

Coal Combustion Rule Regulatory Update

Federal and State Status

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Published CCR Rule

- ▶ EPA published the final Coal Combustion Residuals (CCR) Rule on April 17, 2015 with an effective date of October 19, 2015
- ▶ Regulates CCR as non-hazardous waste under 40 CFR Part 257 Subtitle D of the Resource Conservation and Recovery Act (RCRA)
 - ▶ new and existing CCR landfills
 - ▶ surface impoundments, including lateral expansion of any existing unit
- ▶ CCR includes power plant fly ash, bottom ash, boiler slag and flue gas desulfurization material
- ▶ Rule is self-implementing - relies on state and citizen suits for enforcement
- ▶ States are not required to adopt or implement the CCR Rule
 - ▶ States have existing Solid Waste Management Plans

CCR Rule - National Criteria

- ▶ Final rule established minimal national criteria for CCR landfills and impoundments
- ▶ CCR unit must retrofit or close if unable to meet certain criteria
- ▶ High level requirements:
 - ▶ Location restrictions
 - ▶ Design Standards
 - ▶ Structural Integrity
 - ▶ Operating criteria
 - ▶ Groundwater monitoring and corrective action requirements
 - ▶ Closure and post-closure care requirements
 - ▶ Recording, notification, and public internet posting requirements
 - ▶ Beneficial Use

CCR Landfill Requirements

Requirement	Existing CCR Landfills		New CCR Landfills and Lateral Expansions	
	Required? ¹	Rule Section	Required? ¹	Rule Section
Location Restrictions:	√	§257.64	√	§257.60 - §257.64
Placement Above the Uppermost Aquifer			√	§257.60
Wetlands			√	§257.61
Fault Areas			√	§257.62
Seismic Impact Zones			√	§257.63
Unstable Areas	√	§257.64	√	§257.64
Floodplains ²	√	§257.3-1	√	§257.3-1
Endangered Species ²	√	§257.3-2	√	§257.3-2
Design Requirements:			√	§257.70
Composite Liner			√	§257.70 (b & c)
Leachate Collection and Removal System			√	§257.70 (d)
Groundwater Monitoring and Corrective Action	√	§257.90 - §257.98	√	§257.90 - §257.98
Weekly Inspections	√	§257.84 (a)	√	§257.84 (a)
Annual Inspections	√	§257.84 (b)	√	§257.84 (b)
Fugitive Dust Controls	√	§257.80	√	§257.80
Run-on, Run-off Controls	√	§257.81	√	§257.81
Surface Water Protection ²	√	§257.3-3	√	§257.3-3
Closure Requirements	√	§257.100 - §257.103	√	§257.100 - §257.103
Post-Closure Care	√	§257.104	√	§257.104
Recordkeeping Requirements	√	§257.105	√	§257.105
Notification Requirements	√	§257.106	√	§257.106
Publicly Accessible Internet Site Requirements	√	§257.107	√	§257.107

¹ √ = required, = not required.

² In existing regulations at 40 CFR part 257, subpart A.

CCR Surface Impoundment Requirements

Requirement	Existing Surface Impoundments				New Surface Impoundments and Lateral Expansions			
	Five feet high AND 20 acre-feet, or 20 feet high				Five feet high AND 20 acre-feet, or 20 feet high			
	Yes		No		Yes		No	
	Required? ¹	Rule Section	Required? ¹	Rule Section	Required? ¹	Rule Section	Required? ¹	Rule Section
Location Restrictions:	√	§257.60 - §257.64	√	§257.60 - §257.64	√	§257.60 - §257.64	√	§257.60 - §257.64
Placement Above the Uppermost Aquifer	√	§257.60	√	§257.60	√	§257.60	√	§257.60
Wetlands	√	§257.61	√	§257.61	√	§257.61	√	§257.61
Fault Areas	√	§257.62	√	§257.62	√	§257.62	√	§257.62
Seismic Impact Zones	√	§257.63	√	§257.63	√	§257.63	√	§257.63
Unstable Areas	√	§257.64	√	§257.64	√	§257.64	√	§257.64
Floodplains ⁴	√	§257.3-1	√	§257.3-1	√	§257.3-1	√	§257.3-1
Endangered Species ⁴	√	§257.3-2	√	§257.3-2	√	§257.3-2	√	§257.3-2
Design Requirements:	√	§257.71	√	§257.71	√	§257.72	√	§257.72
Composite Liner	²	§257.71	²	§257.71	√	§257.72	√	§257.72
Leachate Collection and Removal System								
Groundwater Monitoring and Corrective Action	√	§257.90 - §257.98	√	§257.90 - §257.98	√	§257.90 - §257.98	√	§257.90 - §257.98
Structural Integrity Criteria:	√	§257.73 & §257.83	√	§257.73 & §257.83	√	§257.74 & §257.83	√	§257.74 & §257.83
History of Construction	√	§257.73 (c)						
Construction Plan					√	§257.74 (c)		
Marker ³	√	§257.73 (a)(1)	√	§257.73 (a)(1)	√	§257.74 (a)(1)	√	§257.74 (a)(1)
Hazard Potential Classification Assessments ³	√	§257.73 (a)(2)	√	§257.73 (a)(2)	√	§257.74 (a)(2)	√	§257.74 (a)(2)
Structural Stability Assessments	√	§257.73 (d)			√	§257.74 (d)		
Safety Factor Assessments	√	§257.73 (e)			√	§257.74 (e)		
Emergency Action Plan ³	√	§257.73 (a)(3)	√	§257.73 (a)(3)	√	§257.74 (a)(3)	√	§257.74 (a)(3)
Weekly Inspections	√	§257.83 (a)	√	§257.83 (a)	√	§257.83 (a)	√	§257.83 (a)
Annual Inspections	√	§257.83 (b)			√	§257.83 (b)		
Fugitive Dust Controls	√	§257.80	√	§257.80	√	§257.80	√	§257.80

