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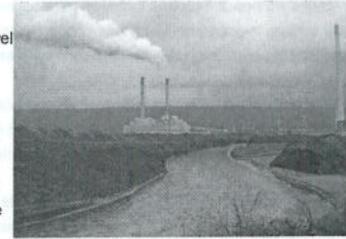


Water: Industry Effluent Guidelines

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Steam Electric Power Generating

Based on the findings from EPA's multi-year study of the Steam Electric Power Generating industry, EPA plans to review the current effluent guidelines for this industry. EPA's decision to review the current effluent guidelines is largely driven by the high level of toxic-weighted pollutant discharges from coal fired power plants and the expectation that these discharges will increase significantly in the next few years as new air pollution controls are installed. Over the course of the study, EPA identified technologies that can significantly reduce these pollutant discharges.



EPA's decision to proceed with a rulemaking was announced on September 15, 2009. EPA reviewed wastewater discharges from power plants and the treatment technologies available to reduce pollutant discharges, which demonstrated the need to update the current effluent guidelines ([40 CFR 423](#)). The current regulations, which were last updated in 1982, do not adequately address the pollutants being discharged and have not kept pace with changes that have occurred in the electric power industry over the last three decades. Steam electric power plants are responsible for a significant amount of the toxic pollutant loadings discharged to surface waters by point sources, and coal ash ponds and flue gas desulfurization (FGD) systems are the source of much of these pollutants. Further information regarding discharges from power plants can be found in the report for EPA's study, [Steam Electric Power Generating Point Source Category: Final Detailed Study Report \(PDF\)](#) (233 pp, 7.5MB; EPA 821-R-09-008).

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What is Steam Electric Power Generating?

Steam electric power generating is the process of generating electricity, in this case using nuclear or fossil fuels, such as coal, oil and natural gas, to heat water to produce steam that turns a turbine to produce electricity.

Facilities Covered

The Steam Electric Power Generating effluent guidelines apply to a subset of the electric power industry, namely those plants "primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium." ([40 CFR Part 423.10](#))

Detailed Study

Information about data collected and findings of the EPA study of the Steam Electric Power Generating industry can be found in the final study report, "[Steam Electric Power Generating Point Source Category: Final Detailed Study Report \(PDF\)](#)" (233 pp, 7.5 MB; EPA 821-R-09-008).

- Includes data on the characteristics of wastewater from coal fired power plants;
- Identifies the wastewater treatment technologies reviewed;
- Presents an overview of the industry profile and predicted future trends in the use of air pollution controls; and
- Describes environmental impacts that have been linked to coal combustion wastewater.

Laboratory Analysis of Flue Gas Desulfurization (FGD) Wastewater

Wastewater from flue gas desulfurization (FGD) systems can contain constituents that may interfere with certain laboratory analyses, due to high concentrations of total dissolved solids (TDS) or the presence of elements known to cause matrix interferences. EPA has observed that, during inductively coupled plasma – mass spectrometry (ICP-MS) analysis of FGD wastewater, certain elements commonly present in the wastewater may cause polyatomic interferences that bias the detection and/or quantitation of certain elements of interest. These potential interferences may become significant when measuring trace elements, such as arsenic and selenium, at concentrations in the low parts-per-billion range.

As part of a recent sampling effort for the steam electric power generating effluent guidelines rulemaking, EPA developed a standard operating procedure (SOP) that was used in conjunction with EPA Method 200.8 to conduct ICP-MS analyses of FGD wastewater. The SOP describes critical technical and quality assurance procedures that were implemented to mitigate anticipated interferences and generate reliable data for FGD wastewater. EPA regulations at 40 CFR 136.6 already allow the analytical community flexibility to modify approved methods to lower the costs of measurements, overcome matrix interferences, or otherwise improve the analysis. The draft SOP developed for FGD wastewater takes a proactive approach toward looking for and taking steps to mitigate matrix interferences, including using specialized interference check solutions (i.e., a synthetic FGD wastewater matrix). EPA's draft SOP is being made available to laboratories contemplating ICP-MS analysis of FGD wastewater, either for adoption as currently written or to serve as a framework for developing their own laboratory-specific SOPs.

