



Representing the Interests of America's Industrial Energy Users since 1978

Comments of the Council of Industrial Boiler Owners (CIBO) on
Effluent Limitations Guidelines and Standards for the Steam Electric Power
Generating Point Source Category
Proposed Rule; 78 Fed. Reg. 34432 (June 7, 2013)

The Council of Industrial Boiler Owners (CIBO) appreciates the opportunity to comment on EPA's proposed revisions to the Effluent Limitations Guidelines (ELGs) and standards.

CIBO is a broad-based association of industrial boiler owners, architect-engineers, related equipment manufacturers, and University affiliates with members representing 20 major industrial sectors. CIBO members have facilities in every region of the country and a representative distribution of almost every type of boiler and fuel combination currently in operation. CIBO was formed in 1978 to promote the exchange of information within the industry and between industry and government relating to energy and environmental equipment, technology, operations, policies, law and regulations affecting industrial boilers. Since its formation, CIBO has been active in the development of technically sound, reasonable, cost-effective energy and environmental regulations for industrial boilers. CIBO supports regulatory programs that provide industry with enough flexibility to modernize -- effectively and without penalty - the nation's aging energy infrastructure, as modernization is the key to cost-effective environmental protection.

CIBO members have a direct interest in the proposed ELGs and standards. Some CIBO members are directly regulated by the proposed ELGs and standards. Some CIBO members are affected due to the proposed regulatory provisions regarding Coal Combustion Residuals (CCR) management and standards that will affect CCR management at steam electric generating plants, and that may affect EPA regulation of CCR management at non-steam electric generating plants.

Most or all CIBO members are affected based on the premise and precedential effect of the rule. A basic premise of EPA's proposed changes is that new technologies for power generation (e.g., coal gasification) and increased usage of emissions controls to meet Clean Air Act requirements

may contribute to higher concentrations of pollutants in wastewater and the potential of new wastewater streams. EPA is interpreting provisions of the Clean Water Act that could now or in future rulemakings, be found to be equally to applicable fossil-fuel fired ICI boilers. These boilers share some similarities with steam electric plants in operational aspects and emissions control systems, and share the same concern for environmental impacts of emissions from boilers generally. EPA's analysis and conclusions in key provisions in the proposed rule could affect EPA's decision making for source categories beyond the category covered by this ELG.

Finally, CIBO members will be directly affected by the rule – as will other purchasers of steam electric power – because the rule will increase the cost of power.

I. Overview of Rule and CIBO Concerns

EPA proposes revised ELGs and standards under the Clean Water Act for the steam electric generating unit (EGU) point source category. EPA is considering various options and four preferred alternatives. The proposal includes: 1) ELGS; 2) BMPs for surface impoundments; and 3) voluntary incentives for dewatering/closing surface impoundments and zero discharge of process wastewater (except cooling water discharge).

CIBO members are concerned about multiple aspects of the proposed rule, as explained below. One chief concern is the lack of clarity regarding the rule's applicability. In addition, CIBO is concerned that the proposal creates unreasonable expectations for treatment and control options for wastewaters associated with steam electric generating units. The proposed ELGs are extensive and the preamble is voluminous concerning options, best available technology (BAT), best practicable technology (BPT), underlying support for proposed revisions, and other elements of the rules. The record is very deficient, however, in establishing scientific and technical bases for the achievability of the standards.

EPA's rationales for establishing ELG and associated BAT are used by state regulators to establish state-issued pollution discharge elimination systems (NPDES) discharge requirements for industrial facilities that have combustion units to generate steam and power for facilities but do not sell electricity. States must base their NPDES permits on sound scientific and engineering data about control technologies, sampling and analysis techniques and environmental and health impacts of regulated streams. This proposed rule will mislead states, insofar as the rule draws conclusions without adequate scientific or technical support.

