection 22.5.2 upon notification from the Director; or
- (b) An ATOP for the facility is denied, following review of the Department; or
- (c) An ATOP or provisional ATOP for the facility is revoked by the Director.

22.5.2 The owner or operator of a facility subject to this regulation shall file a completed ATOP application with the Department on forms furnished by the Department within 60 days of written notice from the Director. The Department shall allow a facility additional time to submit the application if the owner or operator demonstrates to the satisfaction of the Department that such an extension is necessary. The Department shall prioritize facilities for requiring the filing of ATOP applications using the procedures specified in the Rhode Island Air Toxics Guideline. ATOP application forms shall be signed by:

- (a) For a corporation or limited liability company (LLC): a president, secretary, treasurer or vice president of the corporation or member of the LLC in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production or operation facilities applying for the permit;

- (b) For a partnership or sole proprietorship: a general partner or the proprietor, respectively;
- (c) For a municipality, State, Federal or other public agency: either a principal executive officer or ranking elected official. For the purposes of this regulation, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

22.5.3 The Director shall issue an ATOP to a facility if, after review of the application, associated inspection reports, emission test reports, and the results of a modeling analysis conducted using the procedures specified in the Rhode Island Guideline for Air Quality Modeling for Air Toxics Sources, it is determined that:

- (a) Except as provided in Subsection 22.5.4, the emissions of any listed toxic air contaminant from that facility shall not cause an impact at or beyond the property line of the facility which exceeds the Acceptable Ambient Levels for that substance specified in Table I; or
- (b) LAER has been achieved for emissions of a listed toxic air contaminant and, except as provided in Subsection 22.5.4, emissions of that contaminant from the facility will not cause an impact at or beyond the property line of the facility which exceeds the Acceptable Ambient Levels with LAER for that substance specified in Table II.

22.5.4 The Director may, at his discretion, modify the modeling analysis requirements specified in Subsection 22.5.3 by:

- (a) Allowing the owner or operator to exclude from the analysis impacts from the facility in an area that is not accessible to the public, provided that the owner or operator first demonstrates to the Director that public access to that area is precluded; or
- (b) Allowing the owner or operator to use an adjusted annual or 24-hour average Acceptable Ambient Level to determine the acceptability of impacts in an area, provided that the owner or operator first demonstrates to the Director that land use or other factors limit the potential duration of public exposure to the contaminant in that area; or

- (c) Requiring the owner or operator to evaluate one-hour and 24-hour average impacts in areas of the facility's property to which members of the public have unrestricted access.

22.5.5 If, upon review of an ATOP application and associated emissions test reports, inspection reports, and modeling results, it is determined that the facility does not meet the requirements in subsection 22.5.3, the Director may issue a provisional ATOP to the facility which includes the following requirements:

- (a) The facility must be in compliance with the provisions of Subsection 22.5.3 within 18 months of the date of issuance of the provisional ATOP or another reasonable time period as specified by the Director. An additional six months may be allowed if the facility notifies the Department within 30 days of issuance of the provisional ATOP that reformulation will be attempted as a part of a strategy to reduce emissions; and
- (b) The Director may allow a longer period of compliance if product or process substitutions necessary to achieve compliance with Acceptable Ambient Levels must first be approved by another governmental agency. Interim emission reduction measures may be required in such circumstances; and
- (c) The facility must comply with any milestones specified in its provisional ATOP by the dates specified in that document. Quarterly reports must be submitted to the Department certifying that the milestones have been met by the specified dates and delineating any other progress made towards compliance with Subsection 22.5.3.

22.5.6 If, after the review of an ATOP application and associated inspection reports, emission test reports, and modeling results, it is determined that emissions from a facility of one or more listed toxic air contaminants present an imminent threat to the surrounding community, the Director may deny issuance of an ATOP. The Director shall notify the owner or operator of the facility of the specific reasons (including relevant supporting data) that the ATOP was denied.

22.5.7 The Director may impose reasonable conditions in an ATOP, including but not limited to:

- (a) Limitations on hours of operation;

- (b) Limitations on allowable emissions;
- (c) Operation and maintenance criteria that are necessary to ensure that the allowable emissions limitations are not exceeded;
- (d) Installation and/or operation of instrumentation to monitor and record emission data or related parameters;
- (e) Conditions to ensure that emissions from the facility do not cause ground level concentrations that exceed Acceptable Ambient Levels;
- (f) Conditions to ensure compliance with State and Federal air pollution control rules and regulations applicable to processes at the facility that emit listed air toxic contaminants; and
- (g) Periodic emissions testing of the source of the air toxics emissions.

22.5.8 ATOPs initially shall be issued for a three year period. An ATOP renewal application shall be filed with the Director no later than 120 days before the expiration date of the ATOP. If a complete renewal application is filed by that date, the facility may continue to operate under the conditions specified in the current ATOP until a renewed ATOP is issued or denied by the Director. An ATOP shall be renewed upon expiration for an additional three to five year period provided that, after review of the renewal application and associated materials, it is determined that the facility meets the requirements of Subsection 22.5.3.

22.5.9 Any ATOP may be suspended, revoked or amended by the Director at any time upon a showing that the permit holder has failed to comply with this regulation or the terms and conditions of the ATOP or that the continued operation of the permitted source constitutes a threat to the health and safety of the public or a threat to the environment. In any action to suspend, revoke or amend an ATOP, the Director shall notify the permit holder by mail of the facts, conduct or violation which warrant this action. The notice shall state that the permit holder may request a hearing on the action within 30 days of receipt of the notice. If the Department demonstrates that public health, safety, or welfare imperatively requires emergency action, the Director may order summary suspension of the ATOP pending the proceedings for suspension, revocation or amendment.

22.5.10 The holder of an ATOP or provisional ATOP must notify the Director in writing prior to transferring the ATOP or provisional ATOP to another party. Each new owner or operator or holder of the permit shall be

responsible for complying with all conditions specified in the ATOP or provisional ATOP.

22.6 General Provisions

22.6.1 Purpose

The purpose of this regulation is to limit emissions of toxic air contaminants from stationary sources.

22.6.2 Authority

These regulations are authorized pursuant to R.I. Gen. Laws § 42-17.1-2(s) and 23-23, as amended, and have been promulgated pursuant to the procedures set forth in the R.I. Administrative Procedures Act, R.I. Gen. Laws Chapter 42-35

22.6.3 Application

The terms and provisions of this regulation shall be liberally construed to permit the Department to effectuate the purposes of state law, goals and policies.

22.6.4 Severability

If any provision of this regulation or the application thereof to any person or circumstances, is held invalid by a court of competent jurisdiction, the validity of the remainder of the regulation shall not be affected thereby.

