

AIR POLLUTION CONTROL REGULATION NO. 8

SULFUR CONTENT OF FUELS

Effective 1 October 1971

Last Amended 2 May 1985

**RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT DIVISION
OF AIR RESOURCES
AIR POLLUTION CONTROL REGULATION NO. 8**

SULFUR CONTENT OF FUELS

8.Sulfur Content of Fuels

8.1 Definitions

As used in these regulations, the following terms shall, where the context permits, be construed as follows:

- 8.1.1 "Low sulfur fuel" means any fuel except fuel oil containing 0.55 pounds or less of sulfur per million Btu heat release potential or fuel oil containing 1.0 percent sulfur or less by weight.
- 8.1.2 "High sulfur fuel" means any fuel except fuel oil containing more than 0.55 pounds of sulfur per million Btu heat release potential or fuel oil containing more than 1.0 percent sulfur by weight.
- 8.1.3 "Approved stack gas cleaning process" means a process, approved by the Director, which removes sulfur dioxide from the products of combustion of fossil fuel.
- 8.1.4 "Aerodynamic downwash" means the rapid descent of a plume to ground level with little dilution and dispersion due to alteration of background air flow characteristics caused by the presence of buildings or other obstacles in the vicinity of the emission point.
- 8.1.5 "Fuel burning device" means any device engineered to burn fuel for the primary purpose, as determined by the Director, of producing steam, heat or power.
- 8.1.6 "Significant impact" means an increase in the annual average or maximum short-term ambient concentration of a pollutant that would exceed any of the following:

Pollutant	Annual	Averaging Time (Hours)			
		24	8	3	1
SO ₂	1.0 ug/m ³	5 ug/m ³		25 ug/m ³	
TSP	1.0 ug/m ³	5 ug/m ³			
NO ₂	1.0 ug/m ³				
CO			0.5 mg/m ³		2 mg/m ³

8.1.7 "Effective stack height" means the sum of the physical stack height and the plume rise as calculated according to the current practice of the Department of Environmental Management as described in the Rhode Island Guideline for Air Quality Modeling.

8.1.8 "Good engineering practice" means with respect to stack heights, the height necessary to insure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of aerodynamic downwash, eddies and wakes which may be created by the source itself, nearby structures or nearby terrain obstacles as calculated according to the Rhode Island Guideline for Air Quality Modeling.

8.1.9 "Permanent energy conservation measures" means any combination of permanent measures designed to increase the available heat, power, or steam output for a given fuel input or to increase the amount of heat or steam required to produce an equivalent amount of product or heat an equivalent amount of space.

8.2 General Limitations

Unless the Director declares in writing after a hearing that a shortage of low sulfur fuel exists, no person shall store for sale, offer for sale, sell or deliver for use in Rhode Island and no person shall use or store high sulfur fuel except as provided in Section 8.3.

8.3 Exceptions

8.3.1 Limitations with Stack Gas Cleaning Process

The Director may approve the use of high sulfur fuel when combined with an approved stack gas cleaning process, provided the sulfur compound emissions (expressed as sulfur dioxide) from the stack do not exceed 1.1 pounds per million Btu actual heat input, and the person using such process gives evidence satisfactory to the Director that the emissions do not exceed the requirements of this subsection.

8.3.2 Emission Bubbling

The provisions of Section 8.2 shall not apply to fuels included in an emissions bubble. In an emissions bubble, the owner or operator of a source with more than one fuel burning device, each of which is subject to specific emission requirements under the applicable regulations, may propose to meet the total emission control requirements of the applicable regulations, for a given pollutant, through a different mix of control technology than that mandated by existing regulations. Sulfur compound emissions (expressed as sulfur dioxide) from such a bubble shall not exceed 1.1 pounds per million Btu actual heat input and the sulfur content of any fuel used within the bubble shall not contain over 1.21 pounds of sulfur per million Btu heat release potential. Particulate emissions from the bubble shall not exceed 0.10 pounds per million Btu actual heat input and particulate emissions from any single fuel burning device within the bubble shall not exceed 0.15 pounds per million Btu actual heat input.

