December 8, 2025

Lee Zeldin, Administrator
U.S. Environmental Protection Agency
William J. Clinton Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Comments on EPA's proposed rule, "National Emission Standards for Hazardous Air Pollutants from Secondary Lead Smelting Technology Review" (Docket ID: EPA-HQ-OAR-2025-0078)[1]

Dear Administrator Zeldin:

The undersigned health and medical organizations are deeply concerned about the lack of revision of existing emission standards and control technology requirements and absence of stringent emission monitoring requirements in the Environmental Protection Agency's (EPA's) proposed rule, National Emission Standards for Hazardous Air Pollutants from Secondary Lead Smelting Technology Review. We are even more alarmed at EPA's proposed "*de minimis*" exemption from regulation of chlorine (Cl_2) and hydrochloric acid (HCl) emissions.

Simply put, the proposal fails to update these standards, even though more pollution reductions are both possible and necessary for health. It also sets a dangerous precedent of simply ignoring some emissions altogether.

Clean Air Act section 112(d)(6) requires EPA to conduct emission standards and control technology reviews for sector-specific hazardous air pollutant emissions at least once every eight years. This proposed rule, which is already late by several years and is being proposed to meet a consent decree deadline, does not protect public health and does not meet the "ample margin of safety" requirement of the Act to protect the health of vulnerable groups, especially children.

[1] US EPA. (10/01/2025). Federal Register :: National Emission Standards for Hazardous Air Pollutants From Secondary Lead Smelting Technology Review

The American Lung Association's annual "State of the Air" report grades air quality in counties across the country, and includes rankings of all major metropolitan areas. This year's report showed that that even after decades of successfully implementing the Clean Air Act, 46% of Americans – over 156 million people – are living in places that get failing grades for unhealthy levels of ozone and/or particle pollution.[2] The need for strong science-based policies to reduce all air pollutants cannot be overemphasized. Such policies include setting stringent national standards for all hazardous air pollutant emissions with an "ample margin of safety to protect public health," requiring uniform deployment of feasible technologies and requiring monitoring.

What EPA is proposing: Among the many hazardous air pollutants emitted by secondary lead smelters are toxic heavy metals (*e.g.,* lead, mercury, arsenic, cadmium), persistent organic pollutants (POPs; *e.g.,* dioxins, furans), and inorganic toxic gases (*e.g.,* chlorine, hydrochloric acid). In this rule, EPA is proposing no new emission standards, instead proposing to retain the existing limits set in 2012[3] for lead and mercury emissions (which are currently controlled via prescribed management procedures, operational standards, or other best practices), and no new direct limits for cadmium and arsenic (which are indirectly controlled through existing particulate matter capture systems such as baghouses).

The agency is further proposing to retain existing standards for dioxins and furans emissions from reverberatory and electric furnaces (which are currently controlled through performance testing and work practice standards) and adding the previously unregulated rotary furnaces to this category.

Most alarmingly, the agency is proposing to exempt two hazardous pollutants – chlorine and hydrochloric acid – from regulation by deeming their emissions "*de minimis*".

What science is saying: Scientific research since 2012 has significantly expanded our understanding of the adverse health effects of exposure to hazardous air pollutants (HAPs) such as those emitted by secondary lead smelting furnaces.

Heavy metals

Exposure to toxic heavy metals causes cardiovascular, neurological, reproductive and other physiological health harms and also poses severe developmental risks for children. Toxic heavy metals can bioaccumulate in the body over time and cause chronic diseases. Continued exposure to lead, cadmium and arsenic is now strongly linked to increased risk of coronary artery disease, stroke and peripheral artery disease. These metals promote oxidative stress, inflammation and endothelial dysfunction, contributing to hypertension

[2] American Lung Association. (04/2025). State of the Air 2025 report

[3] US EPA. (2012). Federal Register :: National Emissions Standards for Hazardous Air Pollutants From Secondary Lead Smelting

and atherosclerosis.[4] Mercury exposure is also found to increase the risk of cardiovascular diseases.[5]

Lead and mercury are known neurotoxic air pollutants.[6] They impair cognitive development, learning and behavior in children. Mercury disrupts neuronal migration and synapse formation, leading to cognitive and motor delays. Mercury exposure has also been linked to neurodegenerative diseases such as Parkinson's.[7] Arsenic and cadmium may also contribute to neurotoxicity and cognitive decline through oxidative stress and interference with neurotransmission.[8]

Cadmium and lead are nephrotoxic and can cause chronic kidney disease.[9] Cadmium also affects bone metabolism, leading to calcium loss and increasing the risk of osteoporosis.[10] They also disrupt hormone regulation and reproductive health. Cadmium and lead have been linked to infertility and adverse pregnancy outcomes.[11]