CCR Surface Impoundment Requirements

Requirement	Existing Surface Impoundments				New Surface Impoundments and Lateral Expansions			
	Five feet high AND 20 acre-feet, or 20 feet high				Five feet high AND 20 acre-feet, or 20 feet high			
	Yes		No		Yes		No	
	Required? ¹	Rule Section	Required? ¹	Rule Section	Required? ¹	Rule Section	Required? ¹	Rule Section
Hydrologic & Hydraulic Capacity Requirements	√	§257.82	√	§257.82	√	§257.82	√	§257.82
Surface Water Protection ⁴	√	§257.3-3	√	§257.3-3	√	§257.3-3	√	§257.3-3
Closure Requirements	√	§257.100 - §257.103	√	§257.100 - §257.103	√	§257.100 - §257.103	√	§257.100 - §257.103
Post-Closure Care	√	§257.104	√	§257.104	√	§257.104	√	§257.104
Recordkeeping Requirements	√	§257.105	√	§257.105	√	§257.105	√	§257.105
Notification Requirements	√	§257.106	√	§257.106	√	§257.106	√	§257.106
Publicly Accessible Internet Site Requirements	√	§257.107	√	§257.107	√	§257.107	√	§257.107

¹ √ = required, [] = not required.

² Existing CCR surface impoundments are required to be constructed with two feet of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec, a composite liner that meets the requirements of §257.70(b), or an alternative liner that meets the requirements of §257.70(c).

³ This requirement does not apply to an incised CCR surface impoundment.

⁴ In existing regulations at 40 CFR part 257, subpart A.

Overview of Requirements

- ▶ Location Restrictions to assure disposal units are properly sited
 - ▶ Placement above the uppermost aquifer
 - ▶ Wetlands
 - ▶ Fault areas
 - ▶ Seismic impact zones
 - ▶ Unstable areas
- ▶ Units are prohibited from being sited in these areas unless specific demonstrations can be made
- ▶ Demonstrations must be certified by a qualified professional engineer
- ▶ Liner Design
 - ▶ New landfills and impoundments - Composite
 - ▶ 30-mil Geomembrane liner and 2' layer of compacted soil, hydraulic conductivity of no more than 1×10^{-7}
 - ▶ Alternative composite liner
 - ▶ Landfills leachate collection and removal system
 - ▶ Existing landfills and impoundments
 - ▶ same as above and 2' layer of compacted soil, hydraulic conductivity of no more than 1×10^{-7} (court ruling)
 - ▶ Must have PE certified documentation
- ▶ Structural Integrity failure - impoundments must cease placement and initiate closure
- ▶ Other Design Criteria

Overview of Requirements

- ▶ Operational criteria
 - ▶ Fugitive dust control plans
 - ▶ Run-on/run-off for landfills
 - ▶ Hydrologic and hydraulic capacity requirements for surface impoundments
 - ▶ Weekly inspections
- ▶ Record Keeping, Notification and Internet Posting
 - ▶ Owner/Operators must record compliance with requirements in facility's operating record
 - ▶ Must maintain a public website of compliance information
 - ▶ Must provide state notifications

Overview of Requirements

- ▶ Closure and Post-Closure Care of CCR units
 - ▶ Closure in place or by removal within required timeframes
 - ▶ Forced closure of CCR unit can be triggered by:
 - ▶ Failure to meet location restrictions
 - ▶ Unlined impoundment where groundwater results are in excess of GPS
 - ▶ Impoundment cannot meet minimum factor of safety regarding structural integrity
 - ▶ Other reasons for closure:
 - ▶ CCR unit receives “known” final waste shipment or final removal for beneficial use
 - ▶ Idle for more than 2 years
 - ▶ Post-Closure Care
 - ▶ 30 years
 - ▶ Maintain the final cover system, leachate collection and removal system, groundwater monitoring system