II. Applicability and exclusions

EPA intends the rule to apply only to steam electric generating units whose primary business is the sale of electricity. 78 FR 34533; 78 FR 34446. The preamble explains the intended scope of the rule's applicability and states that the rule excludes manufacturing facilities with power

plants that generate power for use onsite. 78 FR 34446. However, the regulatory text does not fully implement the preamble discussion. Neither the applicability nor the exclusion is succinctly and comprehensively addressed in the preamble.

In addition to the revisions suggested below, CIBO further recommends that during the ongoing rulemaking process – before publishing a final rule – EPA make proposed revisions to the applicability provisions available for additional comment. These provisions are so fundamental to the rule that EPA and regulated sources would benefit from another notice and comment opportunity, if only on these provisions.

Clarify the applicability provision. The applicability provision should clearly state that the rule does not apply to commercial or manufacturing or other facilities with power plants that do not generate electricity for sale as their primary business.

Proposed § 423.10 states that the rule applies to:

discharges resulting from the operation of a generating unit by an establishment whose generation of electricity is the predominant source of revenue or principal reason for operation, and which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas), fuel derived from fossil fuel (e.g., petroleum coke, synthesis gas), or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium. This part applies to discharges associated with both the combustion turbine and steam turbine portions of a combined cycle generating unit.

78 FR 34533.

This text could be misinterpreted to apply to, for example, with a physical plant interpreted as being an “establishment” whose “principal reason for operation” is to generate steam, heat, or power, but for use at a manufacturing site, university campus, hospital campus, commercial building, or other site(s) for which the powerhouse is a part of the physical facilities. Many CIBO members operate boilers to generate electricity, heat, or steam for *onsite* use, or generate steam for sale or use in CHP applications with host facilities. However, these businesses do not involve the sale of electricity as their principal reason for operation and their physical plants are typically on or near the site of their facilities that are the core of their business or function.

One possible solution is to define “establishment” to mean the entire facility or plant or company, not only the power plant. If an entire manufacturing facility, for example, is the establishment, the “predominant source of revenue” of the entire manufacturing site would not be power generation. Likewise, the “principal reason for operation” of the entire manufacturing facility is not to generate electricity. The term “establishment” is not now defined in the existing

or proposed Section 423, or Section 401 General Provisions, so there would be no need to amend existing text to accomplish this change.

The rule should also clearly state that proposed rule is not applicable to coal mine sites where CCRs have been or are being used for mineland reclamation. Nothing in the rule or record indicates that EPA intends this rule to cover CCR management for mineland reclamation, nor does the record include any data or analysis that would support the application of this rule to those activities. This rule references the pending CCR rule proposed in 2010 but not finalized. The pending CCR rule clearly states that it does not address the beneficial use of CCR at mine sites or in mines. Therefore, to dispel any concern that this proposed ELG rule could apply to mineland reclamation use of CCRs, the applicability provision should state clearly that it does not.

A related concern is how EPA and States may use the economic analysis supporting these proposed ELGs for CCRs. The final rule should make clear that the economic analysis supports this proposed ELG rule only and should not be used by permit writers in the future for CCRs related to non-EGUs.

Provide the exclusion in regulatory text. The preamble explains that the proposed guidelines do not apply to industries that generate power for use in manufacturing. 77 FR 34446. However, the exclusion of those sources does not appear in the applicability provision at Proposed § 423.10 or in any other regulatory text. Neither the preamble nor the regulatory text expressly excludes another industrial source that could be inadvertently caught up in the rule: university facilities that generate electricity for onsite campus use. Refinements in the regulation (not only the preamble) are needed to ensure states do not incorrectly apply this rule to sources that are not in the steam-electric source category.

So that there be no possible confusion as to what sources are covered by this rule, CIBO suggests that the exemption be made a part of the regulation itself, not only the preamble, and that the exemption very clearly relate to the wide range of facility operations that are not part of the steam electric point source category. Further any economic analysis is establishing ELGs for CCRs. The final rule should make clear that the economic analysis supports this proposed ELG rule only and should not be used by permit writers in the future for CCR related to non-EGUs.

