

Shifty Air: Environmental Justice and the Working Class

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This Article sets out to expose and examine an overlooked dimension of environmental justice scholarship—the differential treatment of the working class. Specifically, the Article compares recommended exposure levels for various pollutants from the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA). OSHA’s recommended exposure levels apply to the workplace and are meant to protect the class of people who perform the (primarily hourly, blue-collar) labor. EPA exposure levels apply to non-workplace environments where people may be exposed to pollutants, including exposure in the ambient air and at home, and thus aim to protect everyone in America. History shows that the people working the hardest, least desirable jobs are knowingly subjected to higher levels of environmental risk. The federal government acts much more aggressively through EPA in non-workplace settings, and gives less attention and care to the pollution the working class confronts on a daily basis. This Article supplements a historical account with direct evidence of differential treatment. †

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DOI: <https://doi.org/10.15779/Z38FX7411F>

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† Editorial Note: This Article was written and substantially edited in 2024. The Trump Administration has since ended many of the environmental justice initiatives referenced herein. As such, several federal websites and resources cited in this piece were taken down during the editing process and are no longer publicly available. While the piece has been edited to refer to these initiatives in the past tense, the Article’s analysis is contextualized by the policies that existed at the time. The overall thesis about the systematic disparate treatment of the working class is unaffected by these changes in the surrounding federal environmental justice context. In the end, the recommendations in the piece remain pertinent and necessary, perhaps even more than ever.

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INTRODUCTION

Former President Joe Biden acknowledged—separately—the importance of union labor to the clean energy transition and the legacy of pollution disproportionately foisted upon fenceline communities.¹ Unfortunately, the discourse around these important issues leaves a few connections underexplored by scholars and policymakers. First, the very workers United States energy policy now aims to benefit have for years struggled to collaborate effectively with environmentalists.² The status of the working class from an environmental justice standpoint still feels unnecessarily unsettled. Second, although there is increasing focus on the disproportionate environmental burdens felt by fenceline communities, or those living near noxious industrial uses, there has been little focus on the disproportionate burden felt by those *working inside* the fenceline. This conceptual or rhetorical blind spot sadly reveals a much more problematic

1. Joseph Biden, President of the United States, State of the Union Address (Mar. 7, 2024) (“I’m cutting our carbon emissions in half by 2030; creating tens of thousands of clean energy jobs, like the IBEW workers building and installing 500,000 electric vehicle charging stations . . . conserving 30 percent of America’s lands and waters by 2030; and taking action on environmental justice — fence-line communities smothered by the legacy of pollution.”).

2. See John Bellamy Foster, *The Limits of Environmentalism Without Class: Lessons from the Ancient Forest Struggle*, 4 CAPITALISM, NAT., SOCIALISM: A J. OF SOCIALIST ECOLOGY 11, 30 (1993) (“The disdain with which environmentalist groups commonly greet workers in the timber industry is most evident in the general silence in environmental circles regarding the fierce battle that is still being waged between employers and employees in and around the Northwest forests.”).

systemic problem—the sanctioned differential protection for people at work versus people everywhere else in American society.

According to the vice president of the United Auto Workers (UAW) in 1967, those who work in American factories are “first and foremost American citizens and consumers” who “breathe the same air and drink and bathe in the same water” as other Americans.³ However, she was not quite right. For decades, regulations have permitted the air workers breathe to contain significantly more pollution than the ambient air (i.e., what everyone else breathes all day long).⁴ Advocates have rightly directed ire at industrial tycoons; as the Alliance for Sustainable Jobs and the Environment documents in its principles: “[t]oo often, corporate leaders regard working people, communities, and the natural world as resources to be used and thrown away.”⁵ Law and regulations reflect this harsh, capitalist reality as well. Too often and for too long, the government has endorsed a two-tiered system of environmental protection—relegating essentially anyone who works for an hourly wage to a more dangerous existence.

This Article exposes and examines this overlooked dimension of environmental justice scholarship—the government-sanctioned differential treatment of the working class. Part I begins by definitively identifying the working class as an environmental justice community of concern. Part II then traces the origins and early history of the labor and environment coalition, to the extent one ever existed. That history explains how any level of environmental protection in the workplace came to be and why the political opportunity for true collaboration was never realized. In Part III, the Article makes an important contribution to the literature, directly comparing for the first time on a comprehensive scale the recommended exposure levels of various pollutants from the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA). OSHA’s recommended exposure levels apply to the workplace and are meant to protect the class of people who perform the primarily hourly, blue-collar labor. EPA exposure levels apply to other facets of life that may expose humans to pollutants, including exposure in the ambient air and at home, and thus aim to protect everyone in America.⁶ The

3. Scott Dewey, *Working for the Environment: Organized Labor and the Origins of Environmentalism in the United States, 1948-1970*, 3 ENV’T HIST. 45, 52 (1998). In 1967, the United Auto Workers (UAW) created a Department of Conservation and Resource Development under the leadership of Vice President Olga M. Madar. She said, “[d]espite the fact that they work in the automobile industry, neither they nor their children develop any immunity to automobile exhaust pollutants or any other pollutants.” *Id.*

4. See *infra* Part III.

5. All. for Sustainable Jobs and the Env’t, *Houston Principles of the Alliance for Sustainable Jobs and the Environment*, HIGH COUNTRY NEWS (May 24, 2024), <https://www.hcn.org/issues/275/14766>.

6. While EPA is tasked with, and ostensibly strives for, comprehensive protection of all people, it should be noted that the agency, and our government as a whole, has historically failed to meet that objective. Marginalized communities have been laden with a disproportionate share of noxious environmental uses. See generally, e.g., GEN. ACCT. OFF., SITING OF HAZARDOUS WASTE LANDFILLS AND THEIR CORRELATION WITH RACIAL AND ECONOMIC STATUS OF SURROUNDING COMMUNITIES

comparison makes clear that the government acts much more aggressively through EPA and gives less attention and care to the pollution the working class confronts on a daily basis. Part IV describes the very real health consequences of this disparate treatment, drawing on a sample of scientific studies and government data. The Article picks up the movement politics story in Part V, showing how and why no meaningful progress has been made on workplace exposures. Part VI then turns to the underlying questions of law and policy—first, searching for any reason to retain the existing scheme of differential protection and, after finding no such reason, outlining some concrete steps towards creating a more equitable system of environmental protection.

I. THE WORKING CLASS AS AN ENVIRONMENTAL JUSTICE COMMUNITY

Policymakers and their advisers have increasingly, and rightly, directed attention to “environmental justice communities” in the United States.⁷ For too long, marginalized groups bore the brunt of society’s environmental problems, and no one so much as acknowledged the disproportionate impact, let alone tried to abate it. For important historical and legal reasons, disparate treatment across racial lines persists as the original sin of environmental injustice. In no way should recognition of the environmental burdens imposed on the working class as a distinct group detract from the need to address the systemic racism embedded in some environmental law.⁸ Nonetheless, America’s diverse working

(1983) <https://www.gao.gov/products/rced-83-168> (detailing four hazardous waste landfills substantially affecting Black and low-income communities).

7. By “environmental justice community” I mean a distinct segment of the population that warrants the attention of environmental justice policy. Such groups have historically borne disproportionate environmental burdens and/or been deprived of environmental benefits. Policymakers and scholars can adopt formal definitions to designate these communities. *See, e.g.*, Connecticut Department of Energy and Environmental Protection, *What Is an Environmental Justice Community?*, <https://portal.ct.gov/deep/environmental-justice/05-learn-more-about-environmental-justice-communities> (last visited Apr. 2025) (“An environmental justice community is defined by the Connecticut General Statutes as: a distressed municipality, as designated by the Connecticut Department of Economic and Community Development; OR defined census block groups where 30% of the population is living below 200% of the federal poverty level.”); Dana Rowangould, Alex Karner & Jonathan London, *Identifying Environmental Justice Communities for Transportation Analysis*, 88 *Transportation Research Part A: Policy and Practice* 151 (2016) (“contrast[ing] three methods for the identification of EJ communities: (1) a commonly used threshold-based approach that groups geographic areas using demographics, (2) a population-weighted approach that calculates weighted means of performance measures, and (3) community-based identification of EJ areas”).

8. What some scholars have called the “double standard for pesticide safety” provides a clear example of this systemic racism. *See* Nathan Donley et al., *Pesticides and Environmental Injustice in the USA: Root Causes, Current Regulatory Reinforcement and a Path Forward*, 22 *BMC Pub. Health* 708, *16 (2022). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) controls the use of pesticides, while the Federal Food, Drug and Cosmetic Act (FFDCA) governs the presence of pesticides in food. *Id.* at *9. FIFRA takes a cost-benefit approach, while FFDCA takes a more protective risk-only approach, essentially prohibiting a “harmful” amount of pesticide residue in any food product. *Id.* at *9–10. As a result, agricultural workers, historically racial and ethnic minorities, are forced to endure harmful workplace exposures when the demonstrated benefit of the pesticide (to society as a whole) purportedly outweighs those harms. *See id.* at *16. For everyone else, who is exposed primarily through food, no harm is allowed, per the FFDCA. *See id.* at *9–10.

class deserves separate attention, as long as the laws and policies that control workplace environmental exposures differ from generally applicable environmental law. Those different legal regimes, as this paper reveals, sadly suffer the same ill-effects created by existing inequality in society.

Dr. Robert Bullard, often described as “the father of environmental justice,”⁹ first drew scholarly and popular attention to the issue of unequal treatment in environmental protection with his work on siting decisions for hazardous waste facilities in the early 1980s.¹⁰ His work highlighted the plight of Black Americans in Warren County, North Carolina who protested a decision to place a highly toxic landfill in their community. Dr. Bullard’s work marshalled data to bolster the community’s argument that it was selected because of the concentration of poor and minority residents.

One of the first official government studies of the distribution of environmental risks confirmed the fears of Dr. Bullard and early environmental justice advocates.¹¹ Racial minorities and low-income communities bore a disproportionate amount of environmental risk associated with hazardous waste landfills.¹² Each community the study identified as bearing a noxious landfill also experienced poverty at a rate of more than 25 percent.¹³ The response to Dr. Bullard and the government’s research helped build a movement and led to a number of changes over the following decades.

If the 1980s was the decade of environmental justice rising to the collective consciousness, the 1990s was the decade of formal meetings and declarations. In 1991, the First National People of Color Environmental Leadership Summit was held in Washington, D.C. The summit delegates produced the seminal work laying out the principles of environmental justice.¹⁴ Those principles—authored by minority activists from across the nation—continue to lay the foundation of any sound environmental justice policy.¹⁵ Of particular relevance to the intersection of labor and the environment, the eighth principle “affirms the right of all workers to a safe and healthy work environment without being forced to choose between an unsafe livelihood and unemployment.”¹⁶

9. See, e.g., Yessenia Funes, *The Father of Environmental Justice Exposes the Geography of Inequity*, SCI. AM. (Sept. 19, 2023), <https://www.scientificamerican.com/article/the-father-of-environmental-justice-exposes-the-geography-of-inequity/>.

10. See generally Robert D. Bullard, *DUMPING IN DIXIE* (3d ed. 2000) (outlining the environmental justice implications of siting hazardous facilities).

11. See generally GEN. ACCT. OFF., *supra* note 6.

12. See *id.* at App’x I, pp. 1, 3, 5, 7 (providing racial and class demography of the four selected sites).

13. See *id.*

14. *The Principles of Environmental Justice*, PEOPLE OF COLOR ENV’T LEADERSHIP SUMMIT, (Oct. 27, 1991), <https://www.ejnet.org/ej/principles.pdf>.

15. Maria Paula Rubiano A., *The Event that Changed the Environmental Justice Movement Forever*, GRIST, (Nov. 1, 2021), <https://grist.org/equity/the-event-that-changed-the-environmental-justice-movement-forever/>.

16. *The Principles of Environmental Justice*, *supra* note 14.

As a matter of governance, federal efforts to address the issue followed in the mid-1990s, with a string of executive orders issued in the Clinton Administration.¹⁷ An important threshold matter in addressing environmental injustice comes with identifying communities of concern. That process must begin with defining environmental justice in the first instance.

EPA officially defines environmental justice as “the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decisionmaking and other Federal activities that affect human health and the environment.”¹⁸ This definition notably draws lines around racial and ethnic minorities as communities of concern, and, important to this Article, identifies income disparities as relevant indicators of undue burden. Biden’s Executive Order 14,008: Tackling the Climate Crisis at Home and Abroad even more explicitly ties environmental and economic justice,¹⁹ mandating that government agencies “make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.”²⁰ The executive order specifically mentioned creating “well-paying union jobs” as integral to United States climate policy.²¹

As Biden acknowledged, workers stand on the front lines of our most consequential environmental struggle. And this is by no means the first time they have occupied that unenviable position. For years, the working class has acutely confronted industrial pollution—in their workplaces and their, often nearby, homes.²² Thus, to equitably craft environmental policy, the government must

17. To Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7629 (Feb 16, 1994).

18. EPA, *Learn About Environmental Justice: Definitions*, <https://www.epa.gov/environmentaljustice/learn-about-environmental-justice> (Nov. 5, 2025) (continuing to state the objective as ensuring that people “are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systemic barriers; and have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices”).

19. Exec. Order No. 14,008, 86 C.F.R. § 7619 (2021) (Tackling the Climate Crisis at Home and Abroad) (“To secure an equitable economic future, the United States must ensure that environmental and economic justice are key considerations in how we govern.”) [hereinafter Tackling the Climate Crisis at Home and Abroad].

20. *Id.*

21. *Id.*

22. See Paul Mohai et al., *Racial and Socioeconomic Disparities in Residential Proximity to Polluting Industrial Facilities: Evidence from the Americans’ Changing Lives Study*, 99 AM. J. PUB. HEALTH S649, S654 (2009) (“Lower-income people were found to be significantly more likely than were higher-income people to live near a polluting industrial facility. Similarly, those without high school diplomas were significantly more likely to live near such a facility than were those with higher levels of education.”); Markus Wissen & Ulrich Brand, *Workers, Trade Unions, and the Imperial Mode of Living: Labour Environmentalism from the Perspective of Hegemony Theory*, in THE PALGRAVE HANDBOOK OF ENV’T LABOUR STUD. 699, 706 (2021) (“A glance at the living and working conditions in the coal and steel regions and industrial centers of Fordist capitalism shows that the increases in prosperity were only

consider the working class an environmental justice community, at least in the industrial context. Importantly, this particular community is one that has multiple government agencies tasked with protecting it, but, as documented here, those agencies have different ideas about “acceptable” environmental risks. Environmental justice demands both agencies set standards to provide the protection promised.

As environmental justice policy evolved from mere lip service to programs with real teeth, the debate over which groups qualify as “environmental justice communities” heated up. Government at the federal and state levels developed tools using demographic and other data to identify specific communities.²³ Those tools rely on objective measures tested against some underlying definition that sets levels or thresholds of concern.

President Biden’s executive order uses the phrase “disadvantaged communities” to describe the policy focus and defines that group as those “that have been historically marginalized and overburdened by pollution and underinvestment in housing, transportation, water and wastewater infrastructure, and health care.”²⁴ Under Biden, EPA similarly identified “[o]verburdened [c]ommunit[ies]” as those that are “[m]inority, *low-income*, [T]ribal, or [I]ndigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks.”²⁵ The federal government’s screening tool, “EJScreen,” utilized a number of indicators that closely track these definitions.²⁶ Among them were a few that were directly relevant to the identification of working-class environmental justice communities. The tool’s “Demographic Index” combined the socioeconomic indicators of income and race to produce an objective measure.²⁷ And the tool’s “Supplemental Demographic Index” combined five socioeconomic indicators:

the other side of environmental pollution, which was particularly detrimental to the health of workers and their families.”); *see generally, e.g.*, Diane Sicotte, *Power, Profit and Pollution: The Persistence of Environmental Injustice in a Company Town*, 16 HUM. ECOLOGY REV. 141 (2009) (describing the decades of heavy metal pollution in Hayden, Arizona, a rural town where the economy centered on a copper smelter).

23. *See, e.g.*, *EJScreen: Environmental Justice Screening and Mapping Tool*, EPA, <https://ejscreen.epa.gov/mapper/> (last visited Mar. 10, 2025) (EPA’s “environmental justice (EJ) mapping and screening tool”); Great Lakes, and Energy, *MiEJScreen: Environmental Justice Screening Tool*, MICH. DEP’T OF ENV’T, <https://www.michigan.gov/egle/maps-data/miejscreen> (last visited Mar. 10, 2025) (providing “an interactive screening tool that identifies Michigan communities that may be disproportionately impacted by environmental hazards”); *Maps & Geospatial Information System (GIS) Tools For Environmental Justice*, N.Y. DEP’T OF ENV’T CONSERVATION, <https://www.dec.ny.gov/public/911.html> (last visited Mar. 10, 2025) (describing the tools for identifying “Potential Environmental Justice Areas (PEJAs)” in New York).

24. Tackling the Climate Crisis at Home and Abroad, *supra* note 19.

25. *EJ 2020 Glossary*, EPA, https://19january2017snapshot.epa.gov/environmentaljustice/ej-2020-glossary_.html (emphasis added) (last visited Mar. 10, 2025).