Overview of Requirements

- ▶ Beneficial Use
 - ▶ Functional benefit
 - ▶ Substitute for virgin material, conserving natural resources
 - ▶ Must meet relevant product specs, regulatory standards, or design stds
 - ▶ When unencapsulated - placement on land of 12,400 tons or more in non-roadway apps, demonstrate, keep records and provide documentation upon request that releases will be at or below regulatory health-based benchmarks
- ▶ Alternative Closure Requirements- Owner or operator of unlined surface impoundment, or who failed aquifer location restriction, or failed landfill unstable area may continue to receive CCR
 - ▶ **No alternative CCR disposal capacity-** must make demonstrations, and remain in compliance with all other requirements, up to 5 years
 - ▶ **Permanent cessation of coal-fired boilers by a date certain - no alternative capacity, must remain in compliance with other requirements**
 - ▶ Surface impoundment 40 acres or smaller cease operation and complete closure by October 17, 2023
 - ▶ Surface impoundment larger than 40 acres cease operation and complete closure by October 17, 2028
 - ▶ CCR landfill complete closure no later than April 19, 2021

Groundwater Requirements

- ▶ Three phases of groundwater monitoring
 - ▶ Detection Monitoring, Assessment Monitoring and Corrective Action Monitoring
- ▶ Detection Monitoring
 - ▶ Establish a minimum of one upgradient and three down gradient wells, establish background with a minimum of eight samples
 - ▶ Must choose statistical procedure to compare background to upgradient concentrations
 - ▶ Monitor semi-annually for Appendix III parameters and determine if SSI for each parameter
 - ▶ Can demonstrate SSI is due to an Alternate Source
 - ▶ If SSI detected, must establish Assessment Monitoring

Appendix III Parameters	
Boron	pH
Calcium	Sulfate
Chloride	TDS
Fluoride	

Groundwater Requirements

- ▶ Assessment Monitoring
 - ▶ If triggered, sample annually for all Appendix IV constituents and semi-annually for Appendix III and those Appendix IV constituents that were detected
 - ▶ Must establish groundwater protection standards (GWPS) for each Appendix IV constituent detected
 - ▶ If any Appendix IV constituents are detected at SSL above the GWPS, must:
 - ▶ Characterize the nature and extent of the release
 - ▶ Install additional monitoring wells
 - ▶ Initiate assessment of corrective measures
 - ▶ An Alternate Source demonstration or sampling and analysis error and sampling frequency can be altered if justified

Appendix IV Parameters		
Antimony	Chromium	Mercury
Arsenic	Cobalt	Molybdenum
Barium	Fluoride	Selenium
Beryllium	Lead	Thallium
Cadmium	Lithium	Radium 226 and 228 combined

Groundwater Requirements

- ▶ Assessment of Corrective Measures
 - ▶ Analysis of effectiveness of potential corrective measures options
 - ▶ Must discuss the assessment of options in a public meeting before selecting remedy.
 - ▶ Remedies must:
 - ▶ Be protective of human health and the environment
 - ▶ Attain the GWPS for three consecutive years and control the source(s) of release.
 - ▶ Control the source of release
 - ▶ Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible.
 - ▶ Specify a schedule for implementing and completing remedial activities and initiate actions.

Appendix III Parameters		Appendix IV Parameters		
Boron	pH	Antimony	Chromium	Mercury
Calcium	Sulfate	Arsenic	Cobalt	Molybdenum
Chloride	TDS	Barium	Fluoride	Selenium
Fluoride		Beryllium	Lead	Thallium
		Cadmium	Lithium	Radium 226 and 228 combined

What Has Been Accomplished Thus Far

▶ 2017

- ▶ Prepare emergency action plans for high and significant hazard potential impoundments
- ▶ Install groundwater monitoring system
- ▶ Develop groundwater sampling and analysis program
- ▶ Initiate groundwater detection monitoring and establish background
- ▶ Begin evaluating monitoring data

▶ 2018

- ▶ Prepare Annual Groundwater Monitoring & Corrective Action Reports & publish to website
- ▶ Complete statistical analysis of samples for Appendix III constituents in detection monitoring
- ▶ Complete Alternative Source Demonstration if applicable
- ▶ Establish Assessment Monitoring Program if applicable or remain in detection monitoring
- ▶ Demonstrate that landfills and impoundments comply with Location Restrictions, if not unit must cease receipt of CCR and initiate closure (deadline extended to Oct 2020 fo)

What Has Been Accomplished Thus Far

▶ 2015

- ▶ Prepare initial dust control plans
- ▶ Initiate weekly inspections and monthly monitoring of instrumentation
- ▶ Establish CCR public website and begin record keeping
- ▶ Identify permanent marker at impoundment