III. Issues of Concern for All Options

EPA has proposed a number of alternatives for regulation and control of the wastewaters from steam electric generating units. These alternatives have a number of items in common including BAT based limits, BPT based limits, selection of pollutants to control, and identification of seven different streams to have new limits. Our lack of comment on any specific area does not mean we agree with that proposed option or control technology.

A. Wastestreams

EPA is proposing to remove FGD wastewater, FGMC wastewater, gasification wastewater, and leachate from the definition of low-volume wastes. As a result, EPA is making a structural adjustment to the text of the regulation at 40 CFR 423 to add paragraphs that list these four wastestreams by name, along with their applicable effluent limitations.

EPA is proposing to revise or establish BAT, BADCT (NSPS), PSES, and PSNS that may apply to discharges of seven wastestreams:

1. flue gas desulfurization,
2. fly ash,
3. bottom ash,
4. combustion residual leachate,
5. flue gas mercury control,
6. nonchemical metal cleaning wastes, and
7. gasification of fuels such as coal and petroleum coke

These changes will have substantial impact on utility plant operations and raise major concerns for CIBO members.

Removing low-volume designations and designating new wastestreams. Removing select wastestreams from the low-volume designation will significantly increase the cost of wastewater treatment. It also will greatly increase the complexity of wastewater treatment and management and may result in greater opportunity for upset conditions and inefficient treatment. The proposed rule prevents comingling of these select streams. The management of these flows could become very expensive in terms of equipment retrofits and impoundment storage capacity as well as managing biological treatment systems for selenium and having the system function properly.

Flue Gas Desulfurization blowdown, bottom ash transport waters, and landfill leachate are the proposed new wastestream designations. By designating these streams for specific management and treatment for regulatory purposes, the segregating aspects of the regulation encumber the facilities' efforts to develop re-use strategies, cost effective treatment systems, and cost effective ZLD systems will be discouraged.

Specifically, designating these streams in this way makes it more difficult to develop and operate engineering systems for efficient wastewater treatment systems and ZLD systems. It is conceivable that some plants would need to build multiple wastewater treatment plants to manage the waste streams because they must be treated before they can be comingled prior to re-use. The required levels of treatment to re-use are often more stringent than what is being

considered here for BAT. EPA has not justified from an engineering or environmental perspective designating these streams for separate treatment and management. The stated purpose is to prevent dilution in re-use and with no true reduction through treatment. We anticipate that fewer companies will consider re-use because they will need to build multiple treatment plants just to meet the BAT and other regulatory limits and treat each stream to the appropriate limit prior to comingling.

The rule proposes a concept of no-comingling of select waters produced by a steam electric generating unit and CCR management. This will impose significant costs for facilities to redesign and implement new water management systems. Piping modifications, pumps, wet wells, storage tanks, separate sampling points and other modifications to appurtenances, and potential changes to plant balance of water will incur costs. New and separate treatment systems for separated waste streams will also result in significant expenditures. These changes will increase the cost of electricity to CIBO members and other power purchasers.

New Discharge Limits. Revised BAT, BADCT (NSPS), PSES, and PSNS for the seven listed streams provide a treatment challenge that EPA has underestimated. The proposed limits and chosen BAT, etc., for some streams are not sustainable over the long term operations and variable nature of operations at a power plant combined with the recognized challenge of operating complex biological wastewater systems with highly variable wastestreams. This is complicated further because the rule prohibits the use of other wastestreams as part of the treatment process (e.g., for pH adjustment, thermal reduction). By disallowing comingling of select waste water streams, the rule significantly increases the cost of water treatment.