Arsenic,[12] cadmium, and nickel are known carcinogens, while lead and methylmercury are possibly carcinogenic.[13] These metals can cause genomic instability, interfere with DNA repair and promote malignant transformation.[14]

Persistent organic pollutants (POPs)

POPs, such as dioxins and furans, are highly toxic to all organ systems even at very low concentrations, and because of their long biological half-lives, even small exposures can have lasting impacts. They bioaccumulate in fat tissues and act by altering gene expression. They promote oxidative stress and inflammation, leading to immune suppression, endocrine disruption, metabolic disorders, reproductive toxicity, developmental disorders and cancer. There may be no safe threshold of exposure to POPs.[15]

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[4] American Heart Association (06/12/2023**).** Scientific statement - Chronic exposure to lead, cadmium and arsenic increases risk of cardiovascular disease

[5] Pan, Z., Gong, T. & Lian, P. (04/26/2024). Compendium on Environmental Impacts on Cardiovascular Health and Biology: Compendium on Environmental Impacts on Cardiovascular Health and Biology: Heavy Metal Exposure and Cardiovascular Disease. Circulation Research, 134:1160–1178.

[6] Arrifano, G. d. P., *et al*. (04/2023). Neurotoxicity and the Global Worst Pollutants: Astroglial Involvement in Arsenic, Lead, and Mercury Intoxication. Neurochem Res., 48(4):1047-1065.

[7] Jannetto, P. J. & Cowl, C. T. (04/2023). Elementary Overview of Heavy Metals. Clin. Chem., 69(4):336–349.

[8] Jomova, K., *et al*. (2025). Heavy metals: toxicity and human health effects. Arch Toxicol., 99:153–209.

[9] Turkington, R.E., *et al*. (2025). Metal mechanisms of mitochondrial toxicity: recent review of arsenic, cadmium, and lead-induced nephrotoxicity. Environ Sci Pollut Res 32:14439–14451

[10] He, S. & Zhang, K. (2025). Cadmium-Induced Bone Toxicity: Deciphering the Osteoclast-Osteoblast Crosstalk. Biology (Basel), 14(8):1051.

[11] Jomova, K., *et al*. (2025). Heavy metals: toxicity and human health effects. Arch Toxicol., 99:153–209.

[12] EPA. IRIS Toxicological Review of Inorganic Arsenic (Final Report, 2025)

[13] World Health Organization. (01/11/2024). Human health effects of benzene, arsenic, cadmium, nickel, lead and mercury: report of an expert consultation**.** Report #: WHO/EURO:2023-8983-48755-72523

[14] Balali-Mood, M. *et al*. (04/12/2021). Toxic Mechanisms of Five Heavy Metals: Mercury, Lead, Chromium, Cadmium, and Arsenic. Frontiers in Pharmacology, 12.

[15] Zhang, F. *et al*. (2025). Exposure–Response Associations of Ambient Heavy Metal and Persistent Organic Pollutant with All-Cause and Cause-Specific Mortality: A Prospective Cohort Study. Environmental Health, 3:493–503

Children are especially vulnerable to the health effects of pollutants due to their rapid growth, still-developing physiological systems and behaviors and activities that increase exposure. Heavy metals and POPs act as endocrine-disrupting chemicals, which affect hormone systems that regulate children's growth, puberty, and metabolism.[16] Exposure to toxic heavy metals is strongly linked to impaired brain development and reduced intellectual abilities including learning disabilities, attention deficits, reduced memory and verbal skills and increased risk of neurobehavioral disorders.[17] POPs interfere with thyroid hormone regulation, which is critical for physical and cognitive development during gestation and early childhood. Prenatal exposure to POPs and metals is linked to low birth weight, preterm birth and developmental delays.[18]

EPA's asserts that the current National Ambient Air Quality Standards (NAAQS) for lead are adequate to protect public health. The lead NAAQS, which were set in 2008 at 0.15 $\mu g/m^3$ as a rolling 3-month average, have not been revised since, despite overwhelming scientific evidence that there is no known safe level of lead exposure, particularly for children.[19] The NAAQS framework (including standards and monitoring) does not account for localized high concentrations of airborne lead, including short-term spikes and fugitive emissions, nor does it account for community-level cumulative impacts such as those likely to be experienced by populations living or working near industrial sources like secondary lead smelters. Therefore, the lead NAAQS are entirely insufficient in protecting community health with an "ample margin of safety" from secondary lead smelter emissions.
EPA must recognize that the national standards for a criteria air pollutant are not equivalent to those set for it as a hazardous air pollutant in protecting local communities that are impacted the most. Hazardous air pollutant emission limits must be enacted and enforced independently of ambient air quality standards.