26. *EJScreen: Environmental Justice Screening and Mapping Tool*, *supra* note 23.

27. *Overview of Socioeconomic Indicators in EJScreen*, EPA (Dec. 19, 2024), <https://www.epa.gov/ejscreen/overview-socioeconomic-indicators-ejscreen>.

income, unemployment, English proficiency, education, and life expectancy.²⁸ The EJScreen tool produced maps that show percentiles (compared to the United States overall and individual state population data) of these metrics and of environmental exposure metrics (in isolation and in combination).²⁹ It was then left up to the individual policymaker to decide what threshold percentile warranted special attention for environmental justice reasons. Some states with similar tools have more explicitly set thresholds for environmental justice concern. For example, the New York Department of Environmental Conservation identifies one “Potential EJ Area” based on income level as a “U.S. Census block group[] of 250 to 500 households” that has “[a]t least 22.82% of the population in an urban or rural area [with] household incomes below the federal poverty level.”³⁰

For a number of reasons, these existing indicators suggest that working-class communities warrant some environmental justice attention. From an income perspective, blue-collar workers earn significantly less than white-collar workers—approximately twenty to 25 percent less according to the Bureau of Labor Statistics (BLS).³¹ Wage inequality between white-collar and blue-collar workers³² is statistically significant and has increased over the decades since federal environmental regulations came into existence.³³ On this metric, the working class continues to experience economic inequity and has not shared equally in the United States’ prosperity. In other words, there exists a subset of the population—who work in our factories, on our construction sites, in our

28. *Id.*

29. *EJScreen Map Descriptions*, EPA, <https://www.epa.gov/ejscreen/ejscreen-map-descriptions>, (Dec. 19, 2024).

30. *Maps & Geospatial Information System (GIS) Tools for Environmental Justice*, N.Y. DEP’T OF ENV’T CONSERVATION, <https://www.dec.ny.gov/public/911.html> (last visited Mar. 10, 2025).

31. See U.S. Bureau of Lab. Stat., *Pay Gap Crosses Occupational Lines*, TED: ECON. DAILY (Aug. 4, 2000), <https://www.bls.gov/opub/ted/2000/jul/wk5/art05.htm> (“White-collar occupations generally recorded higher hourly earnings than blue-collar or service occupations. In metropolitan areas, wages in all three occupations were higher than their counterparts in non-metropolitan areas. White-collar workers averaged \$19.07 in metropolitan areas and \$15.15 in non-metropolitan areas. Among blue-collar workers, the corresponding figures were \$12.78 and \$10.74.”).

32. “White-collar” generally refers to “the class of salaried employees whose duties do not call for the wearing of work clothes or protective clothing” while “blue-collar” generally refers to “the class of wage earners whose duties call for the wearing of work clothes or protective clothing.” *Blue-Collar*, MERRIAM-WEBSTER, <https://www.merriam-webster.com/dictionary/blue-collar> (2024). To be crystal clear, the blue-collar workforce to which this paper refers is a diverse one, particularly along racial lines. One study from the University of Massachusetts, Amherst analyzed data from the Equal Employment Opportunity Commission and population demographics to determine the racial and gender diversity in certain blue-collar jobs in every state. That study found over-representation of men almost across the board, but also interestingly found over-representation of Hispanic workers in a significant number of states. As described by the researchers, the “analysis reveals that the craft workforce is racially diverse and geographically varied, but overwhelmingly male-dominated.” Eric Hoyt & J.D. Swerzenski, *Who’s Getting the Skilled Blue Collar Jobs? A Look into the Top and Bottom 5 States*, CTR. FOR EMP. EQUITY, <https://www.umass.edu/employmentequity/whos-getting-skilled-blue-collar-jobs-look-top-and-bottom-5-states> (last visited Mar. 10, 2025).

33. See Ilhan Dögüs, *Rising Wage Differential Between White-Collar and Blue-Collar Workers and Market Concentration: The Case of the USA, 1964-2007*, 72 PSL Q. REV. 223, 223 (2019) (“From 1964 to 2007 wage inequality between white-collar and blue-collar workers increased by 32%.”).

restaurants, on our roads, in our forests and oceans and mountains—who have been disproportionately burdened economically.³⁴ They should not, according to environmental justice principles, also bear disproportionate environmental costs.

One rather unprecedented reason counsels for environmental justice attention on the working class: the fact that the government itself had singled out this subpopulation as distinct. As detailed above, since at least the first half of the twentieth century, the policy of the federal government enshrined in the Occupational Health and Safety Act (OSH Act), and regulations pursuant to it, has been to address workplace risks and injuries separately from risks in other aspects of life. The practical effect of this over time, as outlined starkly below, has not been to offer this subpopulation special protections. Quite the contrary. Existing regulations effectively permit exposing the working class to pollution at levels far higher than other Americans are compelled to endure. This singling out creates a potential for unequal treatment without an effective political or judicial check. The lack of a voting majority, or even a powerful lobby, makes the passage of more protective legislation unlikely, and, worse, lets elected officials get away with pawning off environmental harm on minority groups. And as environmental justice litigation has unfortunately demonstrated, existing law does little to cabin disparate treatment in the absence of provable intentional discrimination.³⁵

One might argue that poverty and unemployment are more meaningful markers of economic burden and should thus be the only indicators of environmental justice communities. Even accepting that premise, identifying working-class communities would be relevant and helpful to the goal of achieving justice. Somewhat intuitively, poverty and unemployment generally increase in communities with lower average wages. One study of BLS and census data found that the rates of employment in “Low- and Moderate-Income Areas” were about 10 percent lower than in higher income communities.³⁶ Furthermore, the working poor—defined as those who worked but nonetheless fell below the

34. The parallel struggles for environmental and economic justice have been demographically linked since the former started garnering attention in the 1980s. Minority populations that have been subject to lower wages and compromised earning potential are many of the same people who are compelled to live in communities with higher levels of environmental exposure. *See, e.g.*, GEN. ACCT. OFF., *supra* note 6, at App’x I, pp. 1, 3, 5, 7 (exemplifying astronomical rates of poverty within communities selected for hazardous sites).

35. *See* Karen Smith, *How the Legal System Has Failed the Environmental Justice Movement*, 12 J. NAT. RES. & ENV’T. L. 325, 333 (1997) (“One of the main avenues of environmental justice litigation is under civil rights laws such as the Equal Protection Clause of the Fourteenth Amendment and Title VI of the Civil Rights Act of 1964. Unfortunately, civil rights laws have not accomplished what the plaintiffs and their supporters had hoped.”); Luke W. Cole, *Environmental Justice Litigation: Another Stone in David’s Sling*, 21 FORDHAM URB. L. J. 523, 531 (1994) (“[L]awyers have relied far too much on allegations of Constitutional violations, which require a group to prove discriminatory intent and are thus very difficult to win.”).

36. Kelly D. Edmiston, *Why Aren’t More People Working in Low- and Moderate-Income Areas?*, 2019(4) FED. RESRV. BANK OF KANSAS CITY: ECON. REV. 41, 44 (2020).

poverty line—represent a significant sub-sub-population in working-class communities. In 2020, more than six million Americans (or about 4 percent of the labor force) worked at least twenty-seven weeks of the year and still fell below the official poverty level.³⁷ Focusing environmental justice policies on the environmental health of working-class communities would provide increased protections to these individuals.

In practice, policy attention on the unique risks imposed on the working class should further the goal of racial equity. According to a report from the Economic Policy Institute based on BLS labor force projections and demographic trends in college completion, “the working class is projected to become majority people of color in 2032.”³⁸ Consequently, the disparate treatment of workers with respect to environmental risks described herein will increasingly be felt by persons who are also members of historically marginalized racial groups. If anything, the demographic realities of America’s workforce make environmental justice policies for the working class even more urgent.

II. ORGANIZED LABOR AND ENVIRONMENTAL LAW

The labor and environmental movements in the United States have a long, complicated, and often overlooked history. The high-level tension between workers who depend on an industry for their livelihood and environmentalists who want to regulate that industry has existed since the Industrial Revolution. There has also existed an internal tension in the individual laborer when the pollution at issue potentially affects their health by way of direct, close exposure. The laborer’s hourly wages create financial incentives not to speak up for fear of reprimand, and worse, to maximize the time exposed. Meanwhile the risks of continued, prolonged exposure create health-based incentives in the other direction, urging the worker to act or vote or speak out to change their conditions. Thus, “the most obvious area of overlap between labor and environmental concerns has always been that of occupational safety and health.”³⁹

The early history of collaboration between organized labor and the push for more, really any, federal environmental regulation reflects that fundamental area of congruence. The combined forces of the movements peaked, as did much of environmental law, in the 1970s. It was then that Congress passed the OSH Act,⁴⁰ establishing OSHA as the federal agency responsible for workplace safety, including as it relates to toxic exposure. Since that time, however, the movements have increasingly grown apart. The fundamental economic tension now

37. U.S. Bureau of Lab. Stat., *A Profile of the Working Poor, 2020*, BLS REPS. (2022), <https://www.bls.gov/opub/reports/working-poor/2020/home.htm>.

38. Valerie Wilson, *People of Color Will Be a Majority of the American Working Class in 2032*, ECON. POL’Y INST. (Jun. 9, 2016), <https://www.epi.org/publication/the-changing-demographics-of-americas-working-class/>.

39. BRIAN K. OBACH, LABOR AND THE ENVIRONMENTAL MOVEMENT: THE QUEST FOR COMMON GROUND 49 (2004).

40. 29 U.S.C. § 651–78 (1970).

dominates, and preservation of industry has become the cause of the worker, even at the potential expense of their health and the environment. In contemporary American politics, large numbers of working-class voters support a deregulatory agenda and oppose efforts to address climate change.⁴¹ Still, without the labor leaders who advocated for an interconnected nature of these issues, it is unclear how the modern Democratic⁴² or Green⁴³ parties would look. This historical trajectory underlies the perpetual and continued under-protection of the working class by the federal government.

A. Early History

The casual observer of American politics and the workplace could likely identify the improvement in working conditions thanks to OSHA as a combined effort between labor and environmental organizers. Interest convergence led to parallel efforts that, in the best examples, coordinated in approach and, at the very least, supported one another. Importantly, labor unions strongly supported many environmental initiatives prior to the emergence of OSHA in 1970. Unions raised awareness of pollution and exposure issues among their members. These working people stood markedly removed from the professional middle- and upper-class early environmentalists primarily focused on conservation.⁴⁴ Labor leaders and line workers were some of the first Americans to express public concern about environmental issues and helped build the momentum that gave birth to the famed environmental movement of the late 1960s.⁴⁵

In October 1948, an infamous “killer smog” engulfed a Western Pennsylvania community and captured the nation’s attention.⁴⁶ The air pollution disaster was the worst of its kind at that point and a catalyst for the modern

41. William A. Galston, *What Today’s Working Class Wants from Political Leaders*, BROOKINGS (Nov. 16, 2023), <https://www.brookings.edu/articles/what-todays-working-class-wants-from-political-leaders/>.

42. Democratic Nat’l Convention, Democratic Party Platform 2020, *Combating the Climate Crisis and Pursuing Environmental Justice*, in Democratic Party Platform 2020, <https://www.presidency.ucsb.edu/documents/2020-democratic-party-platform> (outlining the party’s platform on climate change).

43. See generally III. *Ecological Sustainability*, GREEN PARTY U.S., https://www.gp.org/ecological_sustainability#green_energy (last visited Mar. 13, 2025) (outlining the party’s sustainability platform).

44. Dewey, *supra* note 3, at 45–46.

45. *Id.*

46. Lorraine Boissoneault, *The Deadly Donora Smog of 1948 Spurred Environmental Protection—But Have We Forgotten the Lesson?*, SMITHSONIAN MAG., (Oct. 26, 2018), <https://www.smithsonianmag.com/history/deadly-donora-smog-1948-spurred-environmental-protection-have-we-forgotten-lesson-180970533/> (“The yellow fog arrived five days before Halloween in 1948, swaddling the Pennsylvania city of Donora and the nearby village of Webster in a nearly impenetrable haze. . . . On Saturday October 30, around 2 a.m., the first death occurred. Within days, 19 more people from Donora and Webster were dead.”).

environmental movement;⁴⁷ it made the front page of *The New York Times* two days in a row.⁴⁸ More than thirteen thousand people, overwhelmingly working class families, lived in the heavily industrialized area outside of Pittsburgh, and more than half of them grew sick from the smog.⁴⁹ Many of the working people affected were members of the United Steelworkers, and the union advocated publicly on their behalf, pointing a finger at uncontrolled poisonous fumes from a United States Steel Corporation facility.⁵⁰ When state government was slow to react and inadequate in responding to the tragedy, the union pushed for a federal investigation, arguing “protocol should not be permitted to stand in the way of protecting our workmen, their jobs, and the welfare of the community.”⁵¹ This was 1948. The anti-pollution movement was in its infancy. This very public story of labor leadership on the issue of pollution control from Western Pennsylvania is not the only one. Instead, it is indicative of an early history of labor environmentalism.

The post-WWII strength of unions⁵² and the American economy allowed the working class to continue to push for more protections with relatively little fear of the collapse of industry or the loss of jobs. Union activity related to the environment in the 1950s and early 1960s was marked by demonstrations of concern over both air and water pollution, borne out of public health consequences of essentially unregulated bad corporate actors.⁵³ During this time, the two major branches of environmentalism remained separate and distinct causes—conservation of nature and wilderness on one hand, and pollution control on the other. Unions showed real commitment to the latter issue, particularly as it pertained to public health, well before the traditional conservation organizations that dominated the advocacy landscape.⁵⁴ Workers, with increasing amounts of disposable income to spend and new families to entertain, also took an interest in wilderness conservation before other groups who raised pollution and public health concerns.⁵⁵ Thus, at least in their approach and concerns, early labor environmentalists were ahead of their time—“combining these two approaches [public health and wilderness protection] within one organizational structure.”⁵⁶

47. *Id.* 46 (“The 1948 Donora smog was the worst air pollution disaster in U.S. history. It jumpstarted the fields of environmental and public health, drew attention to the need for industrial regulation, and launched a national conversation about the effects of pollution.”).

48. Dewey, *supra* note 3, at 47.

49. *Id.* at 42.48

50. *Id.* 48

51. *Id.* 48

52. See JAMES T. PATTERSON, GRAND EXPECTATIONS: THE UNITED STATES 1945-1974 3940 (1996) (describing the growth in total union membership from 3.4 million in 1930 to 14.8 million in 1945).

53. Dewey, *supra* note 3, at 46.

54. *Id.* at 47. 53

55. *Id.* 53

56. *Id.* 53

For these reasons, it is perhaps unsurprising that in the lead-up to the “environmental decade,”⁵⁷ national labor representatives got involved in Washington debates around environmental protection. For instance, national union representatives repeatedly testified in favor of the initial proposals to control water pollution with federal regulation.⁵⁸ The steering committees for the first and second National Conferences on Air Pollution included officials from the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO).⁵⁹ These labor organizations issued loud, early calls for controlling environmental pollution, flying in the face of corporate employers who staunchly opposed regulation.⁶⁰

Against this background, the involvement of unions and unionists in the truly emergent and increasingly powerful environmental movement of the 1970s only seems natural. It is, nonetheless, a chapter of the story that is often left out. By the end of the 1960s, a larger segment of the American population had adopted an anti-pollution stance. “A greatly expanded public health/antipollution impulse became the most important and powerful—even defining—strand of postwar environmentalism, setting it apart from earlier conservationism.”⁶¹ From the perspective of progressive politics, the participation of the working class in the environmental movement is a critically important detail. Environmentally conscious labor leaders effectively demonstrated the inextricable conceptual links between social, economic, and environmental issues.⁶² Despite public political alignment, many environmental organizations at the time were slow to embrace such a holistic approach to progressive policy in their organizing and policy work.⁶³ With labor’s enthusiastic support, Congress passed crucial, pioneering environmental and worker health and safety measures.⁶⁴

Of the labor organizations involved in environmental advocacy at that time, the United Auto Workers (UAW) emerged as the somewhat unlikely leader in the activism.⁶⁵ This could largely be attributed to famed UAW president Walter

57. STAFF OF HOUSE COMM. ON GOV’T OPERATIONS, 91ST CONG., *THE ENVIRONMENTAL DECADE (ACTION PROPOSALS FOR THE 1970’S)* (Comm. Print 1970).

58. Dewey, *supra* note 3, at 48.

59. *Id.* at 52.58

60. *Id.* 58at 48.

61. *Id.* at 47.58

62. *Id.* 58at 46.

63. See, e.g., Jennifer Thomson, *Surviving the 1970s: The Case of Friends of the Earth*, 22 ENV’T HIST. 235, 240 (2017) (“[Friends of the Earth] relied on the policies of established conservation experts to construct its agenda. . . . FOE establish[ed] a number of small, very select policy committees to draft position papers on a number of conservation issues . . . [ranging] from population to pollution to recreation and transportation.”); see also Adam Rome, “Give Earth a Chance”: *The Environmental Movement and the Sixties*, 90 J. OF AM. HIST. 525, 544–45 (2003) (“Even in 1970, as millions of young Americans readied for the first Earth Day, many new leftists dismissed environmentalism as a diversion from the pressing issue of social justice.”).