Six of the eight proposed options have established limits for Se, As, Hg, and nitrates for FGD wastewaters. The limits are based on combined chemical precipitation and anaerobic biological treatment system. A major concern is the identification of anaerobic biological treatment systems as BAT and BPT. Anaerobic biological treatment of FGD wastewaters is a new use of this technology for this wastestream, is not widely used, and has had limited success for all three metals identified, especially at that limit. Based on the data available, the fixed-bed anaerobic biological systems do not reliably meet the proposed levels for Se. Research on their effectiveness for removing other metals of concern is ongoing.

Because much of this technology is largely unproven for these wastewater streams, alternative limits based on more proven and commercially available technologies should be considered. Once anaerobic biological systems are proven to be reliable on complex FGD streams, only then should they be considered as appropriate control technologies.

As and Hg removal is possible with physical/chemical treatment systems and these would be appropriate control technologies to identify. However, anaerobic biological systems applied to

the power block have not been reliably demonstrated and should not be identified as available or required technologies.

Until more performance data are available for these technologies, alternative limits should be evaluated for Se. Anaerobic biological systems have not routinely met the levels proposed. There is also concern that physical/chemical systems will not be able to meet the low levels for Hg and As proposed for some of the wastestreams such as leachate and FGD blowdown.

The proposed discharge limits are tied to loadings that are based on flows for each selected wastewater stream that EPA identified and collected information about. Unfortunately, it appears the proposed regulation does not consider scenarios associated with stormwater runoff from CCR storage, coal pile run-off, or CCR management sites. The management of these flows could become very expensive in terms of property and impoundment storage capacity as well as managing biological treatment systems for selenium and having the system function properly.

Stormwater hitting the top of a landfill and running off appears to be considered leachate. It is not appropriate to consider stormwater flow as leachate because that runoff is often different from leachate and has lower metals loading than leachate.

B. Chemical Precipitation and Anaerobic Biological Treatment for Se, As, and Hg Removal

CIBO has concerns regarding the identification of anaerobic biological treatment systems as available technologies. The deployment and experience with these technologies are very limited and their ability to achieve the limits has not been demonstrated. EPA has taken testimony on the design and operational challenges of this technology and steam electric plants will document significant limitations of systems that EPA is currently studying. With the study and analysis of these systems still far from completion, the rule should not presume standards can be met by these technologies.

EPA should also re-consider its stance on co-mingling and surface impoundments. These are very critical to successful operation of some of the biological treatment systems that EPA has evaluated to establish anaerobic biological systems as BAT and BPT or Se, Hg, and As removal. Alternatively EPA could delay the identification of anaerobic biological systems as preferred treatment technology until this treatment option is better developed for treating FGD wastewaters. Companies and researchers are actively working to develop treatment systems specifically for the power industry.

Specifying anaerobic biological systems at this early stage of the development of the technology will be very costly for the power plants and this will increase the cost of electricity to CIBO

members. Further, if EPA identifies this technology now as preferred, then the strong potential exists for state agencies to impose this treatment system on non-EGUs that have coal fired power plants, with very high costs for uncertain benefits.

Finally, regarding anaerobic biological systems, EPA should not further constrain this technology to the fixed-bed system of the power plants that EPA reviewed when considering technology for Se removal from FGD wastewaters. Instead, EPA should clearly state that suspended growth anaerobic systems, or fluidized bed anaerobic systems or other variants of anaerobic biological treatment and removal for selenium wastewaters are suitable.

C. Other Metals

Many other metals and metals compounds were identified in the Preamble as being present in wastewaters generated by the different processes at power plants. Metals such as boron, cadmium, thallium, and vanadium were reported to be found during EPA's study. EPA has suggested that these metals would not be directly monitored in the regulations because the BAT/BPT for Se, As, and Hg will also remove the other metals. This broad generalization is not necessarily substantiated by the research. Vendors of anaerobic biological treatment systems are certainly not making these claims. Such broad claims by EPA can be misconstrued as factual or research-based, and can be used by regulatory agencies to justify low permit limits for those metals and possibly anaerobic biological systems as BAT for metals such as vanadium and boron. State agencies could apply this to facilities not covered 40 CFR part 423 because the proposed rule gives them a misguided perception that there is a risk and an effective means to mitigate it.

