



March 15, 2024

The Honorable Mike Braun
United States Senate
Washington, DC 20510

The Honorable Amy Klobuchar
United States Senate
Washington, DC 20510

The Honorable Sherrod Brown
United States Senate
Washington, DC 20510

The Honorable Joe Manchin, III
United States Senate
Washington, DC 20510

The Honorable Shelley Moore Capito
United States Senate
Washington, DC 20510

The Honorable J.D. Vance
United States Senate
Washington, DC 20510

The Honorable Robert P. Casey, Jr.
United States Senate
Washington, DC 20510

The Honorable Todd Young
United States Senate
Washington, DC 20510

Re: Dangerous Benzene Concentrations Measured at Coke Oven Plants

Dear Senators:

On December 6, 2023, you wrote to the U.S. Environmental Protection Agency (USEPA) to share your concerns about the economic cost of proposed new standards for the coke oven batteries that supply U.S. steel plants.¹ The letter also assured the USEPA that you supported, “reducing air pollution” from these sources. Among other pollutants, USEPA’s proposal would cut emissions of benzene, a well-known carcinogen linked to leukemia, diseases of the bone marrow, and immune disorders.

Based on the industry’s own sampling results, 24-hour benzene concentrations measured inside the boundary of coke oven plants are up to fifteen times higher than the 8-hour occupational exposure limit recommended by the American Conference of Governmental Industrial Hygienists (ACGIH), exposing plant workers to unhealthy levels of a potent toxin that may also drift into downwind neighborhoods.

¹ The letter is available at https://www.brown.senate.gov/imo/media/doc/epa_steel_and_supply_chain_neshap_rules_letter.pdf.

The results summarized below reflect average benzene concentrations measured over 24-hour and six-month sampling periods by coke oven plant operators in response to a request from USEPA. Outdoor benzene concentrations were measured within the interior of each plant and at the property boundary (or “fenceline”), in part to determine the impact of benzene leaks that often escape detection.²

Benzene Inside Coke Oven Plants Far Exceeds ACGIH Occupational Health Advisory

The American Conference of Governmental Industrial Hygienists (ACGIH) recommends keeping 8-hour workplace concentrations of benzene below a “Threshold Limit Value” of 60 micrograms per cubic meter “to minimize the potential for bone marrow toxicity posed by occupational exposures.”³ The samples measuring 24-hour benzene levels within the boundaries of coke oven plants revealed concentrations far higher than the ACGIH threshold in all seven samples from Clairton Coke Works in Allegheny County, Pennsylvania; eight of thirteen collected from Burns Harbor in northwest Indiana; and two of thirteen from ABC Coke in Birmingham, Alabama (see Table 1).

Table 1: 24-hour Benzene Concentrations Measured within Plant Boundaries That Exceed ACGIH Recommended 8-hour Threshold (60 Micrograms per Cubic Meter).⁴

Facility	Sampling Period Date	Measured Benzene Concentration (Micrograms per Cubic Meter)	Percent Above ACGIH Threshold Limit Value
ABC Coke	11/3/2022	96	60%
ABC Coke	12/1/2022	100	67%
Cleveland-Cliffs Burns Harbor	10/27/2022	110	83%
Cleveland-Cliffs Burns Harbor	11/8/2022	160	167%
Cleveland-Cliffs Burns Harbor	11/22/2022	910	1,417%
Cleveland-Cliffs Burns Harbor	11/22/2022	100	67%
Cleveland-Cliffs Burns Harbor	12/6/2022	130	117%
Cleveland-Cliffs Burns Harbor	12/20/2022	100	67%
Cleveland-Cliffs Burns Harbor	1/4/2023	190	217%
Cleveland-Cliffs Burns Harbor	1/23/2023	110	83%
U.S. Steel Clairton Coke Works	10/11/2022	208	247%
U.S. Steel Clairton Coke Works	10/25/2022	556	827%
U.S. Steel Clairton Coke Works	11/8/2022	123	105%
U.S. Steel Clairton Coke Works	11/22/2022	229	282%
U.S. Steel Clairton Coke Works	12/6/2022	392	553%
U.S. Steel Clairton Coke Works	12/19/2022	247	312%
U.S. Steel Clairton Coke Works	1/3/2023	620	933%

² Benzene concentration data collected by coke oven plant operators can be found in Appendix C of USEPA’s memo titled “Fugitive Monitoring at Coke Oven Facilities” available at <https://www.regulations.gov/document/EPA-HQ-OAR-2002-0085-0880>.

