



United States Steel Corporation

Proposed Revisions to Article XXI 2105.21, Coke Ovens and Coke Oven Gas

- ACHD Conference Room
- October 9th, 2018



Liberty Monitor PM2.5

- In public statements, ACHD has alleged that an upward trend in fine particulate matter (PM2.5) concentrations at the Liberty Monitor is occurring, distinguishing it from other regional PM2.5 monitors.
- However, based on ACHD’s annual data summary report, in 2017, PM2.5 increased at **all** ACHD monitors compared to 2016.
 - *South Fayette background monitor +0.7, Liberty monitor +0.6*
 - *Liberty monitor trends with the South Fayette monitor*
- This information indicates that any asserted “upward trend” is a regional issue and not a local issue.

Monitoring Site	2016 Annual Average	2017 Annual Average	Differential
Liberty	12.8	13.4	+0.6
North Braddock	10.8	11.0	+0.2
Avalon	9.7	10.4	+0.7
Harrison	9.5	10.0	+0.5
Clairton	9.3	9.8	+0.5
Lawrenceville	9.0	9.2	+0.2
South Fayette	8.0	8.7	+0.7
North Park	7.8	8.3	+0.5

BACKGROUND →



Liberty Monitor PM2.5

- U. S. Steel reviewed ACHD PM2.5 Federal Reference Method (FRM) data from the Liberty Monitor for the 1st and 2nd quarters of 2018.
 - 2018 data indicates that the Liberty monitor is below the annual PM2.5 standard (12 $\mu\text{g}/\text{m}^3$).
 - PM2.5 average = 11.8 $\mu\text{g}/\text{m}^3$
 - 2018 data also indicates that there has been a significant decline (only 1 exceedance of the 24-hr PM2.5 standard)

Year	Avg. PM2.5	# of Daily Exceedances
2016	12.8	13
2017	13.4	10
2018*	11.8	1

**1st and 2nd Quarter only.*



Comparison of Article XXI Regulations to other Batteries

- The existing Article XXI coke oven regulations are the most stringent across the country. C Battery is BACT/LAER, and ACHD is proposing regulations that are more stringent than BACT/LAER.
- ArcelorMittal Monessen Plant is ~9.5 miles from USS Clairton but outside of Allegheny County.
- Monessen's coke oven regulations are substantially less stringent than USS.
- U. S. Steel is at a significant competitive disadvantage versus its competitors with no demonstrated appreciable environmental benefit.



Comparison of Article XXI Regulations to PA Code

ACHD Current Article XXI	ACHD Proposed Article XXI	PA Code Section 123/129
Charging		
Pre-1978: 75 seconds during 4 consecutive charges; Post-1978: 55 seconds during 5 consecutive charges	Ten (10) seconds per charge	Four consecutive charges equal more than 75 seconds
Doors		
Pre-1978: 10% of door areas; Post-1978: 5% of door areas; Batteries 1-3,19: 8% of door areas	1 leak allowed per observed side	10% of the door area of operating coke ovens, excluding the two-door area representing the last
40% opacity limit for 15 minutes or longer after the last charge	30% opacity limit	40% opacity limit for 15 minutes or longer after the last charge
Charging Ports		
Pre-1978: 2% of the charging ports; Post 1978 - 1% of the charging ports	No visible emissions	2.0% of the charging port seals, excluding visible emissions from no more than three ovens which may be dampered off
Offtakes		
Pre-1978: 5% of offtake piping; Post-1978: 4% of offtake piping	1 leak allowed per observed side	5.0% of the offtake piping, excluding visible emissions from no more than three ovens which may be dampered off
	60% opacity limit	
Pushing/Traveling		
0.010 gr/dscf Batteries 1-3,19	0.01 gr/dscf	0.02 gr/dscf; 20% opacity limit on pushing, 10% opacity limit on transport during pushing operation
0.040 lbs/ton of coke Batteries 13-15,20,B	0.02 pounds per ton of coke produced	
10% opacity on transport, 20% opacity on pushing	10% opacity limit	
Combustion Stacks		
Pre-1978: 0.030gr/dscf; Post-1978: 0.015 gr/dscf	0.01 gr/dscf	0.04 gr/dscf
Coke Oven Gas		
Sulfur compounds expressed as equivalent H ₂ S with limit of 35 gr/100 dscf	Sulfur compounds measured as all sulfur compounds, expressed as H ₂ S with limit of 35 gr/100 dscf	Sulfur compounds expressed as equivalent H ₂ S with limit of 50 gr/100 dscf
Soaking		
20% opacity with 2-minute exclusion after standpipe cap is opened	No visible emissions after 2-minute exclusion period	