22.6.5 Effective Date

The foregoing Regulation, "Air Toxics," as amended, after due notice, is hereby adopted and filed with the Secretary of State this ___ day of (month) 2007 to become effective twenty days thereafter, in accordance with the provisions of Chapter 23-23, 42-35, 42-17.1, 42-17. of the General Laws of Rhode Island of 1956, as amended.

W. Michael Sullivan, PhD., Director
Department of Environmental Management

Notice Given on: February 21, 2007

Public Hearing held: March 23, 2007

Filing Date: June 29, 2007

Effective Date: July 19, 2007

Table I Acceptable Ambient Levels (AALs) ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Acetaldehyde	75070			0.5
Acetamide	60355			0.05
Acetone	67641	60,000	30,000	
Acetonitrile	75058		60	
Acetophenone	98862		300	
2-Acetylaminofluorene	53963			0.0008
Acrolein	107028	0.1	0.02	
Acrylamide	79061			0.0008
Acrylic Acid	79107	6,000	1	
Acrylonitrile	107131	200		0.01
Aldrin	309002	7	0.1	0.00002
Allyl Chloride	107051		1	
2-Aminoanthraquinone	117793			0.1
4-Aminobiphenyl	92671			0.0002
Ammonia	7664417	1,000		100
Aniline	62533		1	0.6
o-Anisidine	90040			0.02
Antimony & compounds, except trioxide ^a			0.2	
Antimony trioxide	1309644		0.2	0.02
Aramite	140578			0.1
Arsenic & compounds ^a (inorganic)		0.2		0.0002
Arsine	7784421	200	0.05	
Asbestos	1332214			4 ^b
Azobenzene	103333			0.03
Barium	7440393		200	
Benzene	71432	200	30	0.1
Benzidine	92875			0.00002
Benzoic acid	65850		10,000	
Benzotrichloride	98077			0.0003
Benzyl chloride	100447	200		0.02
Beryllium & compounds ^a			0.02	0.0004
Biphenyl	92524		200	
Bis (chloromethyl) ether	542881		1	0.00002
Bis (2-ethylhexyl) phthalate (DEHP)	117817		70	0.4
Boron and borates			30	
Bromates (including Potassium bromate)			10	0.007
Bromine & compounds (except Hydrogen bromide & Bromates)				2
Bromodichloromethane	75274	100	70	0.03

Table I Acceptable Ambient Levels (AALs) ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Bromoform	75252	2,000	70	0.9
1,3-Butadiene	106990			0.03
Butyl benzyl phthalate	85687		700	
Cadmium & compounds ^a			0.1	0.0006
Calcium cyanamide	156627			1
Captan	133062		500	1
Carbaryl	63252		300	
Carbon disulfide	75150	6,000		700
Carbon tetrachloride	56235	1,000	300	0.07
Carbonyl sulfide	463581	200		30
Catechol	120809	6000		5
Chloramben	133904		50	
Chlordane	57749		0.7	0.001
Chlorinated paraffins (avg length C12- C13, 60% chlorine)	108171262			0.04
Chlorine	7782505	200		0.2
Chlorine dioxide	10049044			0.2
Chloroacetic acid	79118		70	0.00002
2-Chloroacetophenone	532274		0.03	
4-Chloroaniline	106478		10	1
Chlorobenzene	108907			1,000
Chlorobenzilate	510156		70	0.7
1-Chloro-1,1-difluoroethane (CFC 142B)	75683		50,000	
Chlorodifluoromethane (HCFC-22)	75456		50,000	
Chloroform	67663	100 ⁱ		0.2
Chloromethyl methyl ether	107302			0.001
2-Chlorophenol	95578		20	
4-Chloro-o-phenylenediamine	95830			0.2
Chloropicrin	76062	30		0.4
Chloroprene	126998			1
p-Chloro-o-toluidine	95692			0.01
Chromium III & compounds ^a (insoluble salts)			5,000	
Chromium VI & compounds ^a - mists and aerosols			0.008	0.00008
Chromium VI & compounds ^a – solid particulate			1	0.00008
Cobalt & compounds ^a				0.01
Coke oven emissions	8007452			0.002
Copper & compounds ^a (except Copper cyanide)		100		2
p-Cresidine	120718			0.02
Cresols/Cresylic acid, isomers and mixtures (Methylphenols)	1319773			600

Table I Acceptable Ambient Levels (AALs) ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Cumene	98828		400	
Cupferron	135206			0.02
Cyanide & compounds (inorganic), except Hydrogen cyanide		300		9
Cyclohexane	110827		6,000	
2,4-Diaminoanisole	615054			0.2
2,4-Diaminotoluene	95807			0.0009
Diazomethane	334883			0.8
Dibromochloromethane	124481	100	70	
1,2-Dibromo-3-chloropropane	96128		0.2	0.0005
Dibutylphthalate	84742	2,000	300	
1,2-Dichlorobenzene	95501		300	
1,4-Dichlorobenzene (p-Dichlorobenzene)	106467	5,000	800	0.09
3,3'-Dichlorobenzidene	91941			0.003
Dichloro diphenyl dichloroethylene (DDE)	3547044			0.01
cis- 1,2-Dichloroethene	156592	3,000	1,000	
trans- 1,2-Dichloroethene	156605	800	70	
Dichloroethyl ether (Bis (chloroethyl) ether)	111444		100	0.003
2,4-Dichlorophenoxyacetic acid	94757		30	
1,3-Dichloropropene	542756		20	0.2
Dichlorvos	62737	20	3	0.01
Dieldrin	60571		0.2	0.0002
Diethanolamine	111422			3
Diethyl sulfate	64675			0.003
1,1-Difluoroethane (HCFC 152a)	75376		40,000	
3,3'-Dimethoxybenzidine	119904			0.0005
p-Dimethyl aminoazobenzene	60177			0.0008
n,n-Dimethyl aniline	121697		7	
3,3'-Dimethyl benzidine	119937			0.0002
Dimethyl carbamoyl chloride	79447			0.0003
Dimethyl formamide	68122			30
1,1-Dimethyl hyrazine	57147		0.5	0.001
1,2-Dimethyl hyrazine	540738		3	0.000006
2,4-Dimethylphenol	105679		70	
Dimethyl phthalate	131113			10
Dimethyl sulfate	77781			0.0002
4,6-Dinitro-o-cresol	534521	10		
2,4-Dinitrophenol	51285	30	7	
2,4-Dinitrotoluene	121142	200	7	0.01
1,4-Dioxane (1,4-Diethyleneoxide)	123911	3,000		0.1