³ The ACGIH Threshold Limit Value for benzene is expressed as 0.02 parts per million, which is also reported in ACGIH documentation to one significant digit as 60 micrograms per cubic meter.

⁴ All facilities except Clairton Coke Works sampled at two interior locations, which is why some sampling period dates report two concentrations.

In 1987, the Occupational Safety and Health Administration (OSHA) established a much higher 8-hour Permissible Exposure Limit (PEL) for benzene of one part per million (3,190 micrograms per cubic meter) as a legally enforceable workplace standard. But OSHA warns that many of the PELs for toxins like benzene are “...outdated and inadequate for protecting worker health.” As such, OSHA recommends that employers consider alternative occupational exposure limits recommended by ACGIH and other organizations to maintain a healthy workplace.⁵

Fenceline Monitoring Shows High Benzene Levels at Coke Oven Plant Boundaries

Exposure to benzene at even low concentrations can be dangerous to young children, the elderly, and people with respiratory diseases, weak immune systems or other vulnerabilities. Concentrations greater than 1.3 micrograms per cubic meter over a lifetime can substantially increase cancer risk, according to the USEPA. Additionally, California’s Office of Environmental Health Hazard Assessment (OEHHA) advises that repeated exposure to benzene levels above 3 micrograms per cubic meter for as much as eight hours a day could slow the formation of blood cells needed for a healthy immune system.⁶

Five coke plants were required to continuously monitor benzene at their plant boundaries for six months, measuring the average concentration at multiple locations during thirteen two-week sampling periods. Table 2 presents the six-month average of the highest fenceline benzene concentrations measured during each two-week sampling period: 35.7 micrograms per cubic meter for Clairton Coke Works; 16.7 micrograms per cubic meter at ABC Coke; 4.2 micrograms per cubic meter at Burns Harbor; 3.8 micrograms per cubic meter at DTE/EES; and less than a microgram per cubic meter at the SunCoke Haverhill plant in Ohio.

Table 2: Fenceline Benzene Concentrations Exceeding California Health Advisory (3 Micrograms per Cubic Meter).⁷

Facility	Six-Month Average of Highest Fenceline Benzene Concentrations Measured During Each Two-Week Monitoring Periods (Micrograms per Cubic Meter)
ABC Coke	16.7
Cleveland-Cliffs Burns Harbor	4.2
DTE/EES	3.8
U.S. Steel Clairton Coke Works	35.7
SunCoke Haverhill	0.6 ^a

^aSampling at SunCoke Haverhill stopped after four sampling periods.

How much high benzene concentrations at specific fenceline locations endanger nearby communities will depend on wind direction and other variables. Also, the high benzene levels measured well inside plant boundaries (see Table 1) may bypass fenceline monitors and pollute neighborhoods downwind under the right conditions. Benzene concentrations can vary from one hour to the next, which means that 24-hour and two-week monitoring results do not capture peak exposures that may have occurred over shorter periods.

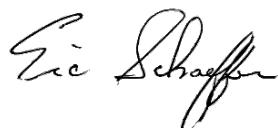
⁵ More information is available on OSHA’s annotated PEL tables webpage at <https://www.osha.gov/annotated-pels>.

⁶ More information can be found on OEHHA’s benzene webpage at <https://oehha.ca.gov/air/chemicals/benzene>.

⁷ Monitors placed along each facility’s fenceline measured the average benzene concentration at each location during thirteen two-week monitoring periods. Values in Table 2 reflect the sum of the highest benzene concentration recorded by any fenceline monitor during each two-week sampling period divided by thirteen.

USEPA's authority to regulate air pollutants does not include establishing standards to reduce workplace exposures. However, the Agency is required under the Clean Air Act to suppress leaks and other "fugitive" emissions hazardous to the surrounding community, which would also reduce benzene exposures among those who work inside these plants. Its proposal would require coke oven plants to monitor and report benzene concentrations at their fence line and when those levels become unacceptably high, to identify and clean up the emission sources causing the problem. We hope you agree that workers inside these plants and those who live nearby deserve the protection this common-sense approach would provide.

Respectfully,



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The Honorable Richard Revesz, Office of Information and Regulatory Affairs Administrator