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Proposed Federal OSHA Standards for Wildfire Smoke

*Keenan Layton**

I. INTRODUCTION

With the rise of global temperatures, climatologists predict a corresponding increase in the frequency and severity of wildfires in the Pacific Northwest. Rising temperatures are expected to create drier conditions in forests, thereby creating environmental conditions more prone to forest fires.¹ Wildfires have become a common enough occurrence in the Pacific Northwest that summers have become synonymous with smoky conditions,² but the issue is not constrained to this region. Though the Pacific Northwest has recently acted as a harbinger of increasing wildfires, environmental scientists forecast an increase in fire risk throughout the Western United States.³ The predicted rise in forest fire occurrence carries with it an increase in wildfire smoke for the surrounding areas,

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¹ Hal Bernton, *Forests West of the Cascades Will See More Fires, Bigger Fires with Climate Change*, SEATTLE TIMES (Sept. 9, 2017), <https://www.seattletimes.com/seattle-news/environment/pacific-northwest-forests-west-of-the-cascades-will-see-more-fires-bigger-fires-with-climate-change/> [https://perma.cc/PSD5-5BZ2].

² Kara Kostanich, *Smoky Summers the 'New Normal' Around Pacific Northwest*, SCIENTIST SAY, KOMO NEWS (Aug. 21, 2018), <https://komonews.com/news/local/smoky-summers-the-new-normal-around-puget-sound-scientist-say> [https://perma.cc/VS75-ADKD].

³ DAVID L. PETERSON & JEREMY S. LITTEL, PAC. NW. RESEARCH STATION, RISK ASSESSMENT FOR WILDFIRE IN THE WESTERN UNITED STATES 249, 250 (2013), https://www.fs.fed.us/pnw/pubs/pnw_gtr870/pnw_gtr870_011.pdf [https://perma.cc/JAZ2-EWYY].

with winds carrying smoke far across state lines.⁴ These smoky conditions, in turn, are hazardous to health. State-level worksite regulations have proven ineffective at protecting workers from smoke-related health risks. Though wildfire smoke might currently appear as a predominantly Pacific Northwest issue, the Occupational Health and Safety Administration (OSHA) must implement its own federal-level regulations in order to fully protect workers.

OSHA should implement federal regulations that incorporate 1) existing asbestos respiration, signage, and work practice requirements, 2) alterations similar to OSHA standards on respiration and work practices for the wildfire smoke context, and 3) categories based on the Environmental Protection Agency's (EPA) Air Quality Index and corresponding public official actions. OSHA must base standards within these regulations on its own independent studies of the health effects of wildfire smoke. The regulations must also provide means for undocumented immigrant⁵ workers to identify violations and report them to OSHA without fear of reprisal.

In Part II of this comment, I will establish the health risks posed by wildfire smoke, as well as OSHA's currently existing regulations and the requirements it must meet to enforce its standards. In Part II, I will explore how past OSHA regulations have been defeated, and how current models fail to protect workers. I will use these failures to suggest ways that OSHA might avoid pitfalls with new regulations and ways in which the new regulations can build upon existing models. In Part III, I will identify the elements which OSHA should incorporate from existing models. In Part IV, I will identify the special issues posed by the demographic context of wildfire smoke regulations and how OSHA can respond to those issues. In Part V, I will address federalist concerns implicated by a federal standard. Finally, in Part VI, I will bring together how elements from each model should be included to address the issues identified.

⁴ Erin Corbett, *California Wildfire Smoke Traveled 3,000 Miles Across the Country to New York And D.C.*, FORTUNE (Nov. 21, 2018), <http://fortune.com/2018/11/21/california-wildfires-new-york-dc/> [<https://perma.cc/283F-N52W>].

⁵ The phrase "Immigrant" workers will be used in this article, as many farm workers have arrived from another country and established a permanent life in the United States. However, these regulations are equally important for migrant workers from outside the United States, who move between countries looking for seasonal work. Both groups are equally affected by cultural and linguistic barriers, as well as mistreatment by farm owners.

II. BACKGROUND

A. Health Effects of Wildfire Smoke

Wildfires release an extreme amount of PM_{2.5}—particles below 2.5 micrometers in diameter⁶—into the air.⁷ Research has demonstrated that long-term exposure to this PM_{2.5} pollution is linked to higher mortality rates.⁸ By some estimates, total deaths from wildfire smoke are projected to increase from 17,000 to 42,000 over the next century.⁹ In addition to its effect on overall mortality rates, wildfire smoke can have immediate effects on heart and respiratory health and cause issues such as eye irritation, fatigue, and chest pain.¹⁰ Such immediate effects make labor conditions hazardous for impaired workers doing dangerous or labor-intensive tasks because they add to the strain and difficulty of those tasks. Through this combination of factors, it is apparent that working in wildfire smoke endangers both long-term and short-term health.

Further, PM_{2.5} exposure has been shown to increase mortality rates even when pollution levels are below EPA standards.¹¹ PM_{2.5} exposure has also been linked to a continued effect on long-term health even when visible symptoms have lessened, meaning basing precautions around only the immediate health effects on workers could lead to long-term health issues.¹² For example, only requiring more breaks to account for increased fatigue would not reduce worker inhalation of PM_{2.5}, and thus not

⁶ *Learn About Particle Pollution Designation*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/particle-pollution-designations/learn-about-particle-pollution-designations#process> [<https://perma.cc/EX4C-2BJG>].