64. Dewey, *supra* note 3, at 46.

65. *Id.* 64at 51.

P. Reuther, who pushed a comprehensive progressive agenda.⁶⁶ Remarkably, the UAW legislative representative⁶⁷ testified in support of strengthened federal standards for motor vehicle emissions, acknowledging that jobs might have to be lost to improve community health.⁶⁸ American auto companies steadfastly resisted tightening vehicular emission controls, a position that their employees, through the UAW, directly opposed.⁶⁹ The UAW's activism in the late 1960s around auto emissions provides perhaps the most stark example of labor unions going beyond self-interest and advocating not just for protection from environmental harm in the workplace, but throughout the community as well.⁷⁰ The UAW embraced "an enlightened pragmatism that many Americans did not yet share."⁷¹ Other unions followed suit, and by 1970, the Oil, Chemical and Atomic Workers (OCAW) and the Steelworkers publicly lobbied Congress for more pollution control, even if it led to increased costs and decreased employment in their industries.⁷² A separate organization called Environmentalists for Full Employment emerged in 1975 to "publicize the fact that it is possible to simultaneously create jobs, conserve energy, and natural resources and protect the environment."⁷³ That message foreshadowed much of the policy discourse in the years that followed—arguments about tradeoffs (even whether they are necessary) and the encouragement of the concept of "green jobs" before that phrase existed.

B. *The Occupational Safety and Health Act*

The fundamental overlap between workplace exposures to harmful pollutants and environmental regulation continued to shape the legislative agenda for workers into the 1970s. Sadly, the same dual focus could not be attributed to the most prominent environmental organizations, whose lobbying efforts steered the landmark lawmaking of the decade. While OCAW, UAW, Steelworkers, and United Farm Workers (UFW) publicly pushed for the development and passage of occupational health and safety legislation, environmental organizations made little noise on these issues.⁷⁴ Thus, the

66. See Wayne State University, *No Greater Calling: The Life of Walter P. Reuther*, <http://reuther100.wayne.edu/> ("Reuther believed that the labor movement was a social movement, that unions had the power to improve the lives of all working-class Americans, and the potential to change the world for the betterment of all. As president of the UAW, Reuther supported the civil rights movement, environmental causes, public housing projects, and health care improvements.").

67. Dewey, *supra* note 3, at 51 (identifying the legislative representative as UAW vice president Olga M. Madar).

68. See *id.* 67at 51.

69. *Id.* 67

70. *Id.* 67at 50 ("Organized labor's concern about the public health and employment aspects of air and water pollution control transcended self-interest.").

71. *Id.* 67

72. OBACH, *supra* note 39, at 50.

73. *Id.* 72

74. *Id.* 72at 49. But see *id.* 72at 52 (describing how traditional environmentalists supported a United Mine Workers strike in 1989 over health and safety issues).

National Environmental Policy Act,⁷⁵ requiring the assessment of environmental impacts of government activity, became the first major congressional action in the field, leaving workplace exposures for another day.⁷⁶ The failure of environmental organizations to embrace workplace issues as environmental concerns reflects the lost potential for cooperation between labor and environmental organizations.⁷⁷

Despite the lack of a fully formed labor-environment coalition, in 1970 Congress passed the OSH Act⁷⁸ to ensure workers would be protected and workplaces would be monitored for unsafe conditions and hazardous releases. The Act established a specific commission within the Department of Labor (what would become OSHA) to implement its provisions.⁷⁹ Protection of workers from exposure to toxic chemicals was a specific aim of that statute,⁸⁰ and developing standards for exposures was a specifically delineated task for the Secretary of Labor and the newly established commission.⁸¹

The OSH Act was by no means the federal government's first intervention on behalf of worker health and safety; it was, however, the first meaningful and effective one. The early 1900s concern with working conditions and industrial hygiene have been famously documented.⁸² At that time, full-scale labor unions were still effectively illegal and violently opposed in many parts of the country.⁸³ Trade unions, advocating on behalf of workers within specific trades and in specific locations, dominated the early advocacy and consequently focused on working conditions acutely relevant to their members.⁸⁴ In response to that

75. 42 U.S.C. § 4321–47 (1970).

76. NATIONAL ENVIRONMENTAL POLICY ACT, <https://ceq.doe.gov/> (last visited Mar. 13, 2025) (“Congress enacted the National Environmental Policy Act (NEPA) in 1969 and President Nixon signed it into law on January 1, 1970. . . . NEPA was the first major environmental law in the United States and is often called the ‘Magna Carta’ of Federal environmental laws.”).

77. 72OBACH, *supra* note 37, at 49.

78. 29 U.S.C. § 651–678 (1970).

79. See 29 U.S.C. § 661 (establishing the “Occupational Safety and Health Review Commission”).

80. See *Summary of the Occupational Safety and Health Act*, EPA (Sept. 9, 2024), <https://www.epa.gov/laws-regulations/summary-occupational-safety-and-health-act> (“Their goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions.”).

81. See 29 U.S.C. § 655 (“The Secretary, in promulgating standards dealing with toxic materials or harmful physical agents under this subsection, shall set the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life.”).

82. See generally, e.g., UPTON SINCLAIR, *THE JUNGLE* (1906) (depicting the unsafe and unsanitary conditions of meatpacking facilities).

83. See, e.g., *Duplex Printing Press Co. v. Deering*, 254 U.S. 443, 478 (1921) (holding that boycotts and strikes by workers in solidarity with others in a contract dispute elsewhere were not protected by the Sherman Act and could be ended by court order).

84. See generally HOWARD ZINN, *A PEOPLE'S HISTORY OF THE UNITED STATES: 1492-PRESENT* (2015) (centering historically underrepresented voices in depicting American history, including the early labor movement).

public concern, a majority of states adopted legislation purportedly aiming to improve safety and health by 1920.⁸⁵ The laws proved an ineffectual “mass of unconnected attempts”⁸⁶ that had very little practical impact benefitting working people.⁸⁷ The laws were hopelessly vague in places⁸⁸ and overly narrow in others.⁸⁹ The growth of the labor movement in the 1930s brought protections for laborers at the federal level, providing for controls on hours, wages, and age of laborers.⁹⁰ Nonetheless, a tremendous gap remained when it came to the working environment, particularly pollution. That gap left people vulnerable to serious injury and even death caused by exposures in the workplace. Unfortunately, the gap persisted until the late 1960s, by which time, predictably, more than two million workers were suffering injuries, and more than ten thousand workers were dying each year as a result of workplace accidents and exposures.⁹¹ Furthermore, those injuries and deaths were not evenly distributed—states with stronger protections and enforcement saw accident rates one-fifth of states with lower protections.⁹²

This stark and painful reality, driven home by union lobbying efforts, finally led to congressional debate and ultimately the passage of the OSH Act. Testimony before the House of Representatives laid out the need for federal protections succinctly:

Clearly, the life of a worker in one state is as important as a worker’s life in another state, and uniform standards must be required to protect all workers from dangerous substances. Despite this obvious need, state response has been minimal. Federal leadership and assistance are necessary to change this record of inaction.⁹³

85. Lloyd Meeds, *A Legislative History of OSHA*, 9 GONZ. L. REV. 327, 328 (1974).

86. E. Stagg Whitin, *Factory Legislation in Maine*, 33 STUD. HIST., ECON., PUB. L. 1, 140–41 (1908).

87. See Meeds, *supra* note 85, at 328 (“Unfortunately for the nation’s workers, these laws were more often window dressing than they were substantive.”).

88. See Leonard Hatch, *The Prevention of Accidents*, 1 AM. LAB. LEGIS. REV. 103, 106 (1911) (“The most common provision for . . . power driven machinery, the principal . . . source of factory accidents . . . is the single declaration . . . that such machinery ‘shall be guarded.’”).

89. See Meeds, *supra* note 85, at 328 (noting that most of the state statutes only regulated the mining industry).

90. See, e.g., The Fair Labor Standards Act of 1938, 29 U.S.C. § 203; Davis-Bacon Act of 1931, Pub. L. 71-798; Walsh-Healey Public Contracts Act of 1936, 41 U.S.C. §§6501–6511.

91. See Meeds, *supra* note 85, at 327–28 (“In 1969, as in previous years, it could be predicted that some 14,500 workers in the United States would die as a result of accidents at the workplace; that some 2.2 million workers would be injured or disabled on the job, with a loss of 250 million man-days of work. Lost wages as a result of these injuries and deaths would approximate \$1.5 billion, with a loss to the gross national product of over \$8 billion.”).

92. H.R. REP. No. 1291, 91st Cong., 2d Sess. 15 (1970) (“[I]t is a fact that in the states with good occupational safety and health programs the accident rate is 19 per 100,000 workers, and in states with poor programs it is 110 per 100,000 workers-or over 500 per-cent higher.”).

93. *Id.*

The passage of the OSH Act and the subsequent OSHA regulation represented the high-water mark of working-class environmentalism. The protections secured through the efforts of labor unions improved safety and health for thousands of workers in the following decades. Studies of OSHA inspections and violations have found that, in particular, citations related to personal protective equipment (PPE) have the most significant mitigating effect on injuries regulated by OSHA.⁹⁴ PPE is precisely the type of worker protection aimed at curbing the risks created by exposure to airborne pollutants and toxic chemicals. Thus, the OSH Act and OSHA inspectors have significantly improved the environmental performance of workplaces, at least as it relates to human health (the air is, of course, still polluted even if PPE mitigates exposure). Crucially, however, as this work demonstrates, federal regulation has never reduced environmental risks for the working class to that of the general population.

III. CODIFIED UNDER-PROTECTION OF THE WORKING CLASS

The protections enshrined in law and regulation following the passage of the OSH Act have remained stagnant for nearly five decades. The resulting environmental injustice befalling American workers is shockingly out in the open. It manifests in differing standards of protection for exposure to the same pollutants. On one hand, EPA sets standards and issues guidance to protect the human health of the general population. People exposed at home or outside in the ambient air can rely on these regulatory protections. At the same time, OSHA sets standards for workplace exposure to the same pollutants that are often demonstrably less protective of health and safety. People exposed at work thus endure disproportionate environmental risk at the express direction of the regulators meant to protect them.

The following subsections compare protections offered by EPA and OSHA across three broad categories—two defined by Clean Air Act programs and one defined by the most prevalent indoor air pollutant. The Clean Air Act categories include persistent ambient air pollutants and hazardous air pollutants; they are focused on emissions in the outdoor air. The indoor air pollutant radon is not covered by the Clean Air Act, but by pollutant-specific legislation. As the data illuminates, OSHA regulates most of these same pollutants, often providing less protection in the workplace than EPA provides in the outdoor air.

94. Amelia Haviland et al., *What Kinds of Injuries Do OSHA Inspections Prevent?*, 41 J. SAFETY RSCH. 339, 340 (2010).

A. Criteria Air Pollutants

The Clean Air Act (CAA) mandates that EPA issue National Ambient Air Quality Standards (NAAQS) for six “criteria air pollutants.”⁹⁵ EPA sets primary NAAQS at a level “requisite to protect the public health” with an “adequate margin of safety.”⁹⁶ There are six criteria air pollutants: particulate matter, ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, and lead.⁹⁷

Simultaneously, Section 6 of the OSH Act grants OSHA the authority to promulgate standards for exposure to pollutants in the workplace.⁹⁸ The Secretary is required to set standards that “most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life.”⁹⁹ Pursuant to section 6 authority, OSHA sets “Permissible Exposure Limits (PELs)” for pollutants, prescribing the maximum amount that workers can be exposed to over a specific time period.¹⁰⁰ OSHA codifies PELs for air pollutants in its Air Contaminants Standard,¹⁰¹ which sets limits for various substances, including some criteria air pollutants.¹⁰² OSHA also sets forth a Respiratory Protection Standard that, among other things, includes maximum allowable concentrations for airborne contaminants and specifies appropriate respiratory protection.¹⁰³ Specifically, EPA and OSHA both regulate lead, carbon monoxide, nitrogen dioxide, and sulfur dioxide.

1. Lead

Both EPA and OSHA regulate lead in the air. EPA sets forth the permissible concentration of lead in the ambient (i.e. outdoor) air. This is the everyday source of oxygen for everyone in America. OSHA sets forth the permissible concentration of lead in the air within workplaces (i.e. indoors). This is the weekday source of oxygen for millions of working-class Americans.

The most recent NAAQS for lead sets a “maximum quarterly average concentration of 0.15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) measured over a

95. 42 U.S.C. § 7408(a)(2).

96. 42 U.S.C. § 7409(b)(1).

97. *Id.*

98. 29 U.S.C. § 655(b).

99. 29 U.S.C. § 655(b)(5).

100. 29 C.F.R. § 1910.

101. 29 C.F.R. § 1910.1000. The criteria pollutants not compared here—particulate matter and ozone—are more difficult to discern the overlapping OSHA regulations because they are not specific chemical compounds. Instead, particulate matter pollution is defined by the size of particles and ozone pollution is controlled by reducing certain precursors. As such, some OSHA-regulated chemical compounds would be in those categories but may have different standards. A clear comparison with broader EPA standards would not be possible.

102. *See* 29 C.F.R. § 1910(Z), Table Z1.

103. 29 C.F.R. § 1910.134.

three-month period.”¹⁰⁴ That standard was promulgated in 2008. The prior standard set the maximum quarterly average ten times higher at 1.5 $\mu\text{g}/\text{m}^3$.¹⁰⁵

The OSHA Air Contaminants Standard for lead applies to any general industry workplace where lead exposure in the air might occur.¹⁰⁶ In that standard OSHA set the general PEL at a maximum concentration of “fifty micrograms per cubic meter of air (50 $\mu\text{g}/\text{m}^3$) averaged over an 8-hour period.”¹⁰⁷ One immediately can see this is higher than the NAAQS limit. The OSHA standard goes on to cover situations where an employee may be exposed to lead for more than eight hours a day. In those situations, the maximum permissible limit (in $\mu\text{g}/\text{m}^3$) is calculated as follows: $400 \div$ hours worked in the day.¹⁰⁸ For purpose of illustration, if a hypothetical employee worked every hour of the day, the PEL would be 16.666 $\mu\text{g}/\text{m}^3$ —more than one hundred times the EPA standard.

2. Carbon Monoxide

Both EPA and OSHA also regulate carbon monoxide, recognizing it as a danger to human health. As with lead, EPA sets forth the concentration of carbon monoxide in the ambient air that protects the health of everyone breathing in the outside air with an adequate margin of safety. OSHA sets forth the permissible concentration of carbon monoxide that workers may be exposed to in the air within their workplaces (i.e. indoor). This is the air breathed for at least eight hours every day for millions of working-class Americans.

The EPA has established two limits for the NAAQS for carbon monoxide, differentiated by the time scale over which exposure is averaged. Articulated as an average concentration over the course of eight hours, the EPA limit has been set at nine parts per million (ppm).¹⁰⁹ On a more acute level, EPA set a one-hour average limit at thirty-five ppm.¹¹⁰ Those standards have not been revised (in either direction) since their initial promulgation in 1971.¹¹¹ If either average is exceeded more than once in a particular year in any air quality region, that region would be in non-attainment of the standard.¹¹² The designation of “non-attainment” then carries significant regulatory consequences, including a state

104. 40 C.F.R. § 50.16.

105. 10440 C.F.R. § 50 app’x G.

106. 29 C.F.R. § 1910.1025.

107. 29 C.F.R. § 1910.1025(c)(1).

108. 29 C.F.R. § 1910.1025(c)(2).

109. Review of National Ambient Air Quality Standards for Carbon Monoxide, 76 Fed. Reg. 54294, 54295 (Aug 31, 2011).

110. *Id.*

111. *Timeline of Carbon Monoxide (CO) National Ambient Air Quality Standards (NAAQS)*, EPA (Dec. 31, 2024), <https://www.epa.gov/co-pollution/timeline-carbon-monoxide-co-national-ambient-air-quality-standards-naaqs>.

112. See Review of National Ambient Air Quality Standards for Carbon Monoxide, 76 Fed. Reg. 54294, 54295.

plan for improving air quality (largely through tighter limits on sources of pollution)¹¹³ and restrictions on the permitting of new sources.¹¹⁴

OSHA has set PEL for carbon monoxide exposure in the workplace, which it expresses as an eight-hour average limit. Under that regulation, workers should not be exposed to more than fifty ppm of carbon monoxide gas averaged over an eight-hour period (i.e., roughly one workday).¹¹⁵ This eight-hour average is more than five times the EPA's limit for that same time period of exposure in the ambient air and fifteen ppm higher than even EPA's acute one-hour standard.

3. Nitrogen Dioxide

Nitrogen oxides (NO_x) are gaseous pollutants produced from, among other things, the burning of fossil fuels.¹¹⁶ The term encompasses both nitric oxide (NO) and nitrogen dioxide (NO₂).¹¹⁷ Nitric oxide is odorless and colorless and, when oxidized in the atmosphere, forms nitrogen dioxide.¹¹⁸ Nitrogen dioxide has an odor and is acidic and highly corrosive.