Table I Acceptable Ambient Levels (AALs) ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
1,2-Diphenylhydrazine (Hydrazobenzene)	122667			0.005
Epichlorohydrin	106898	1,000		0.8
1,2-Epoxybutane	106887			2
Ethyl acrylate	140885			0.5
Ethyl benzene	100414		1,000	
Ethyl carbamate (Urethane)	51796			0.003
Ethyl chloride (Chloroethane)	75003	40,000	10,000	
Ethylene dibromide (Dibromoethane)	106934			0.005
Ethylene dichloride (1,2-Dichloroethane)	107062			0.04
Ethylene glycol	107211	1,000		400
Ethylene glycol monobutyl ether	111762	10,000		1,000
Ethylene glycol monoethyl ether	110805	400	200	70
Ethylene glycol monoethyl ether acetate	111159	100		
Ethylene glycol monomethyl ether	109864	90		20
Ethylene glycol monomethyl ether acetate	110496			90
Ethylene imine (Aziridine)	151564			0.00005
Ethylene oxide	75218		200	0.01
Ethylene thiourea	96457			0.08
Ethylidene dichloride (1,1-Dichloroethane)	75343			0.6
Fluorides & compounds, including Hydrogen fluoride		20	3	
Formaldehyde	50000	50	40	0.08
Glutaraldehyde	111308			0.08
Heptachlor	76448		2	0.00008
Hexachlorobenzene	118741	30	0.4	0.0002
Hexachlorobutadiene	87683		0.7	
Hexachlorocyclohexanes, technical grade & mixed isomers	608731			0.002
alpha-Hexachlorocyclohexane	319846			0.0006
beta-Hexachlorocyclohexane	319857	700	2	0.002
gamma-Hexachlorocyclohexane (Lindane)	58899	40	0.04	0.003
Hexachlorocyclopentadiene	77474		100	0.2
Hexachloroethane	67721	60,000		0.3
Hexamethylene-1,6-diisocyanate	822060		0.2	0.03
Hexamethylphosphoramide	680319			0.00005
Hexane	110543			200
Hydrazine	302012		5	0.0002
Hydrochloric acid (Hydrogen chloride)	7647010	2,000		9
Hydrogen bromide	10035106			20
Hydrogen cyanide	74908	300		3

Table I Acceptable Ambient Levels (AALs) ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Hydrogen sulfide	7783064	40		10
Hydroquinone	123319		1,000	5
Isophorone	78591		700	
Isopropanol	67630	3,000		
Lead & compounds ^a , inorganic				0.008
Lead – tetraethyl lead	78002		0.0003	
Maleic anhydride	108316	10		0.7
Manganese & compounds ^a			0.05	0.04
Mercury & compounds. ^a – elemental & inorganic		2	0.3	0.009
Mercury - methylmercury	22967926		0.3	0.003
Methanol	67561	30,000		4,000
Methoxychlor	72435		20	
Methyl bromide (Bromomethane)	74839	200		5
Methyl chloride (Chloromethane)	74873	1,000	400	90
Methyl chloroform (1,1,1-Trichloroethane)	71556	10,000	4,000	1,000
4,4-Methylene bis (2-chloroaniline)	101144			0.002
Methylene chloride (Dichloromethane)	75092	2,000	1,000	2
4,4-Methylenedianiline	101779	700	300	0.002
Methylene diphenyl diisocyanate	101688			0.6
Methyl ethyl ketone (2-Butanone)	78933	10,000	5,000	
Methyl hydrazine	60344			0.0004
Methyl iodide (Iodomethane)	74884	4,000		30
Methyl isobutyl ketone (Hexanone)	108101		3,000	
Methyl isocyanate	624839			1
Methyl methacrylate	80626		700	
Methyl tert butyl ether (MTBE)	1634044	7,000	3,000	
Michler's ketone (4,4'-Bis (dimethylamino) benzophenone)	90948			0.004
Fine mineral fibers ^c				20
Molybdenum & compounds ^a			20	
Naphthalene	91203			0.3
Nickel and compounds ^a , except Nickel subsulfide		6		0.004
Nickel subsulfide	12035722	6		0.002
Nitric acid	7697372	90		
Nitrobenzene	98953			2
4-Nitrobiphenyl	92933			0.00002
4-Nitrophenol	100027			0.1
2-Nitropropane	79469		20	0.1
N-Nitrosodi-n-butylamine	924163			0.0006

Table I Acceptable Ambient Levels (AALs) ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
N-Nitrosodiethylamine	55185			0.00002
N-Nitrosodimethylamine	62759			0.00007
N-Nitrosodiphenylamine	86306			0.4
N-Nitrosodi-n-propylamine	621647	300		0.0005
N-Nitroso-n-methylethylamine	10595956			0.0002
N-Nitroso-n-methylurea	684935			0.00003
N-Nitrosomorpholine	59892			0.0005
N-Nitrosopiperidine	100754			0.0004
N-Nitrosopyrrolidine	930552			0.002
Parathion	56382		20	0.2
Pentachloronitrobenzene (Quintozene)	82688		10	
Pentachlorophenol	87865	20	4	0.2
Phenol	108952	6,000		200
p-Phenylenediamine	106503			0.2
Phosgene	75445	4		
Phosphine	7803512			0.3
Phosphoric acid	7664382			7
Phosphorus, white	7723140	20	0.07	
Phthalic anhydride	85449		7,000	20
Polychlorinated biphenyls (PCBs), except Aroclor 1254	1336363		0.2	0.001
PCBs- Aroclor 1254	11097691		0.07	
Polychlorinated dibenzo dioxins (PCDDs), Polychlorinated dibenzo furans (PCDFs) and dioxin-like Polychlorinated biphenyls (PCBs)				3×10^{-9} ^d
Polycyclic Organic Matter				0.00009 ^e
1,3-Propane sultone	1120714			0.001
beta-Propiolactone	57578			0.0002
Propionaldehyde	123386			100
Propoxur (Baygon)	114261		10	0.1
Propylene	115071			3,000
Propylene dichloride (1,2-Dichloropropane)	78875	200	4	0.1
Propylene glycol monomethyl ether (PGME)	107982			7,000
Propylene oxide	75569	3,000		0.3
1,2-Propylenimine (2-Methyl aziridine)	75558			0.0001
Quinoline	91225			0.001
Quinone	106514			1
Selenium & compounds ^a , except Hydrogen selenide and Selenium sulfide				20
Selenium – Hydrogen selenide	7783075	5		