Regulatory exemption of HCl and Cl_2 emissions by declaring them "*de minimis*"

In this rule, EPA is proposing to treat hydrochloric acid (HCl) and chlorine (Cl_2) emissions from furnaces in secondary lead smelting facilities as *de minimis*, meaning they are considered too low to warrant regulation. This approach runs afoul of the Clean Air Act. Section 112 of the Clean Air Act mandates that the EPA regulate all HAPs emitted by major sources and does not authorize the agency to exempt emissions of air toxics, which by definition are hazardous to health, based on perceived triviality. Introducing a *de minimis* threshold for HAPs like HCl and Cl_2 – both of which pose serious health risks – violates the intent and letter of the statute. The courts have also interpreted the statute (e.g. *LEAN v. EPA*, 2020) as requiring EPA to address all HAPs emitted by major sources, including requiring EPA to add regulations for previously unregulated HAPs from a source category, even if they were not addressed in the initial technology-based standards.

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[16] The Institute for Functional Medicine. (08/16/2022). Pediatric Health: Pollutants and the Healthy Child
[17] Miotto, E. *et al*. (2025). Neurodevelopmental outcomes in children living near hazardous waste sites: a systematic review. International Journal of Environmental Health Research, 35(5):1213-1226.
[18] Kornvig, S. *et al*. (2021). Prenatal exposure to persistent organic pollutants and metals and problematic child behavior at 3–5 years of age: a Greenlandic cohort study. Nature Scientific Reports, 11(1):22182
[19] How to Prevent Lead Poisoning in Children | Childhood Lead Poisoning Prevention | CDC

EPA's justification for the exemption is based on seriously flawed risk assessment methodology that relies on outdated and incomplete risk modeling, which fails to account for localized exposure scenarios; impacts on vulnerable populations, such as children; non-threshold health effects; and cumulative risks and impacts.

Exempting any HAP, including HCl and Cl_2, from regulation is dangerous to public health because they can cause harm even at low levels. Exposure to HCl can cause a range of acute and chronic health effects including irritation of the nose, throat, and respiratory tract; coughing; chest tightness; and shortness of breath and pulmonary edema.[20] Severe chemical burns, ulceration chemical pneumonitis and Acute Respiratory Distress Syndrome (ARDS) can occur at high concentrations in severe cases.[21,22]

Chlorine exposure can cause acute health effects even at low levels (≤1 ppm) including respiratory discomfort; coughing; shortness of breath; eye, nose and throat irritation; and headaches. Exposure to moderate (1–30 ppm) and high levels (30–60 ppm) of Cl_2 causes more severe effects which include mucous membrane irritation of the eyes and respiratory tract, chest pain, vomiting, dyspnea, pulmonary edema and toxic pneumonitis.[23] Accidental exposures to Cl_2 can cause persistent pulmonary function deficits and Reactive Airways Dysfunction Syndrome (RADS) with asthma-like symptoms persisting for months.[24]

EPA is proposing these *de minimis* exemptions without meaningful engagement of affected communities located near the covered facilities and without consultation with or input from environmental health experts. Communities near smelting operations often face multiple environmental and social stressors, and the assumption that certain emissions are "too small to matter" is both scientifically and ethically indefensible. The absence of a robust environmental justice analysis further questions procedural fairness and transparency. A *de minimis* exemption ignores the reality of aggregate exposure and synergistic and additive effects of copollutants. The impacts of multiple HAPs, even at low levels, are not adequately addressed in the proposed rule. Even low levels of HCl and Cl_2 can contribute to cumulative health risks, especially in communities near polluting sources. Without emission standards, there may be no requirement to monitor or report these emissions, further reducing transparency and potentially hampering efforts required to mitigate any risk of accidental exposures and fugitive emissions quickly to protect community health. Such exemptions can also lead to systemic weakening of HAP controls across sectors. EPA must not open the door to selective deregulation based on arbitrary thresholds that lack statutory support.