EPA has set NAAQS for nitrogen oxides since the inception of the program.¹¹⁹ There are currently two standards, each of which describes a limit based on time averages. The longer-term limit establishes a maximum average concentration over one year at fifty-three parts per billion (ppb).¹²⁰ In contrast, the shorter-term limit sets a one-hour average at one hundred ppb.¹²¹

For its part, OSHA has a PEL for nitrogen dioxide only.¹²² That limit is ostensibly designed to protect the health and safety of people who work with or in close proximity to fossil fuel burning engines. The PEL for nitrogen dioxide is a ceiling limit rather than a weighted average. A ceiling limit sets a maximum exposure limit that may not be exceeded for any length of time. Pursuant to OSHA regulation, the ceiling limit for nitrogen dioxide is five ppm.¹²³ This limit is considerably higher than the time average standards set by EPA. It ensures that people are never exposed to levels of nitrogen dioxide above five ppm, while an average limit theoretically allows for short more extreme exposures. Nonetheless, the order of magnitude difference between the two limits—EPA's and OSHA's—raises concern. Under the OSHA standard, workers could

113. 42 U.S.C. § 7502.

114. 42 U.S.C. § 7502(c)(5).

115. See 29 C.F.R. § 1910(Z), Table Z1.

116. See EPA, *Basic Information about NO₂*, <https://www.epa.gov/no2-pollution/basic-information-about-no2> (last updated July 16, 2024).

117. See European Environment Agency, *Nitrogen Oxides, NO_x*, <https://www.eea.europa.eu/help/glossary/eper-chemicals-glossary/nitrogen-oxides-nox> (last visited Apr. 10, 2025).

118. See *id.*

119. See EPA, *Timeline of Nitrogen Dioxide (NO₂) National Ambient Air Quality Standards (NAAQS)*, <https://www.epa.gov/no2-pollution/timeline-nitrogen-dioxide-no2-national-ambient-air-quality-standards-naaqs> (last updated December 31, 2024).

120. 83 Fed. Reg. 17226 (May 18, 2018); 75 Fed. Reg. 6474 (Feb 9, 2010).

121. 83 Fed. Reg. 17226; 75 Fed. Reg. 6474.

122. See 29 C.F.R. § 1910(Z), Table Z1.

123. See *id.*

permissibly be forced to breathe air containing nitrogen dioxide at levels far exceeding EPA's standard for ambient air quality. To be specific, a workplace exposure of one ppm (i.e. one thousand ppb) for one hour would fall well below OSHA's ceiling limit and yet be ten times EPA's one-hour average ambient air quality standard.

4. Sulfur Dioxide

Sulfur oxides are sulfur oxygen compounds found in the ambient air as either particulate matter or gaseous pollutants. Sulfate (SO₄) is a type of particulate matter found in the air while sulfur dioxide (SO₂) is a foul-smelling gas. Sulfur dioxide gas is a byproduct of burning fuels that contain sulfur (e.g. common fossil fuels), metal smelting, and other industrial processes.¹²⁴ In the United States, the most significant source of sulfur dioxide pollution is coal-burning power plants.¹²⁵ However, industrial processes that utilize raw materials like metallic ore, coal, and crude oil (e.g. petroleum refining, cement manufacturing, and metal processing) also produce large quantities of sulfur dioxide pollution.¹²⁶ Sulfur oxides are also infamously a contributor to acid rain.¹²⁷ Consequently, both EPA and OSHA have devoted attention to this pollutant.

EPA has set two NAAQS for sulfur dioxide specifically. These standards were most recently revised in 2010. The primary standard sets a maximum average concentration of seventy-five ppb.¹²⁸ That average must be calculated by averaging the ninety-ninth percentile of one-hour concentrations over three years.¹²⁹ The secondary NAAQS for sulfur dioxide is a three-hour average of 0.5 ppm, which is not to be exceeded more than once per year.¹³⁰ Prior to the 2010 revision, the NAAQS for sulfur dioxide were more lenient, setting a daily average limit of 0.14 ppm and an annual average limit of 0.03 ppm.¹³¹ According to EPA, the revision to a more stringent standard was in part due to epidemiological studies showing negative respiratory effects in areas with concentrations below the prior limit.¹³²

124. George D. Thurston, *Outdoor Air Pollution: Sources, Atmospheric Transport, and Human Health Effects*, in INT'L ENCYCLOPEDIA OF PUB. HEALTH (2D) 367, 367 (2017).

125. *Id.* 124

126. *Id.* 124

127. Xiaochuan Pan, *Sulfur Oxides*, in ENCYCLOPEDIA OF ENV'T HEALTH (2d ed. 2019) at 823–29 (“Sulfur oxides and nitrogen oxides could react respectively with other substances in the air to form acids, which fall to surface of earth as rain, fog, snow, or dry particles. . . . Acid rain is generally formed nearby the areas where higher SO₂ level, but sometimes may be carried by the wind outside of hundreds miles.”).

128. 84 Fed. Reg. 9866 (Mar. 18, 2019); 75 Fed. Reg. 35520 (June 22, 2010).

129. 75 Fed. Reg. 35520.128

130. 128*Id.*

131. *Id.*

132. *Id.*

There are also two standards for occupational exposure to sulfur dioxide. The standard relevant to air pollution, and thus the comparison herein, sets an eight-hour average limit of five ppm.¹³³ This limit is more than thirty-five times higher than EPA's older, less protective twenty-four-hour average standard, and more than sixty-five times higher than EPA's current standard of seventy-five ppb. This discrepancy persists despite serious exposures and risks in myriad types of industrial facilities.

These relatively weak workplace standards do not just exist on paper. It is well-documented that workers face sanctioned exposures to sulfur oxides at concentrations vastly higher than those faced by the general population.¹³⁴ People working in steel plants and chemical processing facilities, where sulfur oxide acid washes produce mists,¹³⁵ face the risk of severe, irreversible pulmonary injury.¹³⁶ And when people work in environments where these mists are allowed to persist, their teeth have degraded and eroded.¹³⁷ These effects may be "reflective of the large size of the acid particles in these environments, which would result in significant deposition in the upper respiratory tract."¹³⁸ If nothing else, these consequences suggest differential treatment that requires immediate investigation and intervention.

5. Summary of Disparate Criteria Air Pollution Standards

The same pattern repeats for all of the criteria pollutants where there is a directly comparable OSHA standard: workers (at least while at work) are afforded less protection for air quality standards than every other American. The following table makes that pattern abundantly clear.

	NAAQS (EPA)	Time period (EPA)	PEL (OSHA)	Time period (OSHA)
Lead	0.15 µg/m ³	3 months	50 µg/m ³	8 hours
Carbon monoxide (CO)	9ppm 35ppm	8 hours 1 hour	50ppm	8 hours
Nitrogen Dioxide (NO ₂)	100ppb 53ppb	1 hour 1 year	5ppm	Ceiling limit
Sulfur Dioxide	75ppb 0.5ppm	1 hour 3 hours	5ppm	8 hours

133. See 29 C.F.R. § 1910(Z), Table Z1.

134. R.B. Schlesinger, 8.15 - Sulfur Oxides in COMPREHENSIVE TOXICOLOGY (2d) at 277 (2010).

135. Toxicological Profile for Sulfur Dioxide, Potential for Human Exposure, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (Mar. 26, 2014), <https://www.atsdr.cdc.gov/ToxProfiles/tp116-e5.pdf>.

136. *Id.*

137. Schlesinger, *supra* note 134.

138. *Id.* 135

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B. Hazardous Air Pollutants

When Congress passed the CAA, it recognized that certain pollutants pose serious risks to humans and the environment, even in small quantities. Congress in its wisdom dubbed these substances “hazardous air pollutants”¹³⁹ and listed almost two hundred in the statute’s text.¹⁴⁰ The CAA empowers EPA to designate additional pollutants as “hazardous” if they present a “threat of adverse human health effects (including, but not limited to, substances which are known to be, or may reasonably be anticipated to be, carcinogenic, mutagenic, teratogenic, neurotoxic, which cause reproductive dysfunction, or which are acutely or chronically toxic) or adverse environmental effects whether through ambient concentrations, bioaccumulation, deposition, or otherwise.”¹⁴¹ Many of these pollutants also appear in workplaces, and thus OSHA has had occasion to address them as well.

EPA regulates exposure to hazardous air pollutants by promulgating emissions standards for different source categories.¹⁴² These source categories primarily reflect the major sources of hazardous air pollutants (i.e. potential to emit more than ten tons per year of one pollutant or twenty-five tons per year of a combination).¹⁴³ For each source category, EPA regulations specify the amount of pollution permitted to enter into the air, as monitored or tested on a regular basis.¹⁴⁴

OSHA regulates many of these same pollutants through the same regulatory vehicle discussed above—permissible exposure limits (PELs). Because hazardous chemicals are unfortunately involved in a variety of manufacturing processes, OSHA and EPA regulations overlap quite frequently, with the EPA regulations applying to outdoor emissions from specific industries and processes and the OSHA regulations applying to indoor air at any workplace.¹⁴⁵ Fortunately, this means that EPA standards can provide a partial backstop of safety in some circumstances. Those circumstances include when emissions controls also capture any pollution that may enter the indoor air and when the workplace in question constitutes a major source covered by EPA regulations.

Unlike the other pollutants discussed above, the story of under-protection of workers from hazardous air pollutants is not clear-cut or universal. Indeed,

139. 42 U.S.C. § 7412.

140. 42 U.S.C. § 7412(b)(1).

141. 42 U.S.C. § 7412(b)(2).

142. 42 U.S.C. § 7412(d)(1).

143. 42 U.S.C. § 7412(a)(1).

144. 42 U.S.C. § 7412(d)(2)–(3).

145. See, e.g., 29 C.F.R. § 1910.1025(a)(1) (“This section applies to all occupational exposure to lead, except [particular exemptions in the construction and agricultural industries].”).

over the hundreds of pollutants and source categories identified and regulated, one can find workplaces where OSHA exposure limits and EPA emissions standards compare favorably.¹⁴⁶ Sadly, and predictably, that is not the case for every workplace. What follows are just two examples of under-protection in specific types of workplaces to specific hazardous air pollutants.

1. *Styrene in Rubber and Plastics Production*

Styrene is a volatile organic compound that occurs as a sweet-smelling, flammable liquid.¹⁴⁷ Its primary industrial use is in the manufacture of various plastics and rubbers. Factories that produce boats, automotive parts, bathroom appliances, containers, and other reinforced plastic products expose workers to styrene vapors because the liquid evaporates quite easily.¹⁴⁸ Billions of pounds of styrene flow through the manufacturing process annually, exposing countless workers.¹⁴⁹

Styrene is known to affect the nervous system of those who breathe it in. Inhalation can cause impaired vision, fatigue, feelings of intoxication, delayed reaction time, concentration problems, and imbalance.¹⁵⁰ Styrene is also likely cancer-causing chemical. More than a decade ago, the Department of Health and Human Services listed styrene as “reasonably anticipated to be a human carcinogen,”¹⁵¹ and the World Health Organization’s International Agency for Research on Cancer classified styrene in 2019 as “probably carcinogenic to humans.”¹⁵²

Unsurprisingly, both OSHA and EPA have standards that apply to air polluted with styrene. Specifically, these standards are aimed at the plastics and rubber manufacturing industries that use the compound pervasively.¹⁵³

146. See, e.g., 29 C.F.R. § 1910.1048(c)(1) (“The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds 0.75 parts formaldehyde per million parts of air (0.75 ppm) as an 8-hour TWA.”); 40 C.F.R. § 63(DDDD), Table 1B (“Limit formaldehyde emissions to less than or equal to 1 ppmvd if uncontrolled formaldehyde emissions entering the control device are greater than or equal to 10 ppmvd.”).

147. See *Styrene*, NAT’L INST. OF ENV’T HEALTH SCIS., <https://www.niehs.nih.gov/health/topics/agents/styrene#:~:text=Styrene%20is%20a%20colorless%2C%20flammable,food%20containers%2C%20and%20carpet%20backing> (Jul. 15, 2022); *Compound Summary: Styrene*, NAT’L LIBR. OF MED., <https://pubchem.ncbi.nlm.nih.gov/compound/Styrene> (last visited Mar. 13, 2025).

148. See *Styrene*, *supra* note 143; *Compound Summary: Styrene*, *supra* note 147.147

149. See *Styrene*, *supra* note 147; *Compound Summary: Styrene*, *supra* note 143.

150. AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, PUBLIC HEALTH STATEMENT: STYRENE (June 2012), <https://www.atsdr.cdc.gov/toxprofiles/tp53-c1-b.pdf>.

151. See NAT’L TOXICOLOGY PROGRAM, REPORT ON CARCINOGENS (12th ed. 2011).

152. See Int’l Agency for Rsch. on Cancer, *Agents Classified by the IARC Monographs, Volumes 1-137*, <https://monographs.iarc.who.int/list-of-classifications> (last visited Mar 10, 2025) (use search field to search for styrene) (listing styrene under Group 2A, probable carcinogen).

153. See *Styrene*, OSHA, <https://www.osha.gov/styrene> (last visited Mar. 13, 2025); see generally *Group I Polymers and Resins: National Emission Standards for Hazardous Air Pollutants (NESHAP)*, EPA, <https://www.epa.gov/stationary-sources-air-pollution/group-i-polymers-and-resins-national-emission-standards-hazardous> (last visited Aug. 29, 2025)(aggregating historical regulation of styrene).

OSHA has promulgated a set of PELs for styrene that convey a number of limits. The most protective PEL is the eight-hour time-weighted average, which OSHA has set at 100 ppm.¹⁵⁴ Additionally, however, OSHA has set an “acceptable ceiling concentration” and an “acceptable maximum peak above the acceptable ceiling concentration for an 8-[hour] shift.”¹⁵⁵ The ceiling limit for styrene is 200 ppm, and the maximum peak is 600 ppm for no more than five minutes.¹⁵⁶

EPA, for its part, regulates styrene as one of a group of volatile organic compounds associated with the production of polymers and resins.¹⁵⁷ These compounds, including styrene,¹⁵⁸ are designated “hazardous air pollutants” under the CAA.¹⁵⁹ The source category of interest to EPA, and to the comparison herein, governs thermoplastic production and associated equipment.¹⁶⁰ The applicable national emissions standards for this source category for this particular group of compounds does not differentiate between individual pollutants, but instead sets total combined emissions limits.¹⁶¹ Thus, EPA’s limit applicable to styrene requires, among other things, the reduction of emissions through a combustion process to “98 weight percent reduction or to achieve a concentration of 20 parts per million by volume (ppmv) on a dry basis, whichever is less stringent.”¹⁶²

Since OSHA does not regulate emissions control devices and instead focuses solely on pollutant concentrations in the air, the hard numbers provide the only relevant point of comparison. OSHA treats up to 100 ppm of styrene in the air as acceptable and safe. EPA, on the other hand, maintains a regulation that limits emissions to concentrations one-fifth of that amount. Consequently, even the air directly spewing from a pollution control device (subject to EPA regulation) should have a lower concentration of styrene than the ambient air in a factory (as allowed by OSHA). Put another way, the proverbial tailpipe of styrene vapors would emit air that OSHA would deem safe enough to breathe.

154. See 29 C.F.R. § 1910(Z), Table Z2.

155. See *id.* 154; 29 C.F.R. § 1910.1000(b)(2) (“An employee’s exposure to a substance listed in Table Z-2 shall not exceed at any time during an 8-hour shift the acceptable ceiling concentration limit given for the substance in the table, except for a time period, and up to a concentration not exceeding the maximum duration and concentration allowed in the column under ‘acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift.’”).

156. 29 C.F.R. § 1910(Z), Table Z2.

157. See 40 C.F.R. § 63(JJJ).

158. See *id.*; *Initial List of Hazardous Air Pollutants with Modifications*, EPA (Nov. 21, 2024), <https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications> (listing styrene as CAS number 100425).

159. 40 C.F.R. § 63(JJJ); *Initial List of Hazardous Air Pollutants with Modifications*, EPA (Nov. 21, 2024), <https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications> (listing styrene as CAS number 100425).¹⁵⁸

160. See 40 C.F.R. § 63(JJJ).

161. See *id.*

162. *Id.* 160

This is troubling on many levels. First, the hazardous air pollutant emissions that EPA concerns itself with occur primarily outdoors, not within a confined space. And even in the outdoor air, EPA standards are more protective than the indoor air limits as set by OSHA. Second, an enforceable OSHA violation really does not occur until the concentration of styrene in the indoor air reaches two or even six times OSHA's weighted-average limit because the maximum peak concentrations are set so much higher than the average limits. That cushion makes the comparison even more stark. Lastly, styrene, and similarly regulated hazardous air pollutants in the same industry, pervade modern manufacturing. Styrene is perhaps the most important plastics monomer in the global market,¹⁶³ and is consequently produced at levels approaching thirty million tons worldwide.¹⁶⁴ The number of American workers potentially exposed to unsafe levels of styrene alone exceeds a quarter million, across five thousand plants.¹⁶⁵ The disparate protection offered to our working class from this one highly toxic chemical is a sad microcosm of the larger environmental injustice exposed throughout this Article.