8.3.2.1 It is the responsibility of the owner or operator of the source to develop a specific emission bubble. Application for approval of an emission bubble shall be made to the Department and must include the following:

- (a) Certification that all fuel burning devices to be included in the emissions bubble are at the same plant location and are under the control of, or operated by, the same person; and
- (b) Identification of each fuel burning device and stack to be included in the emissions bubble, including the types of fuel to be burned in each unit, the maximum sulfur content of each fuel, the maximum rated gross heat input for each unit, the annual fuel use and operating hours per year for each unit; and for each stack, the physical stack height; the exit velocity of the stack gas, the inside diameter of the stack exit and the exit stack gas temperature; and
- (c) Sufficient information to evaluate aerodynamic downwash effects in accordance with all applicable federal requirements; and
- (d) Air quality modeling meeting the requirements of the Rhode Island Guideline for Air Quality Modeling, including aerodynamic downwashing modeling, to demonstrate that the bubble will not cause a violation of any National Ambient Air Quality Standard, or applicable PSD increment, and will not have a significant impact on any nonattainment area or Class I PSD area. If there is no increase in actual emissions, the air quality modeling requirement may be waived under the following conditions:
 - (1) All the fuel burning devices included in the bubble discharge through the same stack; or

- (2) Emissions from the most polluting fuel are released at an effective stack height within 10 percent of the greatest effective stack height within the bubble and all stacks included in the bubble are co-located. Co-located shall be held to mean within 100 meters of each other.

8.3.2.2 The Department shall not approve any emissions bubble without first giving public notice and affording all interested persons opportunity to comment on the emissions bubble. Additionally, the Department shall notify the public after each final approval.

8.3.2.3 An emissions bubble shall not allow a source to supersede any of the following applicable conditions or standards:

- (a) Conditions of any Prevention of Significant Deterioration permit; or
- (b) Conditions of any nonattainment area permit; or
- (c) Federal New Source Performance Standards; or
- (d) National Emissions Standards for Hazardous Air Pollutants.

8.3.2.4 An approved bubble shall be in effect for a period of no more than three years from the date of issuance. At the end of such three-year period, the Department shall review the bubble for compliance and may either terminate or extend approval of the bubble based on consideration of air quality, control technology innovation, and such other determinations as the Department deems appropriate.

8.3.2.5 The provisions of any bubble shall be incorporated in a permit issued in accordance with the provisions of Air Pollution Control Regulation 9.

8.3.2.6 Any bubble approved by the Department and incorporated into the State Implementation Plan prior to the effective date of this regulation may be continued at the discretion of the Department, subject to the provisions of Subsections 8.3.2.3, 8.3.2.4, and 8.3.2.5.

8.3.3 Conversion and Conservation Incentive

The Department may authorize the use of high sulfur fuel oil for a period of up to 30 months in any fuel burning device with an energy input capacity of less than 250 million Btu's per hour. The use of the high sulfur fuel oil will be contingent on the source committing to implement permanent energy conservation measures to convert to a fuel (other than a petroleum product such as coal, wood, coal-oil mixture, etc.). The savings realized from burning high sulfur fuel oil during this period shall be used to finance the

necessary modifications or installation of pollution control equipment.

8.3.3.1 Approval for burning of high sulfur fuel oil under this section may be granted provided that:

- (a) The applicant demonstrates by means of air quality modeling, including aerodynamic downwash modeling meeting the requirements of the Rhode Island Guideline for Air Quality Monitoring, that the increase in sulfur dioxide and particulate emissions resulting from the use of the high sulfur fuel oil will not cause a violation of any National Ambient Air Quality Standard or any applicable PSD increment and will not have a significant impact on any nonattainment area or Class I PSD area; and
- (b) The applicant enters into a Consent Agreement with the Department that specifies a schedule with deadlines by which time various aspects of the conversion and installation of pollution control equipment or the implementation of energy conservation measures shall be completed. In no event shall final installation of pollution control equipment and completion of the conversion or complete implementation of energy conservation measures be accomplished more than 30 months from the commencement of installation unless the Department finds good cause for a longer time. Financial difficulty will not be considered a good cause; and
- (c) The applicant agrees to submit to the Department a quarterly report stating the quantity of high sulfur fuel oil used, the cost of fuel, the cost of an equivalent quantity of low sulfur fuel oil and the hours of operation for the high sulfur fuel burning unit; and
- (d) The applicant, where practicable and deemed necessary by the Department, shall have a three-day supply of low sulfur fuel oil on hand and be prepared to convert as soon as possible after receiving notice from the Department. If the above is not practicable, then, at a minimum, the company shall have a commitment from its fuel oil supplier to supply the low sulfur fuel within a specified time; and
- (e) If the conversion does not take place or the energy conservation measures are equivalent to the difference between the cost of the high sulfur fuel oil used and the equivalent amount of low sulfur fuel oil. The applicant shall put up a bond for the amount of money estimated to be saved during the burning of high sulfur fuel oil. This money shall be forfeited if the final conversion or implementation of energy conservation measures does not take place; and