Table I Acceptable Ambient Levels (AALs) ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Selenium sulfide	7446346		20	0.2
Sodium hydroxide	1310732	8		5
Styrene	100425	20,000	1,000	100
Styrene oxide	96093			0.02
Sulfates ^f		100		20
Sulfuric acid and Oleum ^g		100		1
1,1,1,2-Tetrachloroethane	630206		100	
1,1,2,2-Tetrachloroethane	79345		3,000	
Tetrachloroethylene (Perchloroethylene)	127184	1,000		0.2
Tetrachlorophenols	25167833			90
1,1,1,2-Tetrafluoroethane	811972		80,000	
Thioacetamide	62555			0.0006
Titanium tetrachloride	7550450		10	0.1
Toluene	108883	4,000	400	300
2,4-Toluene diamine (2,4-Diaminotoluene)	95807			0.0009
2,4-and 2,6-Toluene diisocyanate ^h	26471625			0.07
o-Toluidine	95534			0.02
Toxaphene (Chlorinated camphene)	8001352	20	4	0.0003
1,2,4-Trichlorobenzene	120821		30	
1,1,2-Trichloroethane	79005		10	
Trichloroethylene	79016	10,000	500	0.5
Trichlorofluoromethane	75694		1,000	
2,4,5-Trichlorophenol	95954		300	
2,4,6-Trichlorophenol	88062			0.3
Triethylamine	121448	3,000		7
Trifluralin	1582098		30	3
2,2,4-Trimethylpentane	540841			200
Vanadium & compounds ^a		0.2		
Vinyl acetate	108054		200	20
Vinyl bromide	593602		3	0.005
Vinyl chloride	75014	1,000	100	0.2
Vinylidene chloride (1,1-Dichloroethylene)	75354		200	70
Xylenes, isomers and mixtures	1330207	4,000	3,000	100
Zinc & compounds ^a			1,000	30

^aFor metal compounds, concentrations apply to the metal portion of the compound.

^bAsbestos units are fibers/cubic meter.

^cFine mineral fibers are mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers or other mineral derived fibers of average diameter 1 micrometer (μm) or less.

^dPCDD AAL is in terms of 2,3,7,8-tetrachlorodibenzodioxin equivalents, calculated as specified

in the Rhode Island Air Toxics Guideline.

^cPolycyclic Organic Matter AAL is in terms of benzo(a)pyrene equivalents, calculated as specified in the Rhode Island Air Toxics Guideline.”

^fSulfates AALs apply to ammonium bisulfate [(NH₄)HSO₄, CAS 7803-63-6], ammonium sulfate [(NH₄)₂SO₄, CAS 7783-20-2], ferric sulfate [Fe(SO₄)₃, CAS 10028-22-5] and sodium sulfate [Na₂SO₄, CAS 7757-82-6]

^gSulfuric acid and oleum AALs apply to sulfuric acid (H₂SO₄, CAS 7664-03-9), sulfur trioxide (SO₃, CAS 7446-71-9) and oleum (H₂SO₄ + SO₃, CAS 8014-95-7)

^hIncludes 2,4-TDI (CAS 584849), 2,6-TDI (CAS 91087) and 2,4/2,6 mixtures (CAS 26471625)

^lOne-hour AAL for chloroform should be compared to 7 – 8 hour average concentrations.

Table II Acceptable Ambient Levels (AALs) with LAER ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Acetaldehyde	75070			5
Acetamide	60355			0.5
Acetone	67641	60,000	30,000	
Acetonitrile	75058		60	
Acetophenone	98862		300	
2-Acetylaminofluorene	53963			0.008
Acrolein	107028	0.1	0.02	
Acrylamide	79061			0.008
Acrylic Acid	79107	6,000	1	
Acrylonitrile	107131	200		0.1
Aldrin	309002	7	0.1	0.0002
Allyl Chloride	107051		1	
2-Aminoanthraquinone	117793			1
4-Aminobiphenyl	92671			0.002
Ammonia	7664417	1,000		100
Aniline	62533		1	
o-Anisidine	90040			0.2
Antimony & compounds ^a , except trioxide			0.2	
Antimony trioxide	1309644		0.2	0.02
Aramite	140578			1
Arsenic & compounds ^a (inorganic)		0.2		0.002
Arsine	7784421	200	0.05	
Asbestos	1332214			40 ^b
Azobenzene	103333			0.3
Barium	7440393		200	
Benzene	71432	200	30	1
Benzidine	92875			0.0002
Benzoic acid	65850		10,000	
Benzotrichloride	98077			0.003
Benzyl chloride	100447	200		0.2
Beryllium & compounds ^a			0.02	0.004
Biphenyl	92524		200	
Bis (chloromethyl) ether	542881		1	0.0002
Bis (2-ethylhexyl) phthalate (DEHP)	117817		70	4
Boron and borates			30	
Bromates (including Potassium bromate)			10	0.07
Bromine & compounds (except Hydrogen bromide & Bromates)				2
Bromodichloromethane	75274	100	70	0.3

Table II Acceptable Ambient Levels (AALs) with LAER ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Bromoform	75252	2,000	70	9
1,3-Butadiene	106990			0.3
Butyl benzyl phthalate	85687		700	
Cadmium & compounds ^a			0.1	0.006
Calcium cyanamide	156627			1
Captan	133062		500	10
Carbaryl	63252		300	
Carbon disulfide	75150	6,000		700
Carbon tetrachloride	56235	1,000	300	0.7
Carbonyl sulfide	463581	200		30
Catechol	120809	6000		5
Chloramben	133904		50	
Chlordane	57749		0.7	0.01
Chlorinated paraffins (avg length C12- C13, 60% chlorine)	108171262			0.4
Chlorine	7782505	200		0.2
Chlorine dioxide	10049044			0.2
Chloroacetic acid	79118		70	0.00002
2-Chloroacetophenone	532274		0.03	
4-Chloroaniline	106478		10	1
Chlorobenzene	108907			1,000
Chlorobenzilate	510156		70	0.7
1-Chloro-1,1-difluoroethane (CFC 142B)	75683		50,000	
Chlorodifluoromethane (HCFC-22)	75456		50,000	
Chloroform	67663	100 ⁱ		2
Chloromethyl methyl ether	107302			0.01
2-Chlorophenol	95578		20	
4-Chloro-o-phenylenediamine	95830			2
Chloropicrin	76062	30		0.4
Chloroprene	126998			1
p-Chloro-o-toluidine	95692			0.1
Chromium III & compounds ^a (insoluble salts)			5,000	
Chromium VI & compounds ^a - mists and aerosols			0.008	0.0008
Chromium VI & compounds ^a - solid particulate			1	0.0008
Cobalt & compounds ^a				0.01
Coke oven emissions ^a	8007452			0.02
Copper & compounds ^a (except Copper cyanide)		100		2
p-Cresidine	120718			0.2
Cresols/Cresylic acid, isomers and mixtures (Methylphenols)	1319773			600