- [Standard Operating Procedure: Inductively Coupled Plasma/Mass Spectrometry for Trace Element Analysis in Flue Gas Desulfurization Wastewaters](#) (30 pp, 174K)

Questionnaire for the Steam Electric Power Generating Effluent Guidelines

EPA identified approximately 1,200 fossil- and nuclear-fueled steam electric power plants that are potentially within scope of the data collection objectives. EPA distributed the questionnaire to a statistically-sampled subset of these facilities, sending it to 733 facilities. The questionnaire consists of nine sections which address specific processes, specific data needs, or types of power plants.

The questionnaire collects general plant information and selected technical information about the plant processes and the electric generating units. The requested information includes economic data and technical information about flue gas desulfurization (FGD) wastewater, ash handling, cleaning of metal process equipment, wastewater treatment, and surface impoundment and landfill operations. The questionnaire also required certain power plants to collect and analyze samples of leachate from surface impoundments and landfills containing coal combustion residues.

The questionnaire was divided in four different categories of respondents. These categories include coal- and petroleum coke-fired power plants included in the statistical subset, coal- and petroleum coke-fired power plants not included in the statistical subset, oil-fired and combination power plants, and gas-fired and nuclear power plants. EPA distributed four different versions of questionnaire, corresponding to the categories stated above.

The coal- and petroleum coke-fired power plants included in the statistical subset received Version 1 of the questionnaire which includes Parts A through I. Version 2 of the questionnaire includes Parts A through D, H, and I and was distributed to the coal- and petroleum coke-fired power plants not included in the statistical subset. Oil-fired and combination power plants received Version 3 which includes Parts A through E, H, and I of the questionnaire. Gas-fired and nuclear power plants received Version 4 which consists of Parts A, E, H, and I of the questionnaire.

For a list of facilities selected that received the questionnaire, go to the following link: [Steam Electric Questionnaire Mailing List \(PDF\)](#) (23 pp, 291K)

Questionnaire Distributed to Respondents

- [Questionnaire Instructions \(PDF\)](#) (20 pp, 131K)
- [Part A – Steam Electric Power Plant Operations \(PDF\)](#) (72 pp, 425K)
- [Part B – Flue Gas Desulfurization \(FGD\) Systems \(PDF\)](#) (39 pp, 248K)
- [Part C – Ash Handling \(PDF\)](#) (71 pp, 389K)
- [Part D – Pond/Impoundment Systems and Other Wastewater Treatment Operations \(PDF\)](#) (56 pp, 364K)
- [Part E – Wastes from Cleaning Metal Process Equipment \(PDF\)](#) (15 pp, 132K)
- [Part F – Management Practices for Pond/Impoundments and Landfills \(PDF\)](#) (51 pp, 247K)
- [Part G – Leachate Sampling Data for Ponds/Impoundments and Landfills \(PDF\)](#) (18 pp, 180K)
- [Part H – Nuclear Power Generation \(PDF\)](#) (22 pp, 161K)
- [Part I – Economic and Financial Data \(PDF\)](#) (27 pp, 1.2MB)

Rulemaking Schedule

EPA plans to propose a rulemaking for the steam electric power generating industry in July 2012 and take final action by January 2014.

How to Get Additional Information/Contacts

For technical information regarding previous rulemaking for the Steam Electric Power Generating effluent guidelines, please see the following documents:

- [Development Document for Effluent Guidelines and New Source Performance Standards for the Steam Electric Power Generating Point Source Category \(1974\) \(PDF\)](#) (866 pp, 37MB)
- [Supplement for Pre-treatment to the Development Document for the Steam Electric Power Generating Point Source Category \(1976\) \(PDF\)](#) (276 pp, 7.3MB)
- [Development Document for Final Effluent Guidelines, New Source Performance Standards and Pretreatment Standards for the Steam Electric Power Generating Point Source Category \(1982\) \(PDF\)](#) (664 pp, 22MB)

Documents related to the current rulemaking can be found at EPA's on-line docket website at <http://www.regulations.gov>. The docket ID for the steam electric power generating effluent limitations guidelines rulemaking is EPA-HQ-OW-2009-0819.

For additional information regarding Steam Electric Power Generating effluent guidelines, please see [Steam Electric contacts](#).