- (f) If the applicant implements permanent energy conservation measures, they must reduce oil consumption by at least 50,000 gallons/year below average consumption in the two calendar years immediately preceding the 30-month period. The applicant can continue to burn high sulfur fuel after the 30-month period if, through the use of permanent energy conservation measures, annual oil consumption has been reduced by 56 percent from the average annual consumption during the two calendar years immediately preceding the 30- month period; and
- (g) In the case of conversion, the capacity of the unit that will be converted or installed shall be at least equal to the estimated average heat input rate of high sulfur fuel oil during the 30-month period. This requirement may be waived by the Director if, in his judgment, an increase in the efficiency of the unit due to conversion would decrease the required capacity of the converted unit; and
- (h) Approval to burn high sulfur oil shall be granted for only one 30- month period per facility. Such approval may not be renewed or extended except as provided in Subsection 8.3.3.1 (f). After the 30- month period, the source must meet the sulfur dioxide and particulate emission standards which were in effect prior to the approval, except if an applicable standard is amended during the 30-month period, in which case the source may elect to meet the new standard; or except as may be allowed under Subsection 8.3.3.1 (f). Additionally, the applicant must agree to conduct stack testing of any converted unit at his expense to verify compliance with applicable standards for sulfur dioxide and particulates. The Department may, where appropriate, approve fuel testing rather than stack testing for determining compliance with sulfur dioxide emission limits; and
- (i) The sulfur content of the high sulfur fuel oil used in this section shall not exceed 1.21 pounds of sulfur per million Btu actual heat input.

8.3.3.2 An application for approval under this section shall be made to the Department and must include the following:

- (a) The required air quality modeling; and
- (b) A proposed schedule for completing conversion or for implementing conservation measures; and
- (c) Information on any proposed modifications intended to be made at the facility before it burns high sulfur oil; and

- (d) For conversions, information on the facility as it will exist after the conversion; and
- (e) For conservation applications, a listing of each conservation measure and a preliminary estimate of the fuel savings expected; and
- (f) Historical fuel usage for the facility and preliminary estimates of the quantity of high sulfur fuel oil to be consumed and the total hours burning of high sulfur fuel oil that will take place.

8.3.3.3 Any fuel burning device included in a plan under this section must have been installed and in operation prior to the effective date of this regulation.

8.3.4 Large Fuel Burning Devices Using Coal

8.3.4.1 Any fuel burning device with a rated energy input capacity of 250 million Btu's per hour or more may use high sulfur fuel provided that:

- (a) the high sulfur fuel is coal; and
- (b) the average sulfur content does not exceed 1.21 pounds per million Btu's heat release potential in any 30-day period of 2.31 pounds per million Btu's in any 24-hour period; and
- (c) the stack height, from which emissions resulting from the burning of the high sulfur fuel exit, meets or exceeds good engineering practice; and
- (d) emissions resulting from the use of the high sulfur fuel will not cause a violation of any National Ambient Air Quality Standard or any applicable PSD increment and will not have a significant impact on any nonattainment area.

8.3.4.2 It is the responsibility of the owner or operator of the facility to provide evidence, satisfactory to the Department, and meeting the requirements of the Rhode Island Guideline for Air Quality Modeling, that the above conditions are met.

8.3.4.3 If any new or amended federal law requires a reduction in the total emissions of sulfur oxides or nitrogen oxides in Rhode Island or sets a maximum limit on such emissions, then the owner or operator of a facility burning high sulfur fuel under the provisions of Subsection 8.3.4.1 must obtain emission offsets or emission reductions for the increased sulfur oxide emissions due to coal burning.

- (a) The actual amount of emission offsets or emission reductions at any time shall be the difference between the actual annual sulfur oxide emission rate and the actual annual sulfur oxide emission rate during the baseline period established by federal law; except that the amount of emission offsets or reductions

required shall be reduced to the extent that the new or amended federal law does not count the increased sulfur oxide emissions due to coal burning as part of the maximum allowable emissions for sulfur oxides and nitrogen oxides in Rhode Island.

- (b) Such emission offsets or emission reductions must meet any conditions specified in federal law to be creditable against Rhode Island sulfur oxide and nitrogen oxide emissions and must be obtained within the period established by the new or amended federal law
- (c) The Director may waive any or all of the required emission offsets or emission reductions at his discretion, provided that the total emissions of sulfur oxides and nitrogen oxides in Rhode Island shall not exceed the maximum amount allowed under federal law.