Table II Acceptable Ambient Levels (AALs) with LAER ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Cumene	98828		400	
Cupferron	135206			0.2
Cyanide & compounds (inorganic), except Hydrogen cyanide		300		9
Cyclohexane	110827		6,000	
2,4-Diaminoanisole	615054			2
2,4-Diaminotoluene	95807			0.009
Diazomethane	334883			0.8
Dibromochloromethane	124481	100	70	
1,2-Dibromo-3-chloropropane	96128		0.2	0.005
Dibutylphthalate	84742	2,000	300	
1,2-Dichlorobenzene	95501		300	
1,4-Dichlorobenzene (p-Dichlorobenzene)	106467	5,000	800	0.9
3,3'-Dichlorobenzidene	91941			0.03
Dichloro diphenyl dichloroethylene (DDE)	3547044			0.1
cis- 1,2-Dichloroethene	156592	3,000	1,000	
trans- 1,2-Dichloroethene	156605	800	70	
Dichloroethyl ether (Bis (chloroethyl) ether)	111444		100	0.03
2,4-Dichlorophenoxyacetic acid	94757		30	
1,3-Dichloropropene	542756		20	2
Dichlorvos	62737	20	3	0.1
Dieldrin	60571		0.2	0.002
Diethanolamine	111422			3
Diethyl sulfate	64675			0.03
1,1-Difluoroethane (HCFC 152a)	75376		40,000	
3,3'-Dimethoxybenzidine	119904			0.005
p-Dimethyl aminoazobenzene	60177			0.008
n,n-Dimethyl aniline	121697		7	
3,3'-Dimethyl benzidine	119937			0.002
Dimethyl carbamoyl chloride	79447			0.003
Dimethyl formamide	68122			30
1,1-Dimethyl hyrazine	57147		0.5	0.01
1,2-Dimethyl hyrazine	540738		3	0.00006
2,4-Dimethylphenol	105679		70	
Dimethyl phthalate	131113			10
Dimethyl sulfate	77781			0.002
4,6-Dinitro-o-cresol	534521	10		
2,4-Dinitrophenol	51285	30	7	
2,4-Dinitrotoluene	121142	200	7	0.1
1,4-Dioxane (1,4-Diethyleneoxide)	123911	3,000		1

Table II Acceptable Ambient Levels (AALs) with LAER ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
1,2-Diphenylhydrazine (Hydrazobenzene)	122667			0.05
Epichlorohydrin	106898	1,000		1
1,2-Epoxybutane	106887			2
Ethyl acrylate	140885			0.5
Ethyl benzene	100414		1,000	
Ethyl carbamate (Urethane)	51796			0.03
Ethyl chloride (Chloroethane)	75003	40,000	10,000	
Ethylene dibromide (Dibromoethane)	106934			0.05
Ethylene dichloride (1,2-Dichloroethane)	107062			0.4
Ethylene glycol	107211	1,000	7,000	400
Ethylene glycol monobutyl ether	111762	10,000		1,000
Ethylene glycol monoethyl ether	110805	400	200	70
Ethylene glycol monoethyl ether acetate	111159	100		
Ethylene glycol monomethyl ether	109864	90		20
Ethylene glycol monomethyl ether acetate	110496			90
Ethylene imine (Aziridine)	151564			0.0005
Ethylene oxide	75218		200	0.1
Ethylene thiourea	96457			0.8
Ethylidene dichloride (1,1-Dichloroethane)	75343			6
Fluorides & compounds, including Hydrogen fluoride		20	3	
Formaldehyde	50000	50	40	0.8
Glutaraldehyde	111308			0.08
Heptachlor	76448		2	0.0008
Hexachlorobenzene	118741	30	0.4	0.002
Hexachlorobutadiene	87683		0.7	
Hexachlorocyclohexanes, technical grade & mixed isomers	608731			0.02
alpha-Hexachlorocyclohexane	319846			0.006
beta-Hexachlorocyclohexane	319857	700	2	0.02
gamma-Hexachlorocyclohexane (Lindane)	58899	40	0.04	0.03
Hexachlorocyclopentadiene	77474		100	0.2
Hexachloroethane	67721	60,000		3
Hexamethylene-1,6-diisocyanate	822060		0.2	0.03
Hexamethylphosphoramide	680319			0.0005
Hexane	110543			200
Hydrazine	302012		5	0.002
Hydrochloric acid (Hydrogen chloride)	7647010	2,000		9
Hydrogen bromide	10035106			20
Hydrogen cyanide	74908	300		3

Table II Acceptable Ambient Levels (AALs) with LAER ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Hydrogen sulfide	7783064	40		10
Hydroquinone	123319		1,000	5
Isophorone	78591		700	
Isopropanol	67630	3,000		
Lead & compounds ^a , inorganic				0.08
Lead – tetraethyl lead	78002		0.0003	
Maleic anhydride	108316	10		0.7
Manganese & compounds ^a			0.05	0.04
Mercury & compounds – elemental & inorganic		2	0.3	0.009
Mercury - methylmercury	22967926		0.3	0.003
Methanol	67561	30,000		4,000
Methoxychlor	72435		20	
Methyl bromide (Bromomethane)	74839	200		5
Methyl chloride (Chloromethane)	74873	1,000	400	90
Methyl chloroform (1,1,1-Trichloroethane)	71556	10,000	4,000	1,000
4,4-Methylene bis (2-chloroaniline)	101144			0.02
Methylene chloride (Dichloromethane)	75092	2,000	1,000	20
4,4-Methylenedianiline	101779	700	300	0.02
Methylene diphenyl diisocyanate	101688			0.6
Methyl ethyl ketone (2-Butanone)	78933	10,000	5,000	
Methyl hydrazine	60344			0.004
Methyl iodide (Iodomethane)	74884	4,000		30
Methyl isobutyl ketone (Hexanone)	108101		3,000	
Methyl isocyanate	624839			1
Methyl methacrylate	80626		700	
Methyl tert butyl ether (MTBE)	1634044	7,000	3,000	
Michler's ketone (4,4'-Bis (dimethylamino) benzophenone)	90948			0.04
Fine mineral fibers ^c				20
Molybdenum & compounds ^a			20	
Naphthalene	91203			0.3
Nickel and compounds ^a , except Nickel subsulfide		6		0.04
Nickel subsulfide	12035722	6		0.02
Nitric acid	7697372	90		
Nitrobenzene	98953			2
4-Nitrobiphenyl	92933			0.00002
4-Nitrophenol	100027			0.1
2-Nitropropane	79469		20	1
N-Nitrosodi-n-butylamine	924163			0.006
N-Nitrosodiethylamine	55185			0.0002