2. *Vinyl Chloride in PVC Production*

A similar story unfolds in the case of vinyl chloride. Vinyl chloride is another chemical compound essential to the production of widely used plastics in modern society. Vinyl chloride is a colorless, flammable gas that does not occur naturally, but is produced in large quantities for commercial manufacturing purposes.¹⁶⁶ Its primary use is in the production of polyvinyl chloride (PVC), which is itself simply the polymerization of the gaseous vinyl chloride monomer.¹⁶⁷ PVC is most commonly associated with modern plumbing—the white rigid plastic pipes used in many buildings. Indeed, PVC is the world's third-most widely produced synthetic plastic polymer at about forty million tons per year.¹⁶⁸ As a necessary input to that production, vinyl chloride gas is present in many plastics manufacturing facilities and has the potential to harm workers through inhalation.¹⁶⁹ Additionally, the manufacturing process may release vinyl chloride emissions into the outdoor air.

163. Pavel Vodicka et al., *Spectrum of Styrene-Induced DNA Adducts: The Relationship to Other Biomarkers and Prospects in Human Biomonitoring*, 511 *Mutation Research* 239 (2002).

164. *Styrene*, AM. CHEM. SOC'Y (June 9, 2015), <https://www.acs.org/molecule-of-the-week/archive/s/styrene.html>.

165. See *Jobs & the Economy*, YOUKNOWSTYRENE, <https://youknowstyrene.org/jobs-economy/> (last visited Mar. 10, 2025).

166. See Francis A. Carey, *Vinyl Chloride*, in *ENCYCLOPEDIA BRITANNICA* (Kara Rogers et al.), <https://www.britannica.com/science/plastic> (last updated Oct. 4, 2012); *Vinyl Chloride*, NAT'L CANCER INST., <https://www.cancer.gov/about-cancer/causes-prevention/risk/substances/vinyl-chloride> (last updated June 13, 2024).

167. Osama M. Basmage & Mohamad S.J. Hashmi, *Plastic Products in Hospitals and Healthcare Systems*, in *ENCYCLOPEDIA OF RENEWABLE AND SUSTAINABLE MATERIALS* 648 (2020).

168. *Id.*

169. *Vinyl Chloride-ToxFAQs*, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (Jan. 2024), <https://www.atsdr.cdc.gov/toxfaqs/tfacts20.pdf>.

Vinyl chloride presents several dangers and health risks. At very high levels of acute exposure (far exceeding even OSHA limits), it can cause severe central nervous system effects and death.¹⁷⁰ The danger of acute exposure comes from the inability to smell the gas, hence underenforcement of limits and poor maintenance can result in undetected overexposure.¹⁷¹ Of more direct relevance to the comparison here between lower levels of chronic exposure is the fact that vinyl chloride is a known carcinogen. It is particularly associated with liver disease and liver cancer.¹⁷² Both the U.S. Department of Health and Human Services and the International Agency for Research on Cancer classify vinyl chloride as a known carcinogen.¹⁷³ Indeed, an infamous case of vinyl chloride workplace exposure from 1970 led to four workers at a PVC plant developing a rare type of cancerous tumor on the liver called angiosarcoma.¹⁷⁴

As with styrene, both EPA and OSHA have regulated vinyl chloride. The compound is listed as a hazardous air pollutant under the CAA.¹⁷⁵ EPA has thus put forward emissions standards for source categories and OSHA has set permissible exposure limits for its presence in indoor air at the workplace pursuant to its authority.

EPA has directed its concern at emissions from the production of PVC specifically. Its emission standards, among other things, limit the concentration of vinyl chloride in the air vented from PVC production processes.¹⁷⁶ For process venting from new, major facilities,¹⁷⁷ vinyl chloride emissions must be equal to or less than 0.56 ppm.¹⁷⁸ That limit applies to vents that channel emissions exclusively from PVC production and vents that combine emissions from PVC production and other processes.¹⁷⁹ These limits must be continuously complied

170. *Medical Management Guidelines for Vinyl Chloride (C₂H₃Cl)*, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <https://www.atsdr.cdc.gov/MHMI/mmg20.pdf> (last updated Oct. 21, 2024).

171. *See id.*

172. *See id.* (“Prolonged absorption of vinyl chloride can induce hepatotoxicity and hepatic cancers, including angiosarcoma.”).

173. *See id.*

174. Mark C. Howell, Jr., *Vinyl Chloride*, CONSUMER NOTICE (Apr. 26, 2023), <https://www.consumernotice.org/environmental/vinyl-chloride/>.

175. *Initial List of Hazardous Air Pollutants with Modifications*, EPA (Nov. 24, 2024), <https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications> (listing vinyl chloride as CAS number 75014).

176. *See* National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources [hereafter National Emission Standards], 40 C.F.R. § 63.11169 (2008).

177. From existing major facilities, EPA permits higher emissions. This is a classic example of so-called “new source bias.” New source bias refers to the situation where more stringent regulations apply to new sources, while grandfathered less stringent regulations apply to existing sources, thus creating perverse incentives. *See generally* Arik Levinson, *Grandfather Regulations, New Source Bias, and State Air Toxics Regulations*, 28 *ECOLOGICAL ECON.* 299 (1999).

178. *See* 40 C.F.R. § 63.11169.

179. National Emission Standards, 74 Fed. Reg. 22848, 22858 (April 17, 2012) (codified at 40 C.F.R. § 63.11925) (listing two subcategories for process vents based on whether the vent streams are collected

with, demonstrated by test run durations of at least an hour on a minimum five-year cycle.¹⁸⁰

OSHA has likewise set PELs for vinyl chloride, recognizing its prevalence in the production of a ubiquitous plastic product. OSHA's time-weighted average PEL comes in at 1 ppm over an eight-hour period.¹⁸¹ OSHA further limits maximum exposure to vinyl chloride to 5 ppm averaged over any period up to fifteen minutes.¹⁸²

The variation in the vinyl chloride standards is not as stark and not as clear-cut as styrene or any of the criteria pollutants discussed above. Nevertheless, at least for a new PVC production facility, the outdoor air right next to a vent from pollution control device is required by EPA to have lower levels of vinyl chloride than the indoor air is permitted to contain according to OSHA. Indeed, at 0.56 ppm for emissions and 1 ppm for indoor exposure limits, the air workers breathe may permissibly contain almost twice as much vinyl chloride gas as the air humans and animals living outside the facility breathe.

The PVC market is massive and growing. Biden's EPA made the replacement of lead pipes a major policy goal and funded it through the Bipartisan Infrastructure Law.¹⁸³ Much of that work requires new PVC pipes.¹⁸⁴ Industry estimates project the North American market for PVC to grow from about six billion tons in 2024 to almost eight billion tons in 2029 (a 33 percent increase in just five years).¹⁸⁵ If new production facilities come online to meet this demand, their emissions will have to conform with EPA's strict standards, while their workers will still be allowed to breathe dirtier air inside the facility. A more thoughtful approach would recognize that absurdity and do something to correct it, at least moving forward.

C. Radon

Unlike the air pollutants addressed thus far, radon gas is only of concern as a pollutant in confined spaces (i.e., indoors). Radon is an odorless and invisible radioactive gas that many are familiar with as a risk to homeowners when it is produced by naturally decaying uranium found in rocks common to construction

from: (1) Only PVC production processes (i.e., "PVC-only process vents") or (2) PVC production process and other non-PVC production processes, such as VCM or EDC manufacturing (i.e., "PVC-combined process vents").

180. *See id.*

181. 29 C.F.R. § 1910.1017(c)(1).

182. 29 C.F.R. § 1910.1017(c)(2).

183. Press Release, *EPA Launches New Initiative to Accelerate Lead Pipe Replacement to Protect Underserved Communities*, EPA (Jan. 27, 2023), <https://www.epa.gov/newsreleases/epa-launches-new-initiative-accelerate-lead-pipe-replacement-protect-underserved>.

184. *See id.*

185. Mordor Intelligence, *North America PVC Market Size & Share Analysis - Growth Trends & Forecasts (2024-2029)*, <https://www.mordorintelligence.com/industry-reports/north-america-polyvinyl-chloride-pvc-market> (last visited Mar. 10, 2025).

such as granite, shale, and limestone.¹⁸⁶ Importantly, for the purposes of this Article, radon is also released from mining and processing rocks containing uranium.¹⁸⁷ Radon gas escapes during the initial hard rock extraction and from later-constructed structures or the ground underneath them.¹⁸⁸ In either case, the danger arises when the gas moves into the indoor air in a confined space.¹⁸⁹ The resulting exposure kills an alarming number of Americans each year by causing lung cancer; it is second only to smoking as a cause of lung cancer.¹⁹⁰

OSHA from its earliest days has promulgated standards for ionizing radiation, pursuant to the authority granted by section 6(a) of the OSH Act.¹⁹¹ The OSHA limit applies to a forty-hour exposure in any workweek of seven consecutive days.¹⁹² The limits set by OSHA and guidelines set by EPA are all expressed in “picocuries per liter of air” or “pCi/L,” which is the common, and relatively easily obtained, measurement for the amount of radon in the air.¹⁹³

According to that initial OSHA regulation, which has not changed since 1971, the exposure limit for adult employees is 1×10^{-7} microcuries per milliliter ($\mu\text{Ci/ml}$) [100 picocuries/liter (pCi/L)] averaged over a forty-hour workweek.¹⁹⁴ OSHA also expresses the exposure limit as a yearly average and sets that limit for adult employees at 3×10^{-8} $\mu\text{Ci/ml}$ [30 pCi/L].¹⁹⁵ Those employees are exposed primarily through mining and processing operations that involve uranium-laden rocks.¹⁹⁶

EPA has been tasked with setting an “action level” for radon, rather than a standard; EPA does not regulate residential homeowner behavior in the same way it regulates industrial polluters. EPA estimates the average indoor radon

186. Carolyn Marie Shuko, *Radon Gas: Contractor Liability for an Indoor Health Hazard*, 12 AM. J.L. MED. 241, 242 (1986) (“These radon-releasing rocks are generally used in the construction industry to make products such as brick and concrete. Granite and limestone are also the major components of mechanically shaped stone used in the construction of buildings and walkways.”); see generally G.M. Reimer & L.C.S. Gundersen, *A Direct Correlation Among Indoor Rn, Soil Gas Rn and Geology in the Reading Prong near Boyertown, Pennsylvania*, 57 HEALTH PHYSICS 155 (1989).

187. EPA, A CITIZEN’S GUIDE TO RADON 3 (2016), https://www.epa.gov/sites/default/files/2016-12/documents/2016_a_citizens_guide_to_radon.pdf.

188. *Id.*

189. *Id.* at 4.

190. *Lung Cancer Causes & Risk Factors*, AM. LUNG ASS’N, <https://www.lung.org/lung-health-diseases/lung-disease-lookup/lung-cancer/basics/what-causes-lung-cancer> (last updated Sept. 25, 2024).

191. See 29 U.S.C. § 655 (authorizing OSHA to promulgate existing federal standards and national consensus standards as enforceable workplace standards).

192. The OSHA standard refers to airborne radioactive materials exposure limits in Table I and Table II of Appendix B to 10 C.F.R. § 20.

193. A CITIZEN’S GUIDE TO RADON, *supra* note 187, at 5.

194. 29 C.F.R. § 1910.1096(c)(1); see also SAM KIETH ET AL., TOXICOLOGICAL PROFILE FOR RADON, TABLE 8-1, Agency for Toxic Substances and Disease Registry (2012).

195. See OSHA Interpretation Letter to Connie K. DeWitte (Dec. 23, 2002), <https://www.osha.gov/laws-regs/standardinterpretations/2002-12-23#> (“[T]he current NRC radon-22 (with daughters present) exposure limit for adult employees [is] 3×10^{-8} $\mu\text{Ci/ml}$ [30 pCi/L] averaged over a year.”).

196. See WORLD HEALTH ORG., WHO HANDBOOK ON INDOOR RADON: A PUBLIC HEALTH PERSPECTIVE 4 (2009), https://iris.who.int/bitstream/handle/10665/44149/9789241547673_eng.pdf?

level to be about 1.3 pCi/L, compared to about 0.4 pCi/L in the outside air.¹⁹⁷ Congress has set a long-term goal of equalizing those two figures by reducing indoor air pollution.¹⁹⁸ EPA, and most radon professionals, will acknowledge that the long-term goal is not yet technologically achievable in all cases, but the indoor air of most structures can be reduced to 2.0 pCi/L or below relatively easily.¹⁹⁹

EPA has set an “action level” for mitigation at 4.0 pCi/L.²⁰⁰ EPA describes the proven methods of radon mitigation as follows:

There are several proven methods to reduce radon in your home, but the one primarily used is a vent pipe system and fan, which pulls radon from beneath the house and vents it to the outside. This system, known as a soil suction radon reduction system, does not require major changes to your home. Sealing foundation cracks and other openings makes this kind of system more effective and cost-efficient. Similar systems can also be installed in houses with crawl spaces. Radon contractors can use other methods that may also work in your home. The right system depends on the design of your home and other factors.²⁰¹

Some states require testing and remediation of radon in residential structures and some public buildings, like schools.²⁰² No federal or state law requires testing or remediation for industrial and commercial facilities.²⁰³ This is true despite the fact that many of such buildings dot the landscape of areas designated as “Zone 1- Highest Potential (greater than 4.0pCi/L)” by EPA and the United States Geological Survey.²⁰⁴ The radon zone maps published by EPA and the United States Geological Survey provide information to state and local policymakers and to landowners making decisions about testing and mitigation. States with higher risk profiles tend to be where regulations requiring testing, disclosure, and mitigation for residential structures exist.²⁰⁵ However, in those

197. A CITIZEN’S GUIDE TO RADON, *supra* note 187, at 7.

198. See 15 U.S.C. § 2661.

199. See EPA, A CONSUMER’S GUIDE TO RADON REDUCTION 3 (2016), https://www.epa.gov/sites/default/files/2016-12/documents/2016_consumers_guide_to_radon_reduction.pdf.

200. A CITIZEN’S GUIDE TO RADON, *supra* 187, at 2, 6.

201. *Id.* at 9.

202. See, e.g., CONN. GEN. STAT. § 10-220(d) (2024) (“Prior to January 1, 2008, and every five years thereafter, for every school building that is or has been constructed, extended, renovated or replaced on or after January 1, 2003, a local or regional board of education shall provide for a uniform inspection and evaluation program of the indoor air quality within such buildings . . . The inspection and evaluation program shall include, but not be limited to, a review, inspection or evaluation of the following: . . . (2) radon levels in the air.”).

203. See Kansas State Univ., *State Program Fact Sheets*, NAT’L RADON PROGRAM SERVS., <https://sosradon.org/state-fact-sheets> (navigate hyperlink for each state’s regulations) (last visited Mar. 13, 2025) (lacking any enacted regulation of indoor radon in industrial or commercial spaces).

204. A CITIZEN’S GUIDE TO RADON, *supra* note 187, at 7.

205. See *State Radon Laws*, POL’Y SURVEILLANCE PROGRAM, <https://legacy.lawatlas.org/datasets/state-radon-laws/> (interactive map) (last visited Mar. 13, 2025). This website is in transition; the most recent version is on file with author.

same areas, working people spend eight to ten hours a day (or more) in industrial and commercial buildings constructed on top of the same geological formations that may never have been tested for radon.

IV. CONSEQUENCES FOR WORKING PEOPLE

The health consequences of repeated high levels of exposure to air pollution in the workplace have been dire. America's working class is sick. And getting sicker. Studies confirm the intuition and anecdotal evidence.

The AFL-CIO has produced a regular report on the safety and health of American workers for more than thirty years.²⁰⁶ Among other things, the report provides estimated figures for workplace-related deaths. The most recent report, providing 2022 figures, estimated that approximately 120,000 workers die annually from "occupational diseases."²⁰⁷ Such deaths dwarf deaths from acute traumatic injuries, which come in just under 5,000 on an annual basis.²⁰⁸ Importantly, the study also measures racial disparities in risk of workplace death. AFL-CIO found that Latinx and Black workers faced higher risks of death than risks faced by all workers.²⁰⁹ The figures for Latinx workers are particularly striking. The fatality rate for Latinx workers has increased 15 percent over the decade 2012–2022.²¹⁰ Latinx workers died at a rate of 4.5 per 100,000 in 2022, which exceeded the overall rate by more than 30 percent.²¹¹

Both OSHA and the BLS track workplace injuries, illnesses, and related deaths. According to OSHA, "workers suffer more than 190,000 illnesses and 50,000 deaths annually related to chemical exposures."²¹² As described above, exposures have been linked to cancers and other serious diseases, including impairments of the nervous and reproductive systems.²¹³ According to BLS, within the manufacturing sector, the rate of respiratory illness was 17.9 per

206. *Death on the Job: The Toll of Neglect, 2024* [hereafter *Death on the Job 2024*], AFL-CIO (Apr. 23, 2024) <https://aflcio.org/reports/dotj-2024> ("This 2024 edition of 'Death on the Job: The Toll of Neglect' marks the 33rd year the AFL-CIO has produced a report on the state of safety and health protections for America's workers.").

