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Overview of the Steam Electric Power Generator Effluent Limitation Guidelines and Standards

Overview

The Clean Water Act (CWA) directs the Environmental Protection Agency (EPA) to regulate the discharge of pollutants into waters of the United States. Such discharges are prohibited without a permit. Thus, industrial dischargers and others must obtain permits from states or EPA that set limits on pollutants in their effluent. To guide the limits set in permits for industrial dischargers, EPA issues Effluent Limitation Guidelines and standards (ELGs)—technology-based standards—for categories of industrial dischargers. Since 1972, EPA has promulgated ELGs for 59 industrial categories, including the steam electric power industry—which covers power plants that use nuclear or fossil fuels to generate steam used to produce electricity.

In November 2015, EPA published revised ELGs (80 *Federal Register* 67838) for the steam electric power industry to replace rules issued in 1982. EPA determined that new ELGs were necessary to reflect changes in the industry. For example, technology improvements since 1982, particularly at coal-fired power plants, reduced hazardous air emissions but increased discharges of other pollutants, primarily heavy metals, to surface waters. EPA promulgated the 2015 rule to address those water quality impacts by establishing new or additional requirements for six wastestreams from steam electric power plants. In September 2017, EPA finalized a rule postponing compliance deadlines for two wastestreams to allow the agency time to revise the limits set in the 2015 rule. In November 2019, EPA proposed revisions to the 2015 final rule for those two wastestreams. On August 31, 2020, EPA finalized the rule, the “Steam Electric Reconsideration Rule” (see “Current Status”).

Background and the 2015 Rule

ELGs are national regulations for industrial wastewater discharges that set technology-based numeric limits for specific pollutants. For point sources that introduce pollutants directly into U.S. waters—“direct dischargers”—states or EPA incorporate the limits set in ELGs into National Pollutant Discharge Elimination System permits. For sources that discharge to publicly owned treatment works (POTWs)—“indirect dischargers”—EPA promulgates pretreatment standards that are enforced by POTWs and federal and state authorities.

The CWA requires industrial dischargers to achieve specified levels of pollution control based on whether a discharger is direct or indirect, a new or existing source, and the category of pollutant discharged. The levels of control pertinent to the 2015 rule are as follows:

- *Best Practicable Control Technology Currently Available (BPT)* is based on the average of the best

existing performance of plants within the industry or subcategory. In selecting BPT, EPA considers factors including the cost of applying the control technology in relation to the effluent reduction benefits, equipment and facility age, and processes employed.

- *Best Available Technology Economically Achievable (BAT)* generally represents the best existing performance in the industrial category or subcategory. Factors considered include the cost of achieving effluent reductions and processes employed.
- *New Source Performance Standards (NSPS)* reflect the reductions achievable based on the best available demonstrated control technology. EPA is directed to take into consideration the cost of achieving the effluent reduction and any non-water-quality environmental impacts and energy requirements.
- *Pretreatment Standards for Existing Sources (PSES)* are designed to control the discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of POTWs. PSES standards are analogous to BAT for direct dischargers.
- *Pretreatment Standards for New Sources (PSNS)* are designed for the same purpose as PSES. EPA considers the same factors in promulgating PSNS as it does in promulgating NSPS.

CWA Section 304(m) directs EPA to annually review existing ELGs to determine whether revisions are appropriate. During its 2005 review, EPA identified the steam electric power industry ELGs for possible revision based in part on data showing that the industry ranked high in discharges of toxic and nonconventional pollutants. EPA initiated a study, completed in 2009, which found that the 1982 regulations did not adequately address the pollutants being discharged and had not kept pace with changes in the industry over the prior several decades. The study focused primarily on coal ash handling operations and flue gas desulfurization (FGD) systems (i.e., scrubbers) used at coal-fired power plants to control air pollution. While scrubbers reduce pollutant emissions into the air, some create a significant liquid wastestream. The study further noted that pollutants in coal combustion wastewater at some plants have potential to degrade water quality when discharged or leached into groundwater and surface waters.

In 2009, environmental groups sued EPA to compel the agency to commit to a schedule for issuing revised ELGs for this industry. Pursuant to a consent decree, EPA promulgated a final rule in 2015. The 2015 rule includes BAT and PSES requirements for existing sources and NSPS

and PSNS requirements for new sources for six wastestreams (Table 1). It also maintains BPT requirements from the 1982 regulations for total suspended solids (TSS) and oil and grease.