Table II Acceptable Ambient Levels (AALs) with LAER ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
N-Nitrosodimethylamine	62759			0.0007
N-Nitrosodiphenylamine	86306			4
N-Nitrosdi-n-propylamine	621647	300		0.005
N-Nitroso-n-methylethylamine	10595956			0.002
N-Nitroso-n-methylurea	684935			0.0003
N-Nitrosomorpholine	59892			0.005
N-Nitrosopiperidine	100754			0.004
N-Nitrosopyrrolidine	930552			0.02
Parathion	56382		20	0.2
Pentachloronitrobenzene (Quintozene)	82688		10	
Pentachlorophenol	87865	20	4	2
Phenol	108952	6,000		200
p-Phenylenediamine	106503			0.2
Phosgene	75445	4		
Phosphine	7803512			0.3
Phosphoric acid	7664382			7
Phosphorus, white	7723140	20	0.07	
Phthalic anhydride	85449		7,000	20
Polychlorinated biphenyls (PCBs), except Aroclor 1254	1336363		0.2	0.01
PCBs- Aroclor 1254	11097691		0.07	
Polychlorinated dibenzo dioxins (PCDDs), Polychlorinated dibenzo furans (PCDFs) and dioxin-like Polychlorinated biphenyls (PCBs)				3×10^{-8} d
Polycyclic Organic Matter				0.0009 ^e
1,3-Propane sultone	1120714			0.01
beta-Propiolactone	57578			0.002
Propionaldehyde	123386			100
Propoxur (Baygon)	114261		10	0.1
Propylene	115071			3,000
Propylene dichloride (1,2-Dichloropropane)	78875	200	4	1
Propylene glycol monomethyl ether (PGME)	107982			7,000
Propylene oxide	75569	3,000		3
1,2-Propylenimine (2-methyl aziridine)	75558			0.001
Quinoline	91225			0.01
Quinone	106514			1
Selenium & compounds ^a , except Hydrogen selenide and Selenium sulfide				20
Selenium – Hydrogen selenide	7783075	5		
Selenium sulfide	7446346		20	0.2

Table II Acceptable Ambient Levels (AALs) with LAER ($\mu\text{g}/\text{m}^3$)				
CHEMICAL NAME	CAS #	1 hour	24 hour	Annual
Sodium hydroxide	1310732	8		5
Styrene	100425	20,000	1,000	100
Styrene oxide	96093			0.2
Sulfates ^f		100		20
Sulfuric acid and Oleum ^g		100		1
1,1,1,2-Tetrachloroethane	630206		100	
1,1,2,2-Tetrachloroethane	79345		3,000	
Tetrachloroethylene (Perchloroethylene)	127184	1,000		2
Tetrachlorophenols	25167833			90
1,1,1,2-Tetrafluoroethane	811972		80,000	
Thioacetamide	62555			0.006
Titanium tetrachloride	7550450		10	0.1
Toluene	108883	4,000	400	300
2,4-Toluene diamine (2,4-Diaminotoluene)	95807			0.009
2,4-and 2,6-Toluene diisocyanate ^h	26471625			0.07
o-Toluidine	95534			0.2
Toxaphene (Chlorinated camphene)	8001352	20	4	0.003
1,2,4-Trichlorobenzene	120821		30	
1,1,2-Trichloroethane	79005		10	
Trichloroethylene	79016	10,000	500	5
Trichlorofluoromethane	75694		1,000	
2,4,5-Trichlorophenol	95954		300	
2,4,6-Trichlorophenol	88062			3
Triethylamine	121448	3,000		7
Trifluralin	1582098		30	3
2,2,4-Trimethylpentane	540841			200
Vanadium & compounds ^a		0.2		
Vinyl acetate	108054		200	20
Vinyl bromide	593602		3	0.05
Vinyl chloride	75014	1,000	100	2
Vinylidene chloride (1,1-Dichloroethylene)	75354		200	70
Xylenes, isomers and mixtures	1330207	4,000	3,000	100
Zinc & compounds ^a			1,000	30

^aFor metal compounds, concentrations apply to the metal portion of the compound.

^bAsbestos units are fibers/cubic meter.

^cFine mineral fibers are mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers or other mineral derived fibers of average diameter 1 micrometer (μm) or less.

^dPCDD AAL is in terms of 2,3,7,8-tetrachlorodibenzodioxin equivalents, calculated as specified in the Rhode Island Air Toxics Guideline

^ePolycyclic Organic Matter AAL is in terms of benzo(a)pyrene equivalents, calculated as specified in the Rhode Island Air Toxics Guideline.

^fSulfates AALs apply to ammonium bisulfate [(NH₄)HSO₄, CAS 7803-63-6], ammonium sulfate [(NH₄)₂SO₄, CAS 7783-20-2], ferric sulfate [Fe(SO₄)₃, CAS 10028-22-5] and sodium sulfate [Na₂SO₄, CAS 7757-82-6]

^gSulfuric acid and oleum AALs apply to sulfuric acid (H₂SO₄, CAS 7664-03-9), sulfur trioxide (SO₃, CAS 7446-71-9) and oleum (H₂SO₄ + SO₃, CAS 8014-95-7)

^hIncludes 2,4-TDI (CAS 584849), 2,6-TDI (CAS 91087) and 2,4/2,6 mixtures (CAS 26471625)

ⁱOne-hour AAL for chloroform should be compared to 7 – 8 hour average concentrations.

Table III Minimum Quantities (pounds/year)		
CHEMICAL NAME	CAS #	Minimum Quantity
Acetaldehyde	75070	50
Acetamide	60355	5
Acetone	67641	20,000
Acetonitrile	75058	200
Acetophenone	98862	900
2-Acetylaminofluorene	53963	0.09
Acrolein	107028	0.04
Acrylamide	79061	0.09
Acrylic acid	79107	3
Acrylonitrile	107131	1
Aldrin	309002	0.002
Allyl chloride	107051	3
2-Aminoanthraquinone	117793	10
4-Aminobiphenyl	92671	0.02
Ammonia	7664417	400
Aniline	62533	3
o-Anisidine	90040	2
Antimony & compounds ^a , including antimony trioxide		0.6
Aramite	140578	10
Arsenic & compounds ^a (inorganic)		0.02
Arsine	7784421	0.2
Asbestos	1332214	400 ^b
Azobenzene	103333	3
Barium	7440393	600
Benzene	71432	10
Benzidine	92875	0.002
Benzoic acid	65850	30,000
Benzotrichloride	98077	0.03
Benzyl chloride	100447	2
Beryllium & compounds ^a		0.04
Biphenyl	92524	600
Bis (chloromethyl) ether	542881	0.002
Bis (2-ethylhexyl) phthalate (DEHP)	117817	40
Boron and borates		90
Bromates (including Potassium bromate)		0.8
Bromine and compounds (except Hydrogen bromide & Bromates)		200
Bromodichloromethane	75274	3
Bromoform	75252	100
1,3-Butadiene	106990	3

