

40 CFR PART 60 SUBPART JA

September 13, 2012, the EPA announced the final subpart Ja standards that include flare provisions.

The objective of subpart Ja flare provisions:

To limit or eliminate vent gas flow to flares via flare gas recovery systems, flare management programs, and root cause analysis and corrective action programs.

To **minimize flare SO₂ emissions by limiting H₂S and Total Reduced Sulfur (TRS) content** in flare gas.

The standard now **classifies a flare as a separate affected facility**, rather than being included in the category of "fuel gas combustion devices".

Define "flare" as:

"Flare means a combustion device that uses an uncontrolled volume of air to burn gases. The flare includes the foundation, flare tip, structural support, burner, igniter, flare controls, including air injection or steam injection systems, flame arrestors and the flare gas header system. In the case of an interconnected flare gas header system, the flare includes each individual flare serviced by the interconnected flare gas header system and the interconnected flare gas header system."

Flares that are affected by the standard are those built, modified or reconstructed **after June 24, 2008**.

The limited list of modification exemptions will likely result in **nearly all refinery flares being affected by the standard.**

Compliance to the standard must have been in place by **November 13, 2015**.

Flares modified or reconstructed after November 2015 **must** meet the H₂S limit at start-up, and all other requirements within one year.

Hydrogen sulfide (**H₂S**) concentration of flare gas is limited to 162 ppmv determined hourly on a three-hour rolling average basis.

The standard requires that Total Reduced Sulfur (TRS) content of the flare gas is continuously monitored.

A Root Cause Analysis (RCA) & Corrective Action (CA) is required if a flare emits more than 500 pounds of SO₂ in any 24-hour period.

45 The RCA and CA must be completed within 45 days of the triggering event.

Required Flare Gas Measurements and Ranges:

H₂S @ 0-300 ppmv
 TRS @ 0-5000 ppmv as SO₂ (**minimum**)
 BTU @ 0-1000 (**not part of subpart Ja but included in 40CFR60**)

Refiners may choose to only measure TRS and report this as the H₂S value as well. This will result in an over-reporting of H₂S.

Refiners must determine how to satisfy the regulation's requirements with commercially available process analyzer technologies.

Traditional gas chromatography (GC) is well suited for the H₂S and BTU measurements and demonstrating compliance to the subpart Ja is clearly understood.

The TRS measurement can be accomplished with GC or a dedicated sulfur analyzer using ultraviolet fluorescence technology. However, both may require a sample dilution scheme to meet the required minimum range stated in subpart Ja (0-5000 ppmv) and actual ranges found in the field (TRS concentration may be as high as 50%). Demonstrating compliance while using a dilution scheme is not clear.

Yokogawa can provide a cost-effective solution for refiners to clearly achieve rigorous compliance.

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