207. AFL-CIO, *Death on the Job: The Toll of Neglect, 2022* [hereafter *Death on the Job 2022*], AFL-CIO (Apr. 26, 2022), <https://aflcio.org/reports/death-job-toll-neglect-2022>; *CA-2: Occupational Disease Claim Form*, NAT'L INSTS. OF HEALTH, <https://hr.nih.gov/benefits/pay/workers-compensation/ca-2-occupational-disease-claim-form-0> (last visited Mar. 10, 2025) ("An Occupational Disease is a condition produced in the work environment over a period longer than one work day or shift. It may result from systemic infection, repeated stress or strain, exposure to toxins, poisons or fumes, or other continuing conditions of the work environment.").

208. *See Death on the Job 2022*, *supra* note 207.

209. *See id.*

210. *Id.*

211. *Id.*

212. *Transitioning to Safer Chemicals: A Toolkit for Employers and Workers*, OSHA <https://www.osha.gov/safer-chemicals#1> (last visited Mar. 10, 2025) (citing Michael Wilson, Daniel Chia & Bryan Ehlers, *Green Chemistry in California: A Framework for Leadership in Chemicals Policy and Innovation*, 16 NEW SOLUT. 365 (2006)).

213. *Id.*

10,000 workers in 2022, resulting in 22,100 individual cases.²¹⁴ Additionally, BLS recorded 839 “fatal occupational injuries” attributable to “exposure to harmful substances or environments,” and seventy-nine (almost 10 percent) of those deaths were manufacturing workers.²¹⁵

A truly herculean survey that studied more than 160,000 individuals spanning six decades (1959–2018) sought to investigate the statistical connection between socioeconomic status and pulmonary disease.²¹⁶ The findings were stark—and quite consistent with the hypothesis offered herein: that working class Americans suffer disproportionately from exposure to pollution. The socioeconomic disparity in reported negative respiratory symptoms was persistently observed across the six decades of study.²¹⁷ Indeed, for some specific medical conditions, the disparities have widened over time—diagnosed chronic obstructive pulmonary disease (COPD) being the most prominent.²¹⁸ Thus, since at least the late 1950s, Americans working in lower-paying, hourly-wage industries have endured statistically worse pulmonary health. The study, of course, could not attribute that health disparity to exposures in the workplace. However, more lung disease among the working class is what one might logically expect when the regulatory disparities laid bare above translate to decades of exposure in our workplaces. The scientists behind the six-decade-long study were themselves compelled to conclude that “the benefits of improved air quality and smoking reductions have not been equally distributed [and] [s]ocioeconomic position may function as an independent determinant of pulmonary health.”²¹⁹ The study importantly revealed that not all of the disparity in pulmonary health can be attributed to divergence in smoking prevalence along socioeconomic lines.²²⁰ Put another way, the working class in America is not sicker only because they smoke more. Other variables, including workplace exposures like those described here, contribute to the unequal distribution of lung disease.

The Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry developed a tool called the Social Vulnerability Index (SVI) that provides key insight for environmental justice as it relates to

214. U.S. Bureau of Labor Statistics, *Survey of Occupational Injuries and Illnesses Data, 2022*, U.S. BUREAU OF LAB. STAT., <https://www.bls.gov/iif/nonfatal-injuries-and-illnesses-tables.htm> (Table SNR07, “Illness cases by category of illness - rates, counts, and percent - industry division”) (last updated Nov. 8, 2024).

215. *Id.*

216. Adam Gaffney, David Himmelstein, David Christiani & Steffie Woolhandler, *Socioeconomic Inequality in Respiratory Health in the US from 1959 to 2018*, 181 JAMA INTERN MED. 968 (2021).

217. *See id.* at 974–75.

218. *See id.* at 968 (“Income-based disparities in diagnosed COPD also widened over time, from 4.5 percentage points (age- and sex-adjusted) in 1971 to 11.3 percentage points from 2013 to 2018. Socioeconomic disparities in FEV₁ and FVC also increased. For instance, from 1971 to 1975, the age- and height-adjusted FEV₁ of men in the lowest income quintile was 203.6 mL lower than men in the highest quintile, a difference that widened to 248.5 mL from 2007 to 2012 (95% CI, –328.0 to –169.0).”).

219. *See id.* at 969.

220. *See id.* at 974. (“[D]isparities in the prevalence of cough and wheezing, in diagnosed asthma and COPD, and in FEV₁ and FVC, widened, trends only partly explained by differential changes in smoking.”).

toxic exposures and resultant public health emergencies.²²¹ The higher the SVI of a community, the more negative health effects due to environmental exposure it is likely to experience. The SVI of a community depends on a number of census factors, including socioeconomic status.²²² Researchers have used this tool to identify statistically significant correlations with incidence rates of particular health conditions, including respiratory illness, which is crucial to understanding the negative impacts of air pollution exposure. As established above, the United States government explicitly permits subjecting workers to higher levels of air pollution than the general public. And working-class communities tend to have higher SVI based on census factors like socioeconomic status, housing type, and transportation.²²³ Consequently, one would expect to find a correlation between SVI scores and respiratory illness, which this paper posits can be at least partly attributed to workplace exposures.

A team of medical researchers took the Centers for Disease Control and Prevention data from 2014–18 and examined it for correlations between SVI and respiratory illness.²²⁴ What they found is consistent with the hypothesis that working-class communities, particularly the poorest ones, are suffering from air pollution exposure. The study compared counties in the highest quartile of overall SVI scoring to those in the lowest (i.e. compared the most vulnerable residents to the least), and focused on subscores for socioeconomic status, household composition and disability, minority status and language, and housing type and transportation.²²⁵ There indeed has historically been a statistically significant correlation between social vulnerability, respiratory disease, and disease mortality.²²⁶ The study also found significant correlations between each subindex score, including, importantly, socioeconomic status and respiratory illness mortality.²²⁷ Specifically, the data revealed statistically significant disparities in incidence rates for COPD, asthma, and sarcoidosis.²²⁸ In the succinct, dispiriting words of the study’s authors, “[t]hese findings suggest[] sociodemographic determinants may add a considerable barrier to establishing

221. See *Social Vulnerability Index*, AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, <https://www.atsdr.cdc.gov/placeandhealth/svi/index.html> (last visited Mar. 10, 2025).

Social vulnerability refers to the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss. The CDC/ATSDR Social Vulnerability Index (CDC/ATSDR SVI) uses 16 U.S. census variables to help local officials identify communities that may need support before, during, or after disasters.

Id.

222. *See id.*

223. *See id.*

224. See Yu-Che Lee et al., *Association of County-Degree Social Vulnerability with Chronic Respiratory Disease Mortality in the United States*, 20 ANN. AM. THORACIC SOC. 47, 48–49 (2023).

225. *Id.*

226. *Id.* at 47 (“Chronic respiratory disease mortalities were significantly associated with county-level sociodemographic determinants as measured by the SVI in the United States.”).

227. *Id.* at 49–50.

228. *Id.*

health equity.”²²⁹ Put another way, there is environmental injustice in the air (quite literally).

The studies and statistics cited here are just a sample of the research out there.²³⁰ They tell a consistent and sobering tale. It is, in some ways, a tale as old as time. The people working the hardest, least desirable jobs are knowingly subjected to higher levels of environmental risk. Their bodies and lives are absorbing the externalities of our modern industrial economy. Karl Marx famously predicted this dynamic under capitalism; as people capture, through wages, only some of the value their labor creates, others capture the difference. The continued accumulation and consolidation of wealth leads to a situation where the working class is always increasing in number and increasing in “misery, oppression, slavery, degradation, [and] exploitation.”²³¹ In other words, the wealth of the few accumulates through the sacrifices of the many, facilitated by labor transactions that do not fully compensate workers for their labor, including the risks they bear in the workplace.

The rule of law, as currently written and enforced, utterly fails to protect these same working people; indeed, the law sanctions the disparate treatment of this vital subpopulation. Working Americans deserve more dedicated attention from environmental justice advocates. For years these advocates have advanced the cause of environmental protection for low-income communities, particularly communities of color. Many of those communities have significant overlap with the working-class communities covered by OSHA regulations.²³² However, only recently, in the context of “just transition” advocacy, have workers been the focus.²³³ Outside of the larger climate movement, a lot of work needs doing. Much of the risk workers face comes from air pollutants other than greenhouse gases, and, as such, solidarity between the broader environmental movement and the labor movement will be necessary to achieve real, positive change.

V. THE MODERN DECOUPLING OF LABOR AND ENVIRONMENT

The inability of the federal regime regulating workplace health and safety to evolve since the 1970s has produced a tragically unjust and dangerous world for America’s workers. Sadly, environmental and labor movement synergy peaked with the OSH Act and never reached its full potential. Without a coordinated, broad political effort on their behalf, in the all-too-familiar tale of

229. *Id.* at 47.

230. It is worth noting that these findings are aligned with disparities due to traditional environmental justice concerns. As such, the studies can at best demonstrate only correlation between membership in the working class and negative health outcomes. They cannot establish a conclusive causal link between the workplace itself and the negative health outcomes.

231. Karl Marx, *Historical Tendency of Capitalist Accumulation*, in CAPITAL (1867).

232. *See supra* Part I.

233. This is not to say that no attention has been paid *at all* to working people by environmental justice organizations. In particular, recent work promoting a “just transition” centers the workers who may, without intervention, bear the costs of shifting away from a fossil-fuel-based economy. *See, e.g., Just Transition: A Framework for Change*, CLIMATE JUST. ALL., <https://climatejusticealliance.org/just-transition/> (last visited Mar. 10, 2025).

marginalized groups in America, working people became the sacrifice at the altar of corporate capitalism. Their health and safety (i.e. their bodies) have come to count as another cost of economic growth and prosperity, the benefits of which accrue to wealthier, historically privileged Americans.

Economic stressors (e.g., rising costs, job scarcity) almost immediately exposed the tension in labor unions' support of environmental regulation and then pressured workers to align their positions with the companies that employed them.²³⁴ The energy crisis of the 1970s (punctuated by an oil embargo in 1973), stagflation, and globalization drove a wedge between environmentalists and unionists.²³⁵ Workers, concerned about their jobs disappearing or migrating offshore, cozied up to the corporate position against regulation.²³⁶ Environmentalists kept a narrow focus and failed to fully embrace the budding progressive agenda for combined social, economic, and environmental reform.²³⁷ The environmental movement is disproportionately white and economically advantaged;²³⁸ this homogeneity perpetuated an agenda that prioritized issues of concern to that dominant group at the expense of others.

Labor unions largely abandoned the political perspective that linked environmental quality to other socioeconomic conditions, reverting to the traditional set of concerns including wages, hours, benefits.²³⁹ Industry facilitated the transition away from union environmental advocacy, blackmailing workers with threats of plant closures allegedly due to the costs of compliance with more rigorous environmental standards.²⁴⁰ Despite the provably false nature of the majority of such claims,²⁴¹ frightened workers increasingly went beyond merely abandoning environmental causes and actually joined

234. It is worth noting that most of these stressors were a direct product of a capitalist system in which human labor functions as an important form of capital to be exchanged, manipulated, and exploited.

235. See, *supra* Part I.

236. Dewey, *supra* note 3, at 46–47 (“In the face of such changes, dislocations, and worries, working Americans during the 1970s grew increasingly receptive to the industry-promoted argument that the nation could not afford the luxury of environmentalism.”); *id.* at 58 (“As part of America’s general turn away from the bold reformist visions and freewheeling sociocultural experimentation of the 1960s, unions often joined industrial management in condemning environmental regulations as an economic burden and a threat to jobs.”).

237. *Id.*

238. See EMILY ENDERLE, DIVERSITY AND THE FUTURE OF THE US ENVIRONMENTAL MOVEMENT 6–7 (Jane Coppock eds. 2007) (“Study results presented in *Toward a New Ecological Majority* indicate that, of the nation’s Ecological Base (10 percent of the population and 15 percent of the electorate), 89 percent of members are white, 82 percent are older than 35, 78 percent have attended at least some college and 26 percent earn more than \$80,000 year. According to United States Census Bureau, in 2000 more than 31 percent of people in the U.S. were not white (12.7% Black, 12.6% Hispanic, 3.8% Asian and 2.5% Other).”).

239. *Id.* at 58.

240. *Id.*

241. See *id.* at 59 (“Statistically, such claims usually proved false, and the negative economic effects of environmental regulation have long been highly, and often disingenuously, overrated by industrial interests and their allies.”).

management in vocally opposing new environmental regulations.²⁴² With environmental groups and unions on opposite sides, “workers grew increasingly suspicious of environmentalists, which fueled the myth that organized labor and the environmental movement were inevitably opposed to one another.”²⁴³ Even so, some common ground remained on right-to-know legislation for toxic exposures in the workplace.²⁴⁴

The environmentalists versus workers dynamic grew so prominent that by the early 1980s, popular belief had settled on the conclusion that environmental and labor interests fundamentally opposed one another. The perception among the majority of the American working class was that environmentalists were aloof, extreme elitists indifferent to the economic concerns of ordinary people.²⁴⁵ They were, in some important ways, objectively correct in that assessment.²⁴⁶ These shifts in collaboration and perception were accompanied by a shift in predominant political affiliation. For example, almost half of the AFL-CIO abandoned the Democratic Party to vote for Ronald Reagan in 1980.²⁴⁷

Even the regulators themselves, EPA and OSHA, were reluctant partners in addressing environmental hazards in workplaces.²⁴⁸ It was not until 1991 that a comprehensive Memorandum of Understanding between the two came to set some clear boundaries and goals.²⁴⁹ The lack of coordination between these agencies may explain, though certainly not excuse, some of the environmental injustices highlighted above.

Politically, the divide between the working class and environmental movement at least persisted, if not grew, in the 1990s. Indeed, the conflict featured in one of the most prominent environmental protection fights of that decade—the effort to protect old growth forest habitats in the Pacific Northwest, also known as the “timber wars.” Groups representing truckers, loggers, and others very publicly came into conflict with environmental organizations and grassroots activists.²⁵⁰ This climate of conflict continues today, at least at the ground level.

242. See Robin Baker, Laura Stock & Valeria Velazquez, *The Roles of Labor Unions*, OCCUP'L & ENV'T HEALTH 699, 709 (2011) (“[T]he threat of plant closures was used by companies to enlist labor support in a fight against environmental control. . . . Public opinion generally held that labor would always side with business and industry against environmental protection and in favor of jobs.”).

243. See *id.* at 58–59.

244. OBACH, *supra* note 39, at 53.

245. Dewey, *supra* note 3, at 45.

246. See Denton E. Morrison & Riley E. Dunlap, *Environmentalism and Elitism: A Conceptual and Empirical Analysis*, 10 ENV'T. MGMT. 581, 581–89 (1986) (concluding that environmental elitism can lead to regressive impacts).

247. See *id.* at 45 (some poll-watchers surmised that these workers were drawn to the former actor's simplistic, pro-growth, anti-environmental stance).

248. R. Jeffrey Smith, *Toxic Substances: EPA and OSHA Are Reluctant Regulators*, 203 SCI. 28, 28 (1979).

249. EPA & OSHA, FY 1991 WORKPLAN IMPLEMENTING THE MEMORANDUM OF UNDERSTANDING BETWEEN THE UNITED STATES DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY OFFICE OF ENFORCEMENT (1991).

250. OBACH, *supra* note 39, at 54.

As the world lurches towards belatedly addressing the climate crisis, workers in the United States have markedly dragged their feet. The AFL-CIO and other prominent labor organizations campaigned against the Kyoto Protocol in the late 1990s and continue to support an all-of-the-above approach to energy development and reject the adoption of emissions targets.²⁵¹ More recently, leaders of national labor organizations have endorsed modest efforts to address climate change;²⁵² however, those positions have been criticized from both sides: workers²⁵³ and environmentalists.²⁵⁴ Labor movements in other countries have not experienced the American workers' divergence from environmentalism. In Canada, for example, the Canadian Labour Congress and other major labor organizations supported the Kyoto Protocol as well as the adoption and enforcement of formal emissions reduction targets.²⁵⁵ This support came in spite of the relatively high proportion of Canadian workers in the energy, automotive, mining, forestry, and other affected sectors.²⁵⁶ The Canadian labor movement thus could be said to embrace “social unionism”—that is, a form of unionism that responds to collective needs and crises beyond the worksite and strives to integrate labor into wider popular struggles for social and environmental justice.”²⁵⁷ The American labor movement at one time stood at the precipice of taking a similar approach, but decidedly backed away from that Reutherian perspective in the 1980s²⁵⁸ and has been skeptical of environmental regulation

251. Larry Savage & Dennis Soron, *Organized Labor, Nuclear Power, and Environmental Justice: A Comparative Analysis of the Canadian and U.S. Labor Movements*, 36 LAB. STUD. J. 37, 38 (2011).

