



State of Utah

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## GUIDELINES

To: Permitting Branch, Compliance Sections (Major and Minor Sources)

From: Marty Gray, Permitting Branch Manager, UDAQ *MG*

Date: November 13, 2018

Subject: Fuel Oil Sulfur Content, Diesel Fuel #2, and Applicability to Federal Subparts

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### Purpose

This guideline will provide example language for use in Approval Orders where conditions limiting the sulfur content in fuel oil are needed. The intent of this guideline is to replace a previous guideline issued in October 1995, which has become outdated given the move to ultra-low sulfur diesel fuels now mandated for sale.

### Implementation

The permit writer shall include language similar to the following examples whenever a limitation on sulfur content in fuel oil is applicable. If an existing permit is being superseded, existing language should be checked and updated as needed.

- 1) For those instances where a piece of equipment is limited to using only diesel fuel (or better) as fuel – [the permit writer shall fill in the equipment as needed to match their exact permit needs]:

#### Primary condition

*The owner/operator shall only use diesel fuel (fuel oil #1, #2 or diesel fuel oil additives) in the (equipment from equipment list). All diesel burned shall meet the definition of ultra-low sulfur diesel (ULSD), and contain no more than 15 ppm sulfur. [R307-401-8(1)(a)]*

#### Secondary condition

*To demonstrate compliance with the diesel fuel requirements for any diesel fuel purchased, the owner/operator shall keep and maintain fuel purchase invoices. The fuel purchase invoices shall indicate that the diesel fuel meets the ULSD requirements, or the owner/operator shall obtain certification of sulfur content from the fuel supplier. [R307-401-8(1)(a)]*

- 2) For those instances where equipment is subject to 40 CFR 60 Subpart IIII or 40 CFR 63 Subpart ZZZZ:

Primary condition

*The owner/operator shall only use diesel fuel (fuel oil #1, #2 or diesel fuel oil additives) in the (equipment from equipment list). All diesel burned shall meet the requirements of 40 CFR 80.510(c). [40 CFR 60 Subpart IIII or 40 CFR 63 Subpart ZZZZ]*

Secondary condition

*To demonstrate compliance with the fuel oil requirements, the owner/operator shall keep and maintain fuel purchase invoices. The fuel purchase invoices shall indicate that the diesel fuel meets the ULSD requirements, or the owner/operator shall obtain certification of sulfur content from the fuel supplier. [40 CFR 60 Subpart IIII or 40 CFR 63 Subpart ZZZZ]*

- 3) The use of fuels outside the #2 fuel oil range (such as fuel oil #6) are still subject to the usual requirements of periodic testing and recordkeeping as listed in R307-203-1(1) or as deemed necessary by Title V to demonstrate compliance with 40 CFR 80.510.

**Analysis**

Administrative Rule R307-203-1(1) reads as follows:

- (1) Any coal, oil, or mixture thereof, burned in any fuel burning or process installation not covered by New Source Performance Standards for sulfur emissions shall contain no more than 1.0 pound sulfur per million gross BTU heat input for any mixture of coal nor .85 pounds sulfur per million gross BTU heat input for any oil.*

The sulfur content limitation of 0.85 lb/MMBtu applies regardless of fuel oil grade. Therefore, a source which is allowed to burn fuel oil which is heavier than fuel oil #2 – for example fuel oil #6 – would be limited to this sulfur content in the fuel oil. This limitation also applies to the burning of “waste oil” and “recycled oil” as fuels, although other restrictions regarding the specific definitions of these two fuels may further limit their components. This rule always applies, and the permit writer should include the older default language for fuel oils heavier than fuel oil #2, as well as waste oil, recycled oil, and other fuel oils not covered by this memorandum.

Fuel oil #2, also known as diesel fuel is typically sold in two variants. Labeled as “on-highway” (motor vehicle fuel) and “off-highway,” (for nonroad, locomotive and marine diesel – aka NRLM) these two variants are typically differentiated by whether they are allowed for use in vehicles approved for highway travel (such as passenger cars, haul trucks or the like). Off-highway or NRLM fuel is used in farm vehicles and for fuel oil in many industrial settings.

ULSD is a labeling term found in various paragraphs of 40 CFR 80 Subpart I [Motor Vehicle Diesel Fuel; Nonroad, Locomotive, and Marine Diesel Fuel (NRLM); and ECA Marine Fuel]. The ULSD label is applied to any diesel fuel meeting the 15 ppm fuel sulfur requirements of 40 CFR 80.510 or 40 CFR 80.520. Motor vehicle diesel and NRLM diesel, as well as all diesel fuel additives are specifically listed in 40 CFR 80.501(a) as being subject to the provisions of 40 CFR 80 Subpart I. While the fuel types themselves are not specifically defined within the subpart, these fuels are defined by context, in certain cases by cross reference from another rule such as 40 CFR 60 Subpart IIII or 40 CFR 63 Subpart ZZZZ. Various ASTM testing methods for petroleum products are also incorporated by reference, which further define these fuel types by context.

The current rules for refiners are found in 40 CFR 80.510(c) for NRLM diesel and 40 CFR 80.520(a) for motor vehicle diesel. As far as fuel sulfur content, cetane index and aromatic content, the two standards are the same:

15 ppm sulfur maximum,  
minimum cetane index of 40 and  
maximum aromatic content of 35 volume percent.

These two rules require all diesel fuel to meet both the ULSD standard as well as the cetane and aromatic standards.

By way of example, the use of the NRLM diesel fuel standards are specifically listed in 40 CFR 60.4207 [Subpart IIII – the compression ignition internal combustion engine NSPS] and in 40 CFR 63.6604 [Subpart ZZZZ – the stationary reciprocating internal combustion engine MACT] which both incorporate 40 CFR 80.510(c) by reference.

Fuel oils such as fuel oil #1 (kerosene) or other similar products (such as diesel fuel additives and distillate fuels blended with diesel for on-road use) are subject to the same sulfur content restrictions [see 40 CFR 80.501(a)]. Therefore, all #2 fuel oil which can be purchased and used as fuel within the state must meet the above standards by definition. These standards override the limitations found in R307-203-1(1) for all diesel fuel and should therefore be used by the permit writer.

Utah administrative rule R307-203-1(1) continues with additional requirements on monitoring and recordkeeping:

- (a) In the case of fuel oil, it shall be sufficient to record the following specifications for each purchase of fuel oil from the vendor: weight percent sulfur, gross heating value (btu per unit volume), and density. These parameters shall be ascertained in accordance with the methods of the American Society for Testing and Materials.*
- (d) Records of fuel sulfur content shall be kept for all periods when the plant is in operation and shall be made available to the director upon request, and shall include a period of two years ending with the date of the request.*

Given that the purchase of fuel oil #2 automatically meets the requirements of R307-203-1(1) as listed above, performing the testing listed in (1)(a) and then maintaining the records of that testing as listed in (1)(d) is unnecessary. It makes sense to reduce the paperwork and regulatory burden on the source when specifying that the source is limited to use of “fuel oil #2 or better as fuel.” Likewise, purchase of this fuel also meets the requirements of 40 CFR 80.510(c) for the same reason. Therefore, inclusion of language similar to the language at the beginning of this guidance document is suggested when one of the instances is applicable.

**Authority**

R307-203-1(1), 40 CFR 60 Subpart IIII, 40 CFR 63 Subpart ZZZZ, 40 CFR 80 Subpart I

**This Guideline shall be audited every five years by the Major Source Section Manager to determine the current status and relevance of the information.**