Table 1. Pollutant Discharge Limitations and Technology Basis for 2015 Steam Electric Power Generator ELGs

Wastestreams	Existing Sources (BAT and PSES)	New Sources (NSPS and PSNS)
Flue Gas Desulfurization (FGD) Wastewater	Numeric limitations on arsenic, mercury, selenium, and nitrate/nitrite as nitrogen	Numeric limitations on arsenic, mercury, selenium, and total dissolved solids (TDS)
	Chemical precipitation + biological treatment	Evaporation control technology
Fly Ash Transport Water	Zero discharge of pollutants	Zero discharge of pollutants
	Dry handling control technology	Dry handling control technology
Bottom Ash (BA) Transport Water	Zero discharge of pollutants	Zero discharge of pollutants
	Dry handling or closed loop control technology	Dry handling or closed loop control technology
Flue Gas Mercury Control Wastewater	Zero discharge of pollutants	Zero discharge of pollutants
	Dry handling control technology	Dry handling control technology
Gasification Wastewater	Numeric limitations on arsenic, mercury, selenium, and TDS	Numeric limitations on arsenic, mercury, selenium, and TDS
	Evaporation control technology	Evaporation control technology
Combustion Residual Leachate	Equal to BPT limitation for TSS	Numeric limitations on arsenic and mercury
	Impoundment control technology	Chemical precipitation control technology

Source: EPA, 80 Federal Register 67838-67903, November 3, 2015.

Current Status

Various stakeholders filed judicial petitions for review of the 2015 rule, which were consolidated in the U.S. Court of Appeals for the Fifth Circuit (*Southwestern Elec. Power Co. v. EPA*, 5th Cir., 15-60821, filed November 20, 2015). Industry groups and utilities argued, among other things, that EPA withheld essential data, methodologies, and analyses from the public record as confidential business information. Other groups argued that EPA acted arbitrarily by not requiring more stringent controls on discharges of bromide. In March and April 2017, EPA received petitions

for administrative reconsideration of the rule. According to EPA, the petitions raised “wide-ranging and sweeping objections to the rule” and included new data the agency wanted to review. In April 2017, the Administrator announced his decision to reconsider the rule. The Fifth Circuit granted EPA’s request to sever and hold portions of the case in abeyance while EPA reconsidered the rule.

In September 2017, EPA published a final rule postponing the earliest compliance dates for BAT and PSES requirements for two wastestreams—FGD wastewater and BA transport water—for a two-year period. EPA stated its intention to conduct a new rulemaking regarding the appropriate technology bases and limitations for those requirements “in light of new information not contained in the record for the 2015 rule and the inherent discretion the agency has to reconsider past policy decisions consistent with the CWA and other applicable law.” EPA also stated that it did not intend to revise requirements for the other wastestreams covered by the 2015 rule and, as such, did not change their associated compliance dates.

In November 2019, EPA proposed a rule to revise the ELGs applicable to FGD wastewater and BA transport water, which it finalized on August 31, 2020. The 2020 rule changes the technology basis for treatment of the two wastestreams. EPA concluded that more affordable technologies capable of removing similar pollutant amounts became available since 2015. The 2020 rule establishes new subcategories and varying requirements for high flow facilities, low utilization units, and units retiring by 2028.

FGD wastewater: FGD wastewater dischargers that do not fall into any of the new subcategories have numeric limitations under the 2020 rule that are less stringent for arsenic and selenium and more stringent for mercury and nitrate/nitrite compared to the 2015 rule. Numeric limitations for high flow facilities and low utilization boilers are removed for selenium or nitrate/nitrite and remain unchanged from the 2015 rule for arsenic and mercury. Boilers retiring by 2028 are required only to meet TSS limitations. The 2020 rule retains the voluntary incentives program for direct FGD wastewater dischargers established in the 2015 rule, which gives plants more time to implement new BAT requirements if they adopt additional process changes and controls that achieve more stringent limitations. The 2020 rule’s limitations are less stringent for arsenic, selenium, and TDS and more stringent for mercury compared to the 2015 rule. The 2020 rule adds limitations for bromide and nitrate/nitrite. It also extends the timeline for the incentives program by five years.

BA transport water: While the 2015 rule established a zero discharge standard for BA transport water, the 2020 rule would establish a not-to-exceed 10 percent volumetric purge limitation. For low utilization boilers, the 2020 rule requires facilities to implement best management practice plans and meet TSS limitations. Boilers retiring by 2028 are be required only to meet TSS limitations.

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