Table III Minimum Quantities (pounds/year)		
CHEMICAL NAME	CAS #	Minimum Quantity
Butyl benzyl phthalate	85687	2,000
Cadmium & compounds ^a		0.07
Calcium cyanamide	156627	100
Captan	133062	100
Carbaryl	63252	900
Carbon disulfide	75150	2,000
Carbon tetrachloride	56235	8
Carbonyl sulfide	463581	70
Catechol	120809	500
Chloramben	133904	200
Chlordane	57749	0.1
Chlorinated paraffins (avg length C12- C13, 60% chlorine)	108171262	4
Chlorine	7782505	20
Chlorine dioxide	10049044	20
Chloroacetic acid	79118	0.002
2-Chloroacetophenone	532274	0.09
4-Chloroaniline	106478	30
Chlorobenzene	108907	20,000
Chlorobenzilate	510156	80
1-Chloro-1,1-difluoroethane (CFC 142B)	75683	36,500
Chlorodifluoromethane (HCFC-22)	75456	36,500
Chloroform	67663	20
Chloromethyl methyl ether	107302	0.1
2-Chlorophenol	95578	60
4-Chloro-o-phenylenediamine	95830	20
Chloropicrin	76062	10
Chloroprene	126998	100
p-chloro-o-toluidine	95692	1
Chromium III & compounds ^a , insoluble salts		20,000
Chromium VI & compounds ^a		0.009
Cobalt & compounds ^a		1
Coke oven emissions	8007452	0.2
Copper & compounds ^a , except Copper cyanide		40
p-Cresidine	120718	2
Cresols/Cresylic acid isomers and mixtures (Methylphenols)	1319773	20,000
Cumene	98828	1,000
Cupferron	135206	2
Cyanide & compounds (inorganic) ⁱ , except Hydrogen cyanide		100
Cyclohexane	110827	20,000
2,4-Diaminoanisole	615054	20

Table III Minimum Quantities (pounds/year)		
CHEMICAL NAME	CAS #	Minimum Quantity
2,4-Diaminotoluene	95807	0.1
Diazomethane	334883	90
Dibromochloromethane	124481	40
1,2-Dibromo-3-chloropropane	96128	0.05
Dibutylphthalate	84742	700
1,2-Dichlorobenzene	95501	900
1,4-Dichlorobenzene (p-Dichlorobenzene)	106467	10
3,3'-Dichlorobenzidine	91941	0.3
Dichloro diphenyl dichloroethylene (DDE)	3547044	1
cis- 1,2-Dichloroethene	156592	1,000
trans- 1,2-Dichloroethene	156605	200
Dichloroethyl ether (Bis (chloroethyl) ether)	111444	0.3
2,4-Dichlorophenoxyacetic acid, salts & esters (2,4-D)	94757	90
1,3-Dichloropropene	542756	20
Dichlorvos	62737	1
Dieldrin	60571	0.02
Diethanolamine	111422	300
Diethyl sulfate	64675	0.3
1,1-Difluoroethane (HCFC 152a)	75376	36,500
3,3'-Dimethoxybenzidine	119904	0.05
p-Dimethyl aminoazobenzene	60177	0.09
n,n-Dimethyl aniline	121697	20
3,3'-Dimethyl benzidine	119937	0.002
Dimethyl carbamoyl chloride	79447	0.03
Dimethyl formamide	68122	3,000
1,1-Dimethyl hyrazine	57147	0.1
1,2-Dimethyl hyrazine	540738	0.0007
2,4-Dimethylphenol	105679	200
Dimethyl phthalate	131113	1,000
Dimethyl sulfate	77781	0.02
4,6-Dinitro-o-cresol	534521	4
2,4-Dinitrophenol	51285	10
2,4-Dinitrotoluene	121142	1
1,4-Dioxane (1,4-Diethyleneoxide)	123911	10
1,2-Diphenylhydrazine (Hydrazobenzene)	122667	0.5
Epichlorohydrin	106898	90
1,2-Epoxybutane	106887	200
Ethyl acrylate	140885	50
Ethyl benzene	100414	3,000
Ethyl carbamate (Urethane)	51796	0.3

Table III Minimum Quantities (pounds/year)		
CHEMICAL NAME	CAS #	Minimum Quantity
Ethyl chloride (Chloroethane)	75003	10,000
Ethylene dibromide (Dibromoethane)	106934	0.5
Ethylene dichloride (1,2-Dichloroethane)	107062	4
Ethylene glycol	107211	400
Ethylene glycol monobutyl ether	111762	4,000
Ethylene glycol monoethyl ether	110805	100
Ethylene glycol monoethyl ether acetate	111159	40
Ethylene glycol monomethyl ether	109864	30
Ethylene glycol monomethyl ether acetate	110496	10,000
Ethylene imine (Aziridine)	151564	0.005
Ethylene oxide	75218	1
Ethylene thiourea	96457	9
Ethylidene dichloride (1,1-Dichloroethane)	75343	70
Fluorides & compounds, including Hydrogen fluoride		7
Formaldehyde	50000	9
Glutaraldehyde	111308	9
Heptachlor	76448	0.009
Hexachlorobenzene	118741	0.02
Hexachlorobutadiene	87683	2
Hexachlorocyclohexanes, technical grade & mixed isomers	608731	0.2
alpha-Hexachlorocyclohexane	319846	0.07
beta-Hexachlorocyclohexane	319857	0.2
gamma-Hexachlorocyclohexane (Lindane)	58899	0.1
Hexachlorocyclopentadiene	77474	20
Hexachloroethane	67721	30
Hexamethylene-1,6-diisocyanate	822060	0.6
Hexamethylphosphoramide	680319	0.005
Hexane	110543	20,000
Hydrazine	302012	0.02
Hydrochloric acid (Hydrogen chloride)	7647010	700
Hydrogen bromide	10035106	2,000
Hydrogen cyanide	74908	100
Hydrogen sulfide	7783064	10
Hydroquinone	123319	500
Isophorone	78591	2,000
Isopropanol	67630	1,000
Lead & compounds ^a , inorganic		0.9
Lead - tetraethyl lead	78002	0.0009
Maleic anhydride	108316	4
Manganese & compounds ^a		0.2