8.3.5 Storage Facilities

8.3.5.1 Any person seeking to store for sale, sell or deliver, high sulfur fuel for use in Rhode Island under the provisions of Subsections 8.3.1, 8.3.2, 8.3.3 and 8.3.4 or for use outside of Rhode Island shall obtain the prior written approval of the Director.

8.3.6 Exemptions

The limitations of this regulation shall not apply to marine vessels or motor vehicles.

8.4 Determination of Compliance

8.4.1 Compliance with the applicable limitations set forth in this regulation shall be determined by procedures referenced below or deemed equivalent by the Director. Such procedures shall include but not be limited to any of the following:

- (a) Emission testing conducted by the owner or operator of the source according to the Reference Methods of Appendix A to 40 CFR 60; and
- (b) Laboratory analysis of fossil fuels by the owner or operator of the source or by the supplier. A sampling valve shall be installed in the fuel line between the feed pump and the burner by the owner or operator for sample collection. Fossil fuels must be sampled and analyzed according to ASTM methods which have the prior approval or are required by the Director.

8.4.2 Residual Fuel Oil Shipments to Marine Terminals

Each shipment of residual fuel oil received at a marine terminal shall be sampled and tested for sulfur content using methods approved by the Director. Such sampling and testing shall be performed by a qualified referee laboratory. Results of

such tests must be reported to the Director. In addition, a representative sample of each shipment of oil shall be submitted to the Rhode Island Health Laboratory or other laboratory designated by the Director, by the close of business on the next business day after the oil has been received at the terminal. The following information shall be included with each sample:

- (a) The name of the vessel delivering the oil and compartment or tank number where applicable.
- (b) The name of the inspector taking the sample and the name of the referee laboratory.
- (c) The name of the terminal where the oil was delivered and the name of the owner of the oil.
- (d) The amount of oil in the shipment.

Results of tests conducted by the Rhode Island Health Laboratory or other designated laboratory shall be reported to the owner of the oil.

8.4.3 Taking of Fossil Fuel Samples

The Director may require, under his supervision, the collection of fossil fuel samples for the purpose of determining compliance with this regulation. Sampling and analysis of fossil fuels under Subsection 8.4.2 shall not limit the collection of samples under this section.

8.4.4 Sulfur Variability in Coal

Coal burning devices with a rated energy input capacity of less than 250 million Btu's per hour shall be considered in compliance with sulfur dioxide and particulate emission limitations if the average emission rate in any 24-hour period does not exceed the applicable emission limitation.

**POLICY FOR INCREMENT CONSUMPTION FROM APPLICATION
UNDER SECTION 8.3.3 OF REGULATION 8 - 14 MARCH 1985**

As part of an application under the Conversion and Conservation Incentive Section of Regulation 8, the applicant must demonstrate "...that the increase in sulfur dioxide and particulate emissions resulting from the use of the high sulfur oil will not cause a violation of ... any applicable PSD increment..."

Air Pollution Control Regulation 9, Section 9.15, contains the rules governing increment consumption, and these requirements supersede those of any other regulations. Section 9.15.1 (c) allows for the exclusion of certain concentrations from increment consumption. One such exclusion is for "...concentrations attributable to the temporary increase in emissions of sulfur dioxide of particulate matter from stationary sources which are affected by State Implementation Plan revisions meeting the following criteria:

- (a) The duration of the State Implementation Plan revision shall not exceed thirty (30) months; and
- (b) The duration of the exclusion is not renewable; and
- (c) The emissions increase from the source would not cause or contribute to the violation of a national ambient air quality standard or impact an area where an applicable increment is known to be violated; and
- (d) At the end of the State Implementation Plan revision, the emission levels from the source shall not exceed those levels occurring before the State Implementation Plan revision was approved..."

Any approval under the Conversion and Conservation Incentive Section of Regulation 8 would satisfy all of these criteria. Therefore, in general, applications under Section 8.3.3 will no longer be required to assess increment consumption as part of the application. If, however, an applicant will have a significant impact in either Massachusetts or Connecticut, it will be required to assess increment consumption in that state.

For those applications where the impacts are in Rhode Island only, the applicant will be required to assess compliance with the applicable NAAQS, impacts on nonattainment areas, impacts on Class I PSD areas and impacts on any area where an increment is known to be violated.