CIBO strongly suggests that EPA re-consider how it presents its ideas of how to control metals it says are present in wastewater but for which there are not specifically identified control limits or technologies. The rule suggests they can be removed by the BAT and BPT for Se, As, and Hg and that those compounds are suitable surrogates for the additional metals listed. However, the assertions need more scientific basis than EPA has provided as the basis for its rule and in the final rule EPA should not overstate the performance capabilities of technologies.

D. Compliance

Of concern to CIBO members directly regulated by this rule, EPA has identified that the sample and analysis methods for each of the parameters being regulated must be a "sufficiently sensitive analytic method". CIBO agrees with this and also points out that the sampling procedures and techniques will be critical for demonstrating compliance. Low-level Hg analysis in particular is very difficult to complete successfully. New methods are recently available for low-level As, Se and other compounds. Yet most laboratories are not certified in running the analytic methods.

These methods are not proven out in practical application for the low-levels in the permits and specifically in FGD wastewaters, coal ash wastewaters, leachate, or surface impoundment runoff.

Furthermore, it will be extremely difficult to identify and isolate compliance sampling points to the newly designated waste streams:

- FGD effluent
- FGMC effluent
- Bottom ash transport effluent
- Fly ash effluent
- Landfill leachate and surface impoundment effluents
- Gasification wastewaters
- Non-chemical metal cleaning wastewaters

Many of these streams are combined at existing facilities in such a way that it may be physically impossible to extract them and isolate them from interconnected systems. These interconnections are often integrated water re-use systems in power plants such as using non-chemical metal cleaning wash water combined with plant wash-down to be used as makeup for bottom ash water for cooling sand sluicing.

With the proposed rule having both effluent limitations and loading requirements, will result in the need not only to monitor quality, but to monitor flow volumes in order to determine compliance with loading limits.

These complex ways power plants use and reuse water have been overlooked in the proposed regulations and as a result will make compliance with the ELGs impossible. EPA has acknowledged the level of complex engineering interactions in the power plant balance of water by suggesting it could not get enough data on water chemistry of the proposed designated wastewaters because of the complex interactions. EPA's difficulty collecting the data during the research phase of this regulatory proves reflects the same difficulty that plants will have in deriving data to comply with the rule. This is self-evidence that the achievability of the proposed regulations is not supported.

E. Compliance timing

The 40 CFR Part 423 rule must be promulgated July 2014 with the new requirements incorporated into permits beginning July 2017. CIBO members have great concern about the achievability of this permit and compliance cycle in this situation. There is currently a significant delay in obtaining water pollution control equipment and appurtenances. This delay is exacerbated by any need to evaluate, design, and install new treatment systems like fixed-bed

anaerobic treatment units. EPA should adjust compliance timing to account for this bottleneck in the compliance schedule and ensure that facilities can obtain variances in the permit compliance schedule for purchasing and installing equipment.

F. CCR and Surface Impoundment Management Requirements

It is difficult to make detailed comments on CCR and surface impoundment management requirements in this proposed regulation because they largely reference the proposed CCR regulation that awaits finalization. It is difficult to comment on the coordination and interdependency of this portion of 40 CFR Part 423 requirements if CCR regulations are not finalized for reference. CIBO members are concerned about the possibility of being covered under all of 40 CR Part 423 if a facility would otherwise only have operations subject to the CCR requirements in proposed Part 423.

Our review of the proposed CCR and surface impoundment management provisions suggests that the regulation does not account for the significant role that surface impoundments have at a power plant. Their functionality is not limited to managing coal ash. Surface impoundments are used to manage flows of other wastewater streams and to provide mutual treatment benefits that can come from mixing (i.e., comingling), such as thermal treatment and pH adjustment. They are also critical for providing water balance for a utility. Furthermore, many power plants that operate ZLD systems use surface impoundments to manage water flows into and out of the steam generation system.