▶ 2016

- ▶ Provide history of construction/liner documentation
- ▶ Complete impoundment hazard potential classification
- ▶ Conduct structural stability assessments and safety factor assessments
- ▶ If safety factor could not be met, unit must cease receipt of CCR and initiate closure within 6 months
- ▶ Prepare run-on/run-off control for landfills & inflow flood system plan for impoundments
- ▶ Prepare written closure and post-closure plans, document whether liners meet EPA requirements
- ▶ Complete and post Annual Inspection Report

What Has Been Accomplished Thus Far

▶ 2019

- ▶ Prepare Annual Groundwater Monitoring & Corrective Action Reports & post
- ▶ Resample wells and evaluate samples for Appendix IV constituents versus the Groundwater Protection Standard (GPS)
- ▶ Complete Statistical Analysis for Appendix IV versus GPS
- ▶ If the Statistically Significant Level > GPS, Initiate Assessment of Corrective Measures
- ▶ Conduct public meetings
- ▶ Determine Corrective Measures remedy

Rule Changes & Litigation

- ▶ April 17, 2015: 2015 CCR Rule published in Federal Register
- ▶ July 2015: Petitions for Review of the final rule (legal challenges USWAG vs EPA)
- ▶ July 26, 2016: Direct Final Rule and companion proposal signed, extending compliance deadlines for inactive CCR surface impoundments.
- ▶ December 16, 2016: Congress passes [WIIN Act](#), enabling EPA to allow States to seek a CCR permitting program or other system of prior approval
- ▶ September 13, 2017: EPA grants Petition for Reconsideration from Utility Group
- ▶ November 17 2017: Oral argument on legal challenge
- ▶ July 30 2018: EPA finalizes Phase One Rule published in the federal register.
 - ▶ Adopts two alternative performance standards that either participating state directors or the EPA may apply to owners and operators of CCR units;
 - ▶ Revises groundwater protection standards (“GWPS”) for four regulated constituents which do not have an established maximum contaminant level under the Safe Drinking Water Act; and
 - ▶ Extends deadline to Oct. 31, 2020 by which facilities must cease the placement of waste in CCR units that are closing for two categories:
 - ▶ SSI from an unlined surface impoundment above a GWPS
 - ▶ Where unit is unable to comply with the aquifer location restriction

Rule Changes & Litigation

- ▶ August 21, 2018 - D.C. Circuit ruling on USWAG v EPA legal challenge
- ▶ The decision vacated the following three provisions:
 - ▶ Section 257.101(a)
 - ▶ Owner or operator of an unlined impoundments determines in any sampling event that the concentrations of one or more constituents listed in appendix IV of this part are detected at statistically significant levels above the groundwater protection standard must cease placing CCR and non-CCR wastestreams and either retrofit or close
 - ▶ Section 257.71(a)(1)(i)
 - ▶ Owner or operator of an existing CCR surface impoundment with a liner consisting of a minimum of two feet of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec is considered lined
 - ▶ Section 257.50(e)
 - ▶ This provision exempted applicability for landfills and impoundments for electric utilities or independent power producers that have ceased producing electricity prior to October 19, 2015.
- ▶ Denied other NGO and industry claims
- ▶ Granted voluntary remand to reconsider other issues

Rule Changes & Litigation

- ▶ October 2018 - NGOs file Petition for Review of EPA's Phase One Rule requesting D.C. Circuit immediately vacate provisions of Phase One Rule
- ▶ March 13, 2019 - D.C. Circuit remands Phase One Rule back to EPA to reconsider, but declined to vacate the rule, leaving it in place
- ▶ July 30, 2019 - EPA releases proposed changes
 - ▶ Addresses unencapsulated placement for beneficial use or disposal, replaces 12,400 ton threshold with location-based criteria
 - ▶ Establishes a GWPS for boron if boron is added to list of constituents for Assessment Monitoring
 - ▶ Other public website and Groundwater Report requirements
- ▶ August 6, 2019 - Another proposed rule sent to OMB for review, said to propose new deadline to close or retrofit unlined surface impoundments and address other remand and court related concerns
- ▶ Expecting another EPA proposal that will establish federal permitting program

State Participation



- ▶ Due to uncertainties, rule changes and flux, only 3 states have submitted plans
- ▶ Oklahoma DEQ submitted plan August 2017
 - ▶ EPA issued OK completeness letter December 2017, proposed approval January 2018, held public hearing February 2018, public comment period complete
 - ▶ EPA approved plan June 18, 2018, currently under legal challenge
- ▶ Georgia DNR submitted plan April 2018
 - ▶ EPA issued GA completeness letter June 2019, proposed approval June 2019, held public hearing August 6, 2019, public comments due August 27, 2019
- ▶ Alabama DEM finalized their rules, but have not submitted plan April 2018