Table III Minimum Quantities (pounds/year)		
CHEMICAL NAME	CAS #	Minimum Quantity
Mercury & compounds ^a – elemental & inorganic		0.7
Mercury – Methyl mercury	22967926	0.3
Methanol	67561	10,000
Methoxychlor	72435	60
Methyl bromide (Bromomethane)	74839	70
Methyl chloride (Chloromethane)	74873	400
Methyl chloroform (1,1,1-Trichloroethane)	71556	4,000
4,4-Methylene bis (2-chloroaniline)	101144	0.2
Methylene chloride (Dichloromethane)	75092	200
4,4-Methylenedianiline	101779	0.2
Methylene diphenyl diisocyanate	101688	70
Methyl ethyl ketone (2-Butanone)	78933	4,000
Methyl hydrazine	60344	0.04
Methyl iodide (Iodomethane)	74884	1,000
Methyl isobutyl ketone (Hexanone)	108101	9,000
Methyl isocyanate	624839	100
Methyl methacrylate	80626	2,000
Methyl tert butyl ether (MTBE)	1634044	3,000
Michler's ketone (4,4'-Bis (dimethylamino) benzophenone)	90948	0.4
Fine mineral fibers ^c		2,000
Molybdenum and compounds ^a		60
Naphthalene	91203	30
Nickel and compounds ^a , except Nickel subsulfide		0.4
Nickel subsulfide	12035722	0.2
Nitric acid	7697372	30
Nitrobenzene	98953	200
4-Nitrobiphenyl	92933	0.002
4-Nitrophenol	100027	10
2-Nitropropane	79469	10
N-Nitrosodi-n-butylamine	924163	0.07
N-Nitrosodiethylamine	55185	0.002
N-Nitrosodimethylamine	62759	0.008
N-Nitrosodiphenylamine	86306	40
N-Nitrosdi-n-propylamine	621647	0.05
N-Nitroso-n-methylethylamine	10595956	0.02
N-Nitroso-n-methylurea	684935	0.003
N-Nitrosomorpholine	59892	0.05
N-Nitrosopiperidine	100754	0.04
N-Nitrosopyrrolidine	930552	0.2
Parathion	56382	20

Table III Minimum Quantities (pounds/year)		
CHEMICAL NAME	CAS #	Minimum Quantity
Pentachloronitrobenzene (Quintozene)	82688	30
Pentachlorophenol	87865	7
Phenol	108952	2,000
p-Phenylenediamine	106503	20
Phosgene	75445	1
Phosphine	7803512	30
Phosphoric acid	7664382	800
Phosphorus, white	7723140	0.2
Phthalic anhydride	85449	2,000
Polychlorinated biphenyls (PCBs), except Aroclor 1254	1336363	0.1
PCBs- Aroclor 1254	11097691	0.2
Polychlorinated dibenzo dioxins (PCDDs), polychlorinated dibenzo furans (PCDFs) and dioxin-like polychlorinated biphenyls (PCBs)		3 X 10 ^{-7d}
Polycyclic Organic Matter		0.01 ^e
1,3-Propane sultone	1120714	0.1
beta-Propiolactone	57578	0.02
Propionaldehyde	123386	10,000
Propoxur (Baygon)	114261	10
Propylene	115071	36,500
Propylene dichloride (1,2-Dichloropropane)	78875	10
Propylene glycol monomethyl ether (PGME)	107982	36,500
Propylene oxide	75569	30
1,2-Propylenimine (2-Methyl aziridine)	75558	0.01
Quinoline	91225	0.1
Quinone	106514	100
Selenium & compounds ^a except Hydrogen selenide and Selenium sulfide	7782492	2,000
Selenium – Hydrogen selenide		2
Selenium sulfide	7446346	20
Sodium hydroxide	1310732	3
Styrene	100425	3,000
Styrene oxide	96093	2
Sulfates ^f		40
Sulfuric acid and Oleum ^g		40
1,1,1,2-Tetrachloroethane	630206	300
1,1,2,2-Tetrachloroethane	79345	9,000
Tetrachloroethylene (Perchloroethylene)	127184	20
Tetrachlorophenols	25167833	10,000
1,1,1,2-Tetrafluoroethane	811972	36,500

Table III Minimum Quantities (pounds/year)		
CHEMICAL NAME	CAS #	Minimum Quantity
Thioacetamide	62555	0.07
Titanium tetrachloride	7550450	10
Toluene	108883	1,000
2,4-Toluene diamine (2,4-Diaminotoluene)	95807	0.1
2,4-and 2,6-Toluene diisocyanate ^h	26471625	8
o-Toluidine	95534	2
Toxaphene (Chlorinated camphene)	8001352	0.03
1,2,4-Trichlorobenzene	120821	90
1,1,2-Trichloroethane	79005	30
Trichloroethylene	79016	50
Trichlorofluoromethane	75694	3,000
2,4,5-Trichlorophenol	95954	900
2,4,6-Trichlorophenol	88062	30
Triethylamine	121448	800
Trifluralin	1582098	90
2,2,4-Trimethylpentane	540841	20,000
Vanadium and compounds ^a		0.07
Vinyl acetate	108054	600
Vinyl bromide	593602	0.5
Vinyl chloride	75014	20
Vinylidene chloride (1,1-Dichloroethylene)	75354	600
Xylenes, isomers and mixtures	1330207	1,000
Zinc and compounds ^a		3,000

^aFor metal compounds, Minimum Quantities apply to the metal portion of the compound.

^bAsbestos units are fibers/year.

^cFine mineral fibers are mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers or other mineral derived fibers of average diameter 1 micrometer (µm) or less.

^dPCDD Minimum Quantity is in terms of 2,3,7,8-tetrachlorodibenzodioxin equivalents, calculated as specified in the Rhode Island Air Toxics Guideline.

^ePolycyclic Organic Matter Minimum Quantity is in terms of benzo(a)pyrene equivalents, calculated as specified in the Rhode Island Air Toxics Guideline.

^fSulfates MQ applies to ammonium bisulfate [(NH₄)HSO₄, CAS 7803-63-6], ammonium sulfate [(NH₄)₂SO₄, CAS 7783-20-2], ferric sulfate [Fe(SO₄)₃, CAS 10028-22-5] and sodium sulfate [Na₂SO₄, CAS 7757-82-6]

^gSulfuric acid and oleum MQ applies to sulfuric acid (H₂SO₄, CAS 7664-03-9), sulfur trioxide (SO₃, CAS 7446-71-9) and oleum (H₂SO₄ + SO₃, CAS 8014-95-7)

^hIncludes 2,4-TDI (CAS 584849), 2,6-TDI (CAS 91087) and 2,4/2,6 mixtures (CAS 26471625)

ⁱXCN where X equals any group other than H where a formal dissociation may occur, such as KCN or Ca(CN)₂.