Lack of emissions monitoring requirements: The proposed rule does not mandate continuous emissions monitoring systems (CEMS) of dioxins/furans or direct fenceline monitoring of heavy metals and other HAPs. Knowledge of fugitive emissions and

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[20] US EPA. (Revised 01/2000). Fact Sheet on Hydrochloric Acid (Hydrogen Chloride), Document #: 7647-01-0
[21] University of Kansas Health System Poison Fact Sheet: High Chemicals: Hydrogen Chloride
[22] Hydrogen chloride: toxicological overview - GOV.UK
[23] US EPA. Chlorine - Hazard Summary. Document #: 7782-50-5
[24] Kim, J. A. *et al.* (2014). Acute health effects of accidental chlorine gas exposure. *Ann of Occup and Environ Med* 26(29).

compliance with existing standards and regulations requires fenceline monitoring. Fenceline monitoring and a CEMS requirement must be an integral part of NESHAPs to protect the health of the communities living near emitting facilities. Communities need to know about the levels of hazardous air pollutants being released by smelters across their fences or beyond their borders into their neighborhoods.

Lack of updated technology requirements: In this rule, EPA proposes no changes in control technology requirements, claiming that no cost-effective advancements were found. This conclusion that no new technologies exist to further reduce emissions is outdated. Emerging technologies in filtration, real-time monitoring and process optimization have demonstrated efficacy in reducing HAPs from other source sectors, e.g. NESHAPs for power plants.[25] The agency should incentivize innovation rather than rely on a static inadequate assessment of technological feasibility.

Failure to provide ample margin of safety: This rule clearly does not meet the Clean Air Act requirement under section 112(f) that actions taken must protect health with an "ample margin of safety". This proposal does not include more health-protective standards for toxic heavy metals and POPs despite science showing the need for it, allows *de minimis* exemptions for two inorganic air toxics, does not update technology requirements, lacks real-time continuous emissions and fenceline monitoring requirements and does not account for cumulative impacts of multiple pollutants and socioeconomic stressors. This Clean Air Act requirement for NESHAPs is intended to provide a buffer beyond what is just considered "safe" to protect public health, particularly of vulnerable populations such as children, older adults, pregnant women, workers subjected to occupational exposures and fenceline communities that face elevated risks of exposure on top of multiple socioeconomic stressors and health burdens. This proposed rule is inadequate in affording regulatory protection to meet the "ample margin of safety" threshold, absent a robust risk assessment and a thorough assessment of current science and technology for meaningful emissions reduction from secondary lead smelting operations.

Conclusion: EPA's proposed rule on NESHAPs from secondary lead smelters, which is already several years overdue, falls far short. It fails to revise existing standards for any HAP emissions from covered facilities. It fails to require stringent indirect/surrogate emission controls based on the latest technologies, robust performance standards or enforceable timelines for implementation. It fails to require continuous and fenceline monitoring. In short, it fails to protect public health.

We ask EPA to withdraw this proposed rule and instead,

- initiate a more comprehensive review of current science and technology
- conduct a thorough updated risk assessment that prioritizes public health and solicits input from experts in the field
- consult with fenceline communities

[25] US EPA. (2024). Final Rule - National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review

- consider cumulative impacts of copollutants and other risk factors to establish enforceable standards for all toxic pollutants that are emitted from secondary lead smelters.

EPA must consider peer-reviewed scientific research – including the 2025 IRIS toxicological review of arsenic,[26] the 2024 Lead Integrated Science Assessment,[27] and recommendations from the U.S. National Academies of Science, Engineering, and Medicine on cumulative impacts of environmental and social stressors.[28] The agency must then strengthen NESHAP standards with an ample margin of safety to protect public health, especially of vulnerable groups such as children. These are not choices for EPA, but rather the requirements under the Clean Air Act to protect the health of communities from hazardous air pollution from secondary lead smelters.

Above all, EPA must abandon its proposed approach of creating *de minimis* exceptions. For decades, the Clean Air Act's pollutant standards have been invaluable in protecting public health, and it is critical that they not be allowed to backslide. Creating a novel *de minimis* test for any air pollutant, especially for toxic HAPs, to exempt them from regulation is contrary to the Clean Air Act and extremely dangerous to public health, risking a serious setback to the nation's clean air protections and progress.[29]

Signed,

Alliance of Nurses for Healthy Environments
American College of Physicians
American Lung Association
American Thoracic Society
Asthma and Allergy Foundation of America
Children's Environmental Health Network
International Society for Environmental Epidemiology, North America Chapter
National Association of Pediatric Nurse Practitioners
National League for Nursing
National Medical Association
Oncology Advocates United for Climate and Health International

[26] IRIS Toxicological Review of Inorganic Arsenic (Final Report, 2025) | Risk Assessment Portal | US EPA
[27] Integrated Science Assessment (ISA) for Lead (Final Report) | Integrated Science Assessments | Environmental Assessment | US EPA
[28] State of the Science and the Future of Cumulative Impact Assessment | The National Academies Press
[29] EPA. Benefits and Costs of the Clean Air Act 1990-2020, the Second Prospective Study.