Water and wastewater flows that can be managed by surface water impoundments include plant washwaters, bottom ash sluicing, stormwater, water treatment system rejects, leachate, FGD blowdown, cooling tower blowdown, boiler blowdown, non-chemical metal cleaning wastewaters, and chemical metal cleaning wastewaters. Multiple surface impoundments are often used to manage these flows and control stormwater run-off from coal piles on other parts of the plants. These ponds are often utilized as make-up water for various plant processes. EPA has not made clear its intentions regarding impoundments that handle or manage some CCR wastewater, in spite of the multiple significant regulatory concerns that naturally arise under those circumstances.

Nor has EPA laid the necessary foundation for the CCR management provisions as they relate to stormwater. There appears to be a disconnect between the Preamble and the Technical Development Document for the ELGs dealing with CCR leachate. Unlike other EPA ELGs, the proposed effluent limit on CCR leachate does not clarify whether the leachate is only from the underdrain system or includes both the underdrain discharge and runoff. In prior rules for which stormwater was a concern, EPA has established guidelines for the type of precipitation event for which the stormwater management system should be designed. In this proposed rule, EPA has

not identified the precipitation event that should be addressed in stormwater management systems. The lack of specificity on this point makes designing controls very difficult.

G. Increased operating costs

The proposed regulations will impose on all covered sources significant increased capital and operating costs including: energy, chemicals, water, labor, permits, fees, health & safety, training, solids disposal, maintenance, operators licenses, liability insurance and connection fees.

Sources that are not covered by the regulation still anticipate an increase cost of purchased power because the additional regulatory burden on electric generating units will result in higher electric rates. In addition, these sources will incur direct costs because state agencies will very likely apply the regulations to power plants that are associated with manufacturing. This has happened before for other regulations that apply to steam electric generating units.

IV. Summary

CIBO strongly recommends that EPA not change how wastewater is regulated at power plants. Instead, EPA should change the metals and compounds to be regulated to reflect the changes at power plants over the last 30 years. EPA should change the conventional, non-conventional and toxic pollutant list to reflect changes in the plants and understanding of health and environment impacts. However, EPA should not change the process for describing wastewaters and regulating them. EPA should continue to allow existing sources the important flexibility to isolate or segregate wastewaters as necessary to manage/treat the wastewater streams and water balances and be in compliance with their existing NPDES permits. EPA should add new load limits, and measuring requirements, but should not establish where a stream must be treated in the system and with what technology. Compelling regulated sources to adopt the proposed changes will negatively impact the plants' abilities to innovate around water re-use operation and technologies.

EPA should allow the wastewater streams to be comingled but use other approaches to ensure that desired reductions in effluent loads of metal are met. EPA could set daily and monthly loads in permits, instead of requiring measurements of streams prior to comingling of wastewaters (as proposed). Isolated sampling of the different streams will be difficult to implement and not provide significant benefit in treatment or monitoring.

To list some specific concerns and recommendations:

- Clarify applicability and expressly state exclusions, including excluding non-EGUs and mineland operations from CCR management regulations.

- Do not isolate the wastewater streams; allow facilities the latitude to manage the streams as needed to achieve treatment to meet permit conditions.
- Facilitate re-use by allowing utilities to identify the best way to manage wastewater streams, including allowing co-mingling.
- Consider daily loads and not concentration based permit conditions.
- Do not regulate surface impoundments and CCR management until the CCR rule is promulgated.
- Reconsider the use of anaerobic biological treatment for Se removal in FGD wastewaters as this technology is not largely proven in the industry. At the least, re-evaluate the proposed limits for Se, As, and Hg because it is not proven that existing systems in operation are meeting these limits consistently.