252. *Convention Resolution 5: Climate Change, Energy and Union Jobs*, AFL-CIO (June 14, 2022), <https://aflcio.org/resolutions/resolution5>. *But see* Colby Itkowitz et al., *AFL-CIO Criticizes Green New Deal Calling It Not Achievable or Realistic*, WASH. POST (Mar. 12, 2019), https://www.washingtonpost.com/politics/afl-cio-criticizes-green-new-deal-calling-it-not-achievable-or-realistic/2019/03/12/842784fe-44dd-11e9-aaf8-4512a6fe3439_story.html.

253. *See, e.g.*, Umair Irfan, *The Green New Deal is Fracturing a Critical use for Democrats: unions*, VOX (June 19, 2019), <https://www.vox.com/2019/5/22/18628299/green-new-deal-labor-union-2020-democrats>; Jeanne Whalen, *Electric Vehicle Skepticism from Auto Workers Puts Biden in Tough Spot*, WASH. POST (July 10, 2023), <https://www.washingtonpost.com/business/2023/07/10/biden-ev-uaw-labor-union>.

254. *See, e.g.*, Nina Lakhani, *These Environmentalists Detest the Inflation Reduction Act*, MOTHER JONES (Aug. 10, 2022), <https://www.motherjones.com/politics/2022/08/environmentalists-hate-inflation-reduction-act-climate-bill-fossil-fuels/>.

255. Savage & Soron, *supra* note 251, at 38.

256. *Id.*

257. *Id.*

258. *See* Taylor E. Dark, *Organized Labor and the Presidential Nominating Process: Reconsidering the 1980s*, 26 PRESIDENTIAL STUD. Q. 391, 402 (1996) (describing how on “general welfare-state issues” labor unions had very little progress in the 1980s and began to ally with conservative leaders international); Robin Baker et. al, *The Roles of Labor Unions*, in Barry S. Levy et al., 6 OCCUPATIONAL AND ENV'T HEALTH 699 (2011).

[In the 1980s] tensions between organized labor and the environmental movement grew. Advocacy for environmental protection was increasingly perceived by labor as a threat to union jobs, which already were declining at an alarming rate. . . . As a result of well-publicized conflicts, such as the “timber wars” in the Northwest between loggers and environmental activists, the labor movement developed a reputation for being anti-

ever since. Not to be outdone, the environmental movement, particularly as carried forward by the professional NGOs, has only recently begun to correct its historically homogenous and exclusionary composition.

All the while, the environmental harms imposed upon the American working class have not abated. Indeed, one could argue that the retreat from environmental advocacy by labor groups has allowed OSHA to sleep at the wheel, or at least regulate toxic exposures with less scrutiny. And, what's worse, the environmental groups who prowl over EPA's every move like determined watchdogs have been cast as enemies of the working class by industry and politicians.²⁵⁹ Hence, there is less pressure and incentive to give OSHA comparable oversight.

VI. POTENTIAL, YET INADEQUATE, JUSTIFICATIONS

The legally sanctioned disparate treatment exposed for the first time in this Article demands an explanation. No serious commentator, or feeling human being, would condone the literal poisoning of millions of Americans without a reason. Maybe the legal answer is simple: the underlying laws empowering OSHA and EPA require different levels of protection. If so, the underlying moral and policy question as to *why* the law would create such a distinction would remain. If that is not the legal answer, and the statutory delegations of authority to EPA and OSHA are similarly broad, OSHA cannot hide behind its statutory mandate to absolve the agency of culpability for its failure to adequately protect the working class.

The OSH Act defines an "occupational safety and health standard" as a requirement, specifying environmental conditions, operational practices, methods, or precautions, that is "reasonably necessary or appropriate to provide safe or healthful employment and places of employment."²⁶⁰ Where the standard concerns exposure to toxic materials or harmful physical agents, OSHA must "set the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity."²⁶¹ The key phrases in this statutory language are "to the extent feasible" and "material impairment."²⁶² Those phrases cabin OSHA's discretion in standard setting. However, they mean very little without interpretation.

environmentalist. Similarly, many workers came to view the environmental movement as anti-labor and uncaring about workers. Public opinion generally held that labor would always side with business and industry against environmental protection and in favor of jobs. *Id.* at 709.

259. See, e.g., A.J. Higgins, *LePage Declares 2 Maine Groups 'Enemies'*, NAT'L RES. COUNCIL OF ME. (Apr. 26, 2016), <https://www.nrcm.org/news/lepage-declares-2-maine-groups-enemies/> ("If you want this state to be an affordable and good place — not only to live and raise your family, but to be able to get out of poverty and into prosperity — we need to fight back against the Natural Resource Council of Maine . . .").

260. 29 U.S.C. § 652(8).

261. 29 U.S.C. § 655(b)(5).

262. See *id.*

The Supreme Court famously had occasion to weigh in on the extent of OSHA's authority in setting protective workplace standards early in the Agency's existence. In 1980, in *Industrial Union Department, AFL-CIO v. American Petroleum Institute*²⁶³ (also known as the "Benzene Case"), the Supreme Court considered a challenge to OSHA's permissible exposure limit of airborne concentrations of benzene (which had been lowered from 10 ppm to 1 ppm).²⁶⁴ The Secretary of Labor relied on an interpretation of the phrase "extent feasible" in section 6 of the OSH Act that required OSHA, at least for carcinogens, to "set an exposure limit at the lowest technologically feasible level that will not impair the viability of the industries regulated."²⁶⁵ The Supreme Court rejected that interpretation of the statute. Instead, the Court infamously wrote, "'safe' is not the equivalent of 'risk-free.'"²⁶⁶ The OSH Act requires the Secretary to make a threshold determination that a workplace OSHA intends to regulate is "unsafe" before advancing to the step of setting, or changing, a standard, such as a PEL.²⁶⁷ In making that determination, the relevant question, due to the "extent feasible" language, is whether "significant risks are present and can be eliminated or lessened by a change in practices."²⁶⁸ This threshold question applies consistently to all standards set pursuant to the OSH Act, including, importantly, those setting exposure limits for toxic materials.²⁶⁹ The Supreme Court held, unsurprisingly, that the stricter airborne benzene standard thus exceeded the authority delegated to OSHA under the Act.²⁷⁰ Importantly, the Court held that section 6 of the OSH Act, empowering the Agency to set

263. 448 U.S. 607 (1980).

264. *Id.* at 607.

265. *Id.* at 613 ("Wherever the toxic material to be regulated is a carcinogen, the Secretary has taken the position that no safe exposure level can be determined, and that § 6(b)(5) requires him to set an exposure limit at the lowest technologically feasible level that will not impair the viability of the industries regulated.")

266. *Id.* at 611.

267. *Id.*

268. *Id.*

269. *Industrial Union Department, AFL-CIO v. American Petroleum Institute*, 448 U.S. 607, 642 (1980).

Therefore, before the Secretary can promulgate any permanent health or safety standard, he must make a threshold finding that the place of employment is unsafe in the sense that significant risks are present and can be eliminated or lessened by a change in practices. This requirement applies to permanent standards promulgated pursuant to § 6 (b)(5), as well as to other types of permanent standards, there being no reason why § 3 (8)'s definition of a standard should not be deemed incorporated by reference into § 6 (b)(5). Moreover, requiring the Secretary to make a threshold finding of significant risk is consistent with the scope of his regulatory power under § 6 (b)(5) to promulgate standards for 'toxic materials' and 'harmful physical agents.' This interpretation is supported by other provisions of the Act, such as § 6 (g), which requires the Secretary, in determining the priority for establishing standards, to give due regard to the urgency of the need for mandatory safety and health standards for particular industries or workplaces, and § 6 (b)(8), which requires the Secretary, when he substantially alters an existing consensus standard, to explain how the new rule will 'better effectuate' the Act's purposes. *Id.* at 608.

270. *Id.* at 607-08.

standards for toxic exposures, “did not give OSHA the unbridled discretion to adopt standards designed to create absolutely risk-free workplaces, regardless of cost.”²⁷¹ This decision made OSHA’s task in promulgating new PELs significantly more burdensome. Since the Benzene Case, the record evidence necessary to support strict OSHA standards now must establish an *unsafe* work environment, an ability to make it demonstrably safer via current regulation, and a manageable cost of compliance with the regulation. Put another way, Supreme Court interpretation has made clear that OSHA standards must only eliminate *significant* risks of harm, and only when economically and technologically feasible.²⁷²

Turning to EPA’s authority, the CAA prescribes how the agency should issue NAAQS.²⁷³ Section 108 of the CAA directs the EPA Administrator to set ambient air quality standards for the protection of human health; these are explicitly health-based (rather than technology-based) standards.²⁷⁴ Indeed, the Act’s language defines primary NAAQS as “ambient air quality standards the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing for an *adequate margin of safety*, are requisite to protect the *public health*.”²⁷⁵ This statutory language specifically calls for standards that center health and safety and include a buffer to account for uncertainty. Instead of requiring an initial determination that the air is unsafe before standards must be promulgated, the CAA tasks the Administrator with identifying *pollutants* whose presence in the ambient air potentially endangers public health.²⁷⁶

In *Whitman v. American Trucking Associations*,²⁷⁷ the Supreme Court famously held that the CAA does not permit EPA to consider costs of

271. *Id.* at 608; *see also id.* at 641 (“[W]e think it is clear that the statute was not designed to require employers to provide absolutely risk-free workplaces whenever it is technologically feasible to do so, so long as the cost is not great enough to destroy an entire industry.”).

272. *See id.* at 642 (“If the purpose of the statute were to eliminate completely and with absolute certainty any risk of serious harm, we would agree that it would be proper for the Secretary to interpret §§ 3(8) and 6(b)(5) in this fashion. Rather, both the language and structure of the Act, as well as its legislative history, indicate that it was intended to require the elimination, as far as feasible, of significant risks of harm.”).

273. *See* 42 U.S.C. § 7408.

274. 42 U.S.C. § 7409.

275. *Id.* (emphasis added).

276. 42 U.S.C. § 7408(a)(1).

(1) For the purpose of establishing national primary and secondary ambient air quality standards, the Administrator shall within 30 days after December 31, 1970, publish, and shall from time to time thereafter revise, a list which includes each air pollutant—(A) emissions of which, in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare; (B) the presence of which in the ambient air results from numerous or diverse mobile or stationary sources; and (C) for which air quality criteria had not been issued before December 31, 1970 but for which he plans to issue air quality criteria under this section. *Id.*

277. 531 U.S. 457 (2001).

implementation when setting NAAQS.²⁷⁸ Justice Scalia, writing for a unanimous Court, laid out the process of ambient air standard-setting simply:

EPA, “based on” the information about health effects contained in the technical “criteria” documents compiled under § 108(a)(2) . . . is to identify the maximum airborne concentration of a pollutant that the public health can tolerate, decrease the concentration to provide an “adequate” margin of safety, and set the standard at that level. Nowhere are the costs of achieving such a standard made part of that initial calculation.²⁷⁹

Since that monumental decision over two decades ago, the health-based nature of the NAAQS has been a matter of well-settled environmental law.²⁸⁰ Quite the opposite of the Benzene Case ruling for OSHA, the *Whitman Trucking* ruling has made EPA’s job in setting air pollution standards more straightforward and less cumbersome.

The CAA also prescribes the authority for EPA to issue National Emissions Standards for Hazardous Air Pollutants (NESHAPs).²⁸¹ The Supreme Court has also had occasion to interpret the language dictating the appropriate inputs to those standards. Section 112 of the CAA directs the Administrator to take a technology-based approach to hazardous air pollutants. That section requires the setting of emissions standards based on the economic and technical feasibility of controlling the air toxin in question.²⁸² Specifically, NESHAPs must be based on Maximum Achievable Control Technology, which may include prohibition on emissions of particular pollutants entirely.²⁸³ Importantly, although these are

278. *Id.* at 471 (“The text of § 109(b), interpreted in its statutory and historical context and with appreciation for its importance to the CAA as a whole, unambiguously bars cost considerations from the NAAQS-setting process, and thus ends the matter for us as well as the EPA.”).

279. *Id.* at 465.

280. See Michael A. Livermore & Richard L. Revesz, *Rethinking Health-Based Environmental Standards*, 89 N.Y.U. L. REV. 1184, 1185–86 (2014).

Whitman v. American Trucking Associations is understood across the political spectrum to hold that the U.S. Environmental Protection Agency (EPA) may not consider costs when setting National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (CAA). This decision was lauded by protection-oriented groups as a major victory for public health and the environment, and severely criticized by regulated industry and anti-regulatory groups for imposing burdensome costs in pursuit of unrealistic levels of environmental safety. Both sides therefore seem to agree that were EPA to engage in cost-benefit analysis of its proposed air quality standards, the results would be more industry friendly and less environmentally protective. This conventional account is widely shared in the academic literature. *Id.*

281. See 42 U.S.C. § 7412.

282. See *id.*

283. See *id.* § 7412(d)(2)

(“Emissions standards promulgated under this subsection and applicable to new or existing sources of hazardous air pollutants shall require the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section (including a prohibition on such emissions, where achievable) that the

technology-based standards, the overall program still has human health as a central goal.²⁸⁴ The list of hazardous air pollutants, supplied by Congress in the first instance,²⁸⁵ is subject to revision by the Administrator, who is tasked specifically with “adding pollutants which present, or may present, through inhalation or other routes of exposure, a threat of adverse human health effects.”²⁸⁶

Radon is an entirely different story, as EPA does not explicitly regulate it. Instead, Congress put EPA on a public health communication mission, leaving it largely to states and municipalities to impose enforceable standards through building and housing codes. EPA was required by statute to prescribe “action levels” for radon.²⁸⁷ These “action levels” tell people the health risk associated with different levels of radon exposure. Alongside this important health-based information, EPA is also required to indicate the corrective actions people can take to mitigate the risk, including the technological feasibility and cost of the actions.²⁸⁸ These standards are set in order to make progress towards the statutorily prescribed goal of having radon levels in buildings that are at or below the levels in ambient outdoor air.²⁸⁹ That national goal is both ambitious and focused on human health.

As the statutory language and Supreme Court jurisprudence indicate, the mandates for OSHA and EPA differ. That difference in mandate could at least partly explain the disproportionate lack of protection for the working class exposed in this Article. However, that legalistic explanation is necessarily

Administrator, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable for new or existing sources in the category or subcategory to which such emission standard applies, through application of measures, processes, methods, systems or techniques . . .”).

284. *See id.* § 7412(f)(2)(a) (“Emission standards promulgated under this subsection shall provide an ample margin of safety to protect public health.”).

285. *Id.* § 7412 (b)(1).

286. *See id.* § 7412(b)(2) (“The Administrator shall periodically review the list established by this subsection and publish the results thereof and, where appropriate, revise such list by rule, adding pollutants which present, or may present, through inhalation or other routes of exposure, a threat of adverse human health effects (including, but not limited to, substances which are known to be, or may reasonably be anticipated to be, carcinogenic, mutagenic, teratogenic, neurotoxic, which cause reproductive dysfunction, or which are acutely or chronically toxic) or adverse environmental effects whether through ambient concentrations, bioaccumulation, deposition, or otherwise, but not including releases subject to regulation under subsection (c) as a result of emissions to the air.”).

287. *See id.* § 2663(b)(1) (“The updated citizen’s guide published as provided in subsection (a) shall include a description of a series of action levels indicating the health risk associated with different levels of radon exposure.”).

288. *See id.* § 2663(b)(2). (“The updated citizen’s guide shall also include information with respect to each of the following: (A) The increased health risk associated with the exposure of potentially sensitive populations to different levels of radon[;] (B) The increased health risk associated with the exposure to radon of persons engaged in potentially risk-increasing behavior[;] (C) The cost and technological feasibility of reducing radon concentrations within existing and new buildings[;] (D) The relationship between short-term and long-term testing techniques and the relationship between (i) measurements based on both such techniques, and (ii) the actions 1 levels set forth as provided in paragraph (1).”).

289. *See id.* § 2661 (“The national long-term goal of the United States with respect to radon levels in buildings is that the air within buildings in the United States should be as free of radon as the ambient air outside of buildings.”).

incomplete. Even OSHA's mandate requires the Agency to respond to unsafe levels of indoor air pollution, particularly when known technology exists to mitigate the risk. OSHA itself has admitted a failure to do just that with respect to many of the standards analyzed in this Article.²⁹⁰ For a specific example, one need look no further than radon. Radon can be cost-effectively mitigated to safe levels in most buildings. The danger posed by exposure within current OSHA limits is well-documented. Thus, OSHA's failure to protect workers from that pollutant cannot be attributed to the limited extent of its statutory authority. Perhaps another explanation justifies the disparity. The following subsections deal with the three most common justifications for disparate regulatory protections for workers: they are exposed only during work hours; they have access to PPE; and they are compensated (directly or indirectly) for the additional risk they face.

A. Time of Exposure

Perhaps, the disproportionate protection can be explained by the different times of exposure evaluated by EPA and OSHA. In theory, EPA's air quality and emissions standards dictate the level of pollutants in the air everyone in a particular region continuously breathe in, twenty-four hours a day, seven days a week. However, OSHA controls the air breathed in by workers for a smaller subset of time—eight hours a day, five days a week. As such, the lower exposure time could explain a higher threshold for dangerous pollutants in the air. Unfortunately, the math does not support this explanation.