Comparison of Article XXI Regulations to Subpart LL

ACHD Current Article XXI	ACHD Proposed Article XXI	Federal - NESHAP Subpart L
Charging		
Pre-1978: 75 seconds during 4 consecutive charges; Post-1978: 55 seconds during 5 consecutive charges	Ten (10) seconds per charge (no rolling average)	12 seconds of visible emissions per charge, using 30-day rolling average
Doors		
Pre-1978: 10% of door areas; Post-1978: 5% of door areas; Batteries 1-3,19: 8% of door areas	1 leak allowed per observed side	3.3% leaking coke oven doors - 30 run rolling average
40% opacity limit for 15 minutes or longer after the last charge	30% opacity limit	
Charging Ports		
Pre-1978: 2% of the charging ports; Post 1978 - 1% of the charging ports	No visible emissions	0.4% leaking port lids - 30 run rolling average
Offtakes		
Pre-1978: 5% of offtake piping; Post-1978: 4% of offtake piping	1 leak allowed per observed side	2.5% leaking offtake system - 30 run rolling average
	60% opacity limit	





Comparison of Article XXI Regulations to Subpart CCCCC

ACHD Current Article XXI	ACHD Proposed Article XXI	Federal - MACT Subpart CCCCC
Pushing/Traveling		
0.010 gr/dscf Batteries 1-3,19	0.01 gr/dscf	0.020 lb/ton of coke if moveable hood vented to stationary control device; 0.01 gr/dscf if cokeside shed is used to capture emissions; 0.04 lb/ton of coke if mobile control device that captures emissions during travel is used
0.040 lbs/ton of coke Batteries 13-15,20,B	0.02 pounds per ton of coke produced	
10% opacity on transport, 20% opacity on pushing	10% opacity limit	
Combustion Stacks		
Pre-1978: 0.030gr/dscf; Post-1978: 0.015 gr/dscf	0.01 gr/dscf	Daily average of 15% opacity for normal coking cycle; daily average of 20% opacity for extended coking
Coke Oven Gas		
Sulfur compounds expressed as equivalent H2S with limit of 35 gr/100 dscf	Sulfur compounds measured as all sulfur compounds, expressed as H2S with limit of 35 gr/100 dscf	
Soaking		
20% opacity with 2-minute exclusion after standpipe cap is opened	No visible emissions after 2-minute exclusion period	



Technology review of Article XXI coke oven revisions

- To date, U. S. Steel has not identified any other by-product coke battery that can continuously achieve compliance with the current Article XXI standards let alone the proposed Article XXI standards.
- U. S. Steel is working with Thyssen Krupp Industrial Solutions (TKIS).
 - TKIS is a world leader in coke oven battery operations and technology
 - TKIS is reviewing the proposed coke oven regulations to see if any battery on a world-wide scale is capable of meeting the standards on a continuous basis.



Source Testing Manual (STM)

- Has ACHD performed their compliance analysis based on the Proposed STM or the Current STM?
 - It has been difficult for USS to determine compliance because we are unsure which Source Testing Manual to compare the proposed regulation changes to.
- Some of the concerns with Proposed STM vs. Current STM
 - Doors - no reference to viewing the emissions at the top of the door
 - Doors – proposed STM does not subtract 2 doors in calculation
 - Pushing – currently reading pushes from the top of the battery being pushed. Neither current nor proposed state this.
 - How is travel read from the top of the battery being pushed?
 - Not clear when a “push” starts in proposed STM
 - How are two sides of the battery read during a push?



H2S and Odor Complaints

- No empirical data/study regarding odor complaints
 - No nexus established
- ACHD has not provided empirical data or studies on how the new rule would measurably improve ambient air quality or reduce odor or H2S.
- After the shutdown of Shenango, there is no appreciable difference in H2S concentrations at the nearby Avalon monitor.



H2S and Odor Complaints

- Of 66 complaints listed in ACHD's brief in opposition to the petition for stay, for the hour of the complaint, none exceeded the hourly 0.1 ppm H2S standard at the Liberty monitor.
- Reviewing the Smell Pittsburgh app data, odor complaints have been recorded throughout Allegheny County with no statistical correlation between quantity of complaints and location.



Summary

- U. S. Steel has a history of working with ACHD to develop and implement plans necessary to improve air quality. But U. S. Steel has concerns with ACHD's proposed regulation.
 - **No clear or consistent explanation of the objectives for the individual requirements contained in the proposed regulation.**
 - **No demonstration of the anticipated ambient impacts from the individual requirements contained in the proposed regulation.**
 - **No evidence that battery technology exists to continuously comply with the proposed regulations.**
 - **No finding by ACHD that implementation of the approved U. S. Steel compliance plan will not address current air quality concerns.**
 - **Historical compliance rate data used by ACHD to justify the proposed standards is flawed due to inconsistencies implementing the Source Testing Manual**



Summary

- Proposal:
 - Defer consideration of the revised coke oven standards until completion of the approved U. S. Steel's battery assessment and associated plan.
 - If at that time, the ACHD determines that existing ambient standards or other regulatory requirements are not being met, develop a plan that is specifically designed to address the issue.

U. S. Steel is committed to improving the environment using sound science and solutions which are technologically and economically feasible.