OSHA makes clear in setting PELs that it assumes eight-hour workdays. The Agency also, in some instances, provides a formula for calculating PELs for workers who have extended hours. The PEL for lead is one such situation. According to OSHA regulation, for employees who work more than eight hours, the PEL is calculated using the following formula: maximum permissible limit (in $\mu\text{g}/\text{m}^3$) = $400 \div \text{hours worked in the day}$.²⁹¹ Hence, one simple way to compare EPA and OSHA limits would be to assume someone who works twenty-four hours a day. The resulting PEL for a person with that unusually cruel shift would be $16.6666 \mu\text{g}/\text{m}^3$.²⁹² As noted above, the EPA standard for lead in the ambient air is $0.15 \mu\text{g}/\text{m}^3$.²⁹³ OSHA would permit a worker to continuously breathe air that contains more than one hundred times the level of lead that EPA

290. See *Permissible Exposure Limits – Annotated Tables*, OSHA, <https://www.osha.gov/annotated-pels> (last visited Mar. 10, 2025) (“Industrial experience, new developments in technology, and scientific data clearly indicate that in many instances these adopted limits are not sufficiently protective of worker health. This has been demonstrated by the reduction in allowable exposure limits recommended by many technical, professional, industrial, and government organizations, both inside and outside the United States.”).

291. 29 C.F.R. § 1910.1025(c)(2).

292. $400 \div 24 = 16.6666$.

293. See *supra* Part III.A.1.

permits for the ambient air. Put another way, even when using OSHA's own methodology to account for differing exposure times, the inadequacy of worker protections persists at a two-orders-of-magnitude scale.

B. Personal Protective Equipment

Another potential explanation for disparate treatment is the availability of personal protective equipment (PPE). Individuals who work in environments with contaminated air can utilize various levels of protection to filter the air that reaches their lungs. In fact, OSHA even requires such equipment in certain contexts.²⁹⁴ EPA obviously does not mandate people use PPE to breathe in ambient air. Thus, if compliance with OSHA PELs were measured in indoor air *before* any PPE acts on or filters it, the PELs might not accurately reflect the risk worker's encounter. Sadly, that potential explanation clashes with reality.

Per OSHA regulation, compliance with a PEL in a workplace where PPE is utilized can be demonstrated by reference to the air quality *after* the equipment acts on or filters it. Specifically, the regulation states that "employee exposure, for the purpose of determining whether the employer has complied with the PEL, may be considered to be at the level provided by the protection factor of the respirator for those periods the respirator is worn."²⁹⁵ In other words, when the worker is required to wear a mask, the air quality that matters for OSHA purposes is the air quality inside the mask, but only for those times. Thus, the availability of PPE cannot explain PELs far in excess of EPA ambient air quality standards and emissions limits. Compounding the problem, OSHA regulation further permits employers to average their employees' exposure between periods where they are and are not required to wear PPE.²⁹⁶

According to OSHA's own records, society cannot be confident that employers follow regulations and proper procedures with respect to PPE. OSHA annually reports the most frequently cited standards for violations. In 2022, the "Respiratory Protection"²⁹⁷ standard ranked as the seventh most violated standard, as measured by citations issued.²⁹⁸ The standard was included in almost 2,500 citations for 2023, which was almost 500 more than citations for other types of PPE and almost 1,000 more than machine guarding.²⁹⁹ On the other end, the only type of citations that far surpassed respiratory protection citations were fall protection requirement citations, which numbered just over 7,000 and were the most frequent citation by far.³⁰⁰ Given the noted resource

294. See, e.g., 29 C.F.R. § 1910.134(a)(2) ("A respirator shall be provided to each employee when such equipment is necessary to protect the health of such employee.").

295. 29 C.F.R. § 1910.1025(c)(3).

296. *Id.*

297. 29 C.F.R. § 1910.134.

298. *Top 10 Most Frequently Cited Standards for Fiscal Year 2023 (Oct. 1, 2022, to Sept. 30, 2023)*, OSHA, <https://www.osha.gov/top10citedstandards> (last visited Mar. 10, 2025).

299. See *id.*

300. See *id.*

constraints and consequent underenforcement of OSHA standards,³⁰¹ it is likely that many more workplaces than even those cited fail to adequately provide and implement PPE. Thus, even if one were to accept that PPE could eliminate the increased risk workers are subjected to, the limited available evidence suggests it is not doing so in practice.

C. Economic Growth

Recognizing the inadequacy or incompleteness of potential legal and technical justifications for disparate treatment, one might be tempted to grasp for an economic rationale. That type of rationale depends upon accepting a tradeoff between the health of the working class and some economic benefit. The underlying assumption of fungibility between economic (e.g. money) and non-economic values (e.g. human or environmental health) has been hotly contested in environmental law for decades.³⁰² Modern cost-benefit analysis depends upon this type of thinking, but that does not mean tradeoffs can be morally condoned in every instance. Here, the health of a particular community, an environmental justice community according to this Article,³⁰³ suffers in return for some economic benefits—both to that community directly and to society at large. That deal is inherently unfair and inhumane and should be rejected as the basis for the mistreatment identified here.

Notwithstanding said moral objection to the tradeoff, it is worth exposing the flawed economics of the situation, even on its own terms. First, let us take the tradeoff for individual workers and the argument that they receive compensation for enduring the heightened health risks described above. Given the relative financial status of the working class in American society, claiming that they enjoy some special compensation relative to white collar workers, for instance, seems dubious at best. Further, an economist would accept this explanation only if the worker trading their health for compensation had

301. The OSH Act set forth two mechanisms for enforcement—direct federal enforcement and delegated enforcement by states facilitated by federal funds and accompanied by oversight. *See* 29 U.S.C. §§ 657–659, 667. The under-resourcing of OSHA and underenforcement of OSHA regulations is beyond the scope of this Article but has been well documented and discussed elsewhere. *See, e.g., Death on the Job 2024, supra* note 206. According to publicly available data, OSHA has less than two thousand inspectors to inspect the over eleven million workplaces and thus could inspect every workplace once every 186 years. *Id.* Put another way, OSHA’s current budget equates to less than four dollars available to protect each worker. *Id.* Scholars have also criticized OSHA’s ability to enforce its existing regulations. *See, e.g.,* Sidney A. Shapiro & Randy Rabinowitz, *Voluntary Regulatory Compliance in Theory and Practice: The Case of OSHA*, 52 ADMIN. L. REV. 97 (2000); Thomas McGarity, Rena I. Steinzor, Sidney A. Shapiro & Matthew Shultz, *Workers at Risk: Regulatory Dysfunction at OSHA*, CTR. FOR PROGRESSIVE REFORM, White Paper No. 1003 (2010).

302. *See generally* DOUGLAS A. KYSAR, *REGULATING FROM NOWHERE: ENVIRONMENTAL LAW AND THE SEARCH FOR OBJECTIVITY* (Yale Univ. Press 2010); FRANK ACKERMAN & LISA HEINZLERING, *PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING* (The New Press 2004).

303. *See supra* Part I.

something close to perfect information (i.e. they understood the terms of the transaction).³⁰⁴ The necessity of this Article as the first of its kind laying out the stark realities of sanctioned under-protection (at least as it concerns breathable air) proves just how far the current situation is from the perfect information ideal. The truth is, sadly, that information and policy on indoor air pollution in general, let alone in workplaces, lags behind the issue of outdoor air pollution.³⁰⁵

Another utilitarian-based theory posits that some amount of workplace risk necessarily accompanies today's relatively high standard of living. Modern society may need at least some subset of the working class to endure higher levels of exposure so that vital products and materials continue to be available. In other words, the overall economic well-being of a techno-industrial society, a well-being that everyone living in society benefits from, costs human health of some workers. This line of thinking lays bare the moral dilemma discussed above. But, beyond that serious objection, in a democratic society any tradeoffs of this kind should be made explicit to the voting populous. Thomas Jefferson recognized the importance of a well-informed (rather than ignorant or deceived) electorate.³⁰⁶ And, more recently and directly relevant here, having an informed voting populace, and the consequent democratic pressure, is one of the primary justifications for laws that make information available about the environmental and public health effects of government action (i.e., "transparency" or "public participation").³⁰⁷ And, again, this Article is evidence that no such information on disparate workplace exposures has been publicly communicated.

In sum, there is simply no satisfying explanation for the disparate environmental protections offered America's workforce. This is unsurprising. It is rightfully difficult to justify the poisoning of an entire socioeconomic class.

VII. A WAY FORWARD

The disparate treatment laid bare in these pages demands a response. The tumultuous history of strategic collaboration between labor and environmental organizations has reached an inflection point. The working class is slowly being poisoned, with government approval. A coordinated effort across these two politically powerful progressive factions undoubtedly stands the best chance of pushing society to change course. Further, the most effective strategy would proceed on two fronts, public and private governance. To its credit, OSHA has pointed in both directions in public statements, saying the Agency needs to

304. See, e.g., Shapiro & Rabinowitz, *supra* note 302, at 120 ("[I]t is unlikely that workers receive wage premiums that fully compensate them for work-related risks. For wage premiums to be fully compensating, workers (or at least some workers) must be fully informed about work-related risks.").

305. See Samantha Ammons et al., *Perception of Worry of Harm from Air Pollution: Results from the Health Information National Trends Survey (HINTS)*, 22 BMC PUB. HEALTH 1254, *8 (2022) ("[R]esearch and subsequent policy interventions focused on the health impacts of indoor air pollution lags behind that of outdoor air pollution.").

306. Letter from Thomas Jefferson to Richard Price (Jan. 8, 1789), in FOUNDERS ONLINE NAT'L ARCHIVES, <https://founders.archives.gov/documents/Jefferson/01-14-02-0196> (last visited Mar. 10, 2025) ("[W]herever the people are well informed they can be trusted with their own government.").

307. See, e.g., NEPA.

update regulatory standards, *and*, in the meantime, corporate governance can help better protect workers.³⁰⁸

In the traditional public government space, much of the desired level of protection for workers can be achieved pursuant to the current statutory scheme. In other words, regulatory change, primarily in PELs, could go a long way towards environmental justice for the working class. On the website where OSHA publishes current PELs for the public to see, the Agency openly “recognizes that many of its [PELs] are outdated and inadequate for ensuring protection of worker health.”³⁰⁹ The Agency candidly admits to not updating many of its PELs since their initial adoption some five decades ago.³¹⁰ OSHA goes on to concede generally the point made specifically clear in this Article: “Industrial experience, new developments in technology, and scientific data clearly indicate that in many instances these adopted limits are not sufficiently protective of worker health.”³¹¹ Given these admissions, it must be a lack of resources, political, human, fiscal, or otherwise, that prevents OSHA from correcting its acknowledged error. As such, coordinated pressure from labor *and* environmental groups could help provide some political capital. Additionally, as the comparisons above suggest,³¹² EPA has already invested in resources to make many of the necessary findings regarding the human health impacts of pollutants that OSHA regulates. Intentional and directed OSHA and EPA interagency work on pollutants where their jurisdictions overlap could help ease the resource burden. An interagency working group could systemically examine all PELs and corresponding EPA standards, expanding on the work began here.³¹³ If done effectively, this work could at least eliminate the obvious instances of disparate treatment, improving worker protections and avoiding the continuation of an embarrassing instance of government mistreatment of the working class.

Private governance (i.e. corporate policies for the control of toxic exposures to workers) will have to play a role in closing the class-based gap on environmental protection. As OSHA has pointed out, some large companies already supplement insufficiently protective PELs with their own corporate

308. *Permissible Exposure Limits – Annotated Tables*, *supra* note 290 (“Most of OSHA’s PELs were issued shortly after adoption of the Occupational Safety and Health (OSH) Act in 1970, and have not been updated since that time. . . . Many large industrial organizations have felt obligated to supplement the existing OSHA PELs with their own internal corporate guidelines.”).

309. *Id.*

310. *Id.*

311. *Id.*

312. *See supra* Part III.

313. *See, e.g.*, Exec. Order No. 12,898, 59 C.F.R. 32 (1994) (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) (establishing the Interagency Working Group on Environmental Justice (EJ IWG) to facilitates the active involvement of all Federal agencies in implementation of the substantive goals of the Order).

policies.³¹⁴ Labor unions, including (ironically or tellingly, depending on your perspective) the American Federation of Government Employees (AFGE), also recognize that health and safety policies are an appropriate, and often necessary, subject of collective bargaining.³¹⁵ Nonetheless, one study of “virtually all” collective bargaining agreements covering more than one thousand employees in the late 1990s and early 2000s, found that only 58 percent had any health and safety provisions whatsoever.³¹⁶ And, of those that had health and safety provisions, less than 10 percent covered indoor air quality.³¹⁷ And most of those provisions constituted agreements by employers to disclose information on air pollutants, rather than agreements to control pollutants to certain levels.³¹⁸

More aggressive collective bargaining on actual environmental protections for workers, bolstered by external pressure from environmental advocates, could yield improved results. The potential for a private ordering solution to a long-unaddressed pattern of government discrimination has practical appeal. It could be implemented more quickly than the regulatory change suggested above. Collectively bargained agreements would also not be subject to judicial review. The provisions could be more narrowly tailored to individual industries and specific exposures. All of these advantages counsel for directed efforts on the part of labor unions, supported and informed by environmental groups, to make environmental performance conditions and metrics explicit negotiating items in new collective bargaining agreements. However, a private solution cannot be the only solution. Even if superseded by private agreement, official government policy sanctioning disparate treatment of the working class amounts to environmental injustice. As Cass Sunstein famously articulated, statutes (and by extension regulations) serve an expressive, in addition to behavior-policing, function.³¹⁹ Sunstein specifically mentions environmental law *and* antidiscrimination law as areas where the expressive function carries increased weight.³²⁰ Environmental injustices, like those exposed in this Article, implicate

314. *Permissible Exposure Limits – Annotated Tables*, *supra* note 290 (“Many large industrial organizations have felt obligated to supplement the existing OSHA PELs with their own internal corporate guidelines. . . . OSHA recommends that employers consider using the alternative occupational exposure limits because the Agency believes that exposures above some of these alternative occupational exposure limits may be hazardous to workers, even when the exposure levels are in compliance with the relevant PELs.”).

315. *Bargaining for Health and Safety*, AM. FED’N OF GOV’T EMPS., <https://www.afge.org/member-benefits/health-and-safety/bargaining-for-health-and-safety/> (last visited Mar. 10, 2025).

316. George Gray, Donald Myers & Phyllis Myers, *Collective Bargaining Agreements: Safety and Health Provisions*, 121 MONTHLY LAB. REV. 13, 15 (May 1998).

317. *Id.*

318. *See id.* (“Provisions citing air quality involve the employer’s agreeing to provide the union with the names of all hazardous materials, including aerosols, that are present at the work site and that may contaminate or otherwise adversely affect the air.”).

319. *See* Cass Sunstein, *On the Expressive Function of Law*, 144 UNIV. PA. L. REV. 2021, 2022, 2024 (1996) (“Many people support law because of the statements made by law, and disagreements about law are frequently debates over the expressive content of law.”).

320. *See id.* at 2044 (“Antidiscrimination law is often designed to change norms so as to ensure that people are treated with a kind of dignity and respect that discriminatory behavior seems to deny.”); *id.* at

both of these areas and therefore present situations where we should take care to ensure that codified legal rules reflect the norms of equal and equitable treatment.

CONCLUSION

The United States government,³²¹ along with its global partners in the battle against climate change,³²² recently embraced the goal of a “just transition” away from a fossil-fuel-based economy to a greener one. That is a laudable and important goal. It rightly “centers workers”³²³ and those most impacted by climate change. However, it naively overlooks the unjust reality of the workplace writ large. If the country genuinely wants to ensure equitable treatment for the working class when it comes to environmental protection, government officials, politicians, and advocates need look no further than the existing systemic problems identified herein. The current injustices must be corrected so that they are not perpetuated in the transition to a carbon neutral economy. A guaranteed job or a better wage is a lot less useful if you are dead or dying from exposure to pollution. The cruel irony of a carbon neutral world poisoning the working class with other toxins smacks of dystopian fiction. Let us do our best to not have it become our reality.

2024 (“In environmental protection, public debate is often focused on the perceived social meaning of law.”).

321. See *Just Transition*, U.S. DEP’T OF LAB., BUREAU OF INT’L LAB. AFFS., <https://www.dol.gov/agencies/ilab/just-transition> (last visited Mar. 10, 2025) (“Centering workers in the climate transition is integral to achieving a just clean energy future. As those most impacted by climate change, workers need a voice in policies responding to it and need skills and support to succeed in a decarbonizing world.”).

322. See Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement, 5th Sess., Decision 1/CMA.5, ¶ 28(d) (2023) (“Transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner . . .”).

323. See *Just Transition*, *supra* note 321.

We welcome responses to this Article. If you are interested in submitting a response for our online journal, *Ecology Law Currents*, please contact cse.elq@law.berkeley.edu. Responses to articles may be viewed at our website, <http://www.ecologylawquarterly.org>.