⁷ Chris Mooney, *Smoke From Wildfires May be Surprisingly Deadly, Scientists Report*, WASH. POST (Dec. 15, 2017), https://www.washingtonpost.com/news/energy-environment/wp/2017/12/15/smoke-from-wildfires-may-be-surprisingly-deadly-scientists-report/?noredirect=on&utm_term=.4162630796bd [<https://perma.cc/UJU9-AFD2>].

⁸ Jaime E. Hart et al., *The Association of Long-term Exposure to PM_{2.5} on All-cause Mortality in the Nurses' Health Study and the Impact of Measurement-error Correction*, 14 ENVTL. HEALTH 38 (May 1, 2015), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4427963/> [<https://perma.cc/5FSQ-APQF>].

⁹ B. Ford et al., *Future Fire Impacts on Smoke Concentrations, Visibility, and Health in the Contiguous United States*, 2 GEOHEALTH (July 6, 2018), <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2018GH000144> [<https://perma.cc/9QKY-S5TG>].

¹⁰ *Wildfire Smoke*, CTR. FOR DISEASE CONTROL AND PREVENTION, <https://www.cdc.gov/disasters/wildfires/smoke.html> [<https://perma.cc/AG2V-YMMN>].

¹¹ Hart et al., *supra* note 8.

¹² Cathie Anderson, *Fine Particles From Wildfire Smoke can Hurt Your Body in Ways You Never Dreamed of*, SACRAMENTO BEE (Nov. 19, 2018), <https://www.sacbee.com/news/state/california/fires/article221795980.html> [hereinafter *Fine Particles*].

prevent the longer term respiratory effects of the exposure. Additionally, wildfire smoke can have a negative health impact on respiratory systems even at low levels. For example, one farmworker working without protection reported adverse health effects among workers such as burning sensations and a nosebleed.¹³

B. Regulatory Background

1. Current OSHA Regulations and Guidelines

OSHA has regulations in place to protect workers from general airborne hazards through ventilation controls¹⁴ and airborne contaminant limits.¹⁵ These regulations, however, are ill-suited to protecting outdoor workers against an environmental hazard such as wildfire smoke. Ventilation controls assume a controlled indoor environment where employers may deal with airborne hazards through adequate equipment safeguards.¹⁶ Limits on airborne contaminants are most effective when the source of contamination is under the control of the employer. In an outdoor wildfire smoke situation, ventilation ceases to be an option and the source of contamination is out of the employer's control. As such, more carefully tailored regulations are needed to protect employees in dangerous conditions.

Beyond regulations, OSHA has released guidelines on two subjects adjacent to wildfire smoke: indoor air quality¹⁷ and wildfires.¹⁸ While not legally binding on their own, guidelines let employers know what they must do to meet the General Duty Clause of the OSH Act.¹⁹ Though adjacent, these guidelines are not useful for a wildfire smoke context. Indoor air quality regulations assume a controlled environment inapplicable to an outdoor context. Wildfire regulations concern only responders and those in close proximity to the fire, but do not account for the atmospheric danger of PM_{2.5}. The lack of guidelines creates unacceptable, yet preventable, health concerns for employees working in wildfire

¹³ Melissa Etehad, *Amid Thomas Fire, Farmworkers Weather Risks in Oxnard's Strawberry Fields*, L.A. TIMES (Dec. 23, 2017), <http://www.latimes.com/business/la-me-fire-farmworkers-20171223-story.html> [<https://perma.cc/H82P-S9KX>].

¹⁴ 29 C.F.R. § 1910.94 (2011).

¹⁵ 29 C.F.R. § 1910.1000 (2011).

¹⁶ For example, 29 C.F.R. § 1910.94 (2011) sets ventilation requirements using exhaust ventilation systems and hood ventilation, two systems used to remove airborne contaminants from an enclosed space.

¹⁷ *Indoor Air Quality*, OCCUPATIONAL SAFETY AND HEALTH ADMIN., <https://www.osha.gov/SLTC/indoorairquality/> [<https://perma.cc/S7WJ-GR9U>].

¹⁸ *Wildfires*, OCCUPATIONAL SAFETY AND HEALTH ADMIN., <https://www.osha.gov/dts/wildfires/index.html> [<https://perma.cc/7DE2-E2UC>].

¹⁹ OSH Act of 1970 § 5; 29 U.S.C. § 654 (2010).

smoke conditions. At the bare minimum, OSHA should create similarly clear guidelines for wildfire smoke events.²⁰

2. OSHA warrant requirements

OSHA relies on a system of fines and citations to enforce its regulations.²¹ In order to identify violations and give fines and citations as punishment, OSHA must inspect work sites.²² While employers may allow inspection without a warrant, OSHA inspectors are required to seek one if they are denied access to a site.²³ The warrant requirement is important to consider when building a regulation, as a regulation is only enforceable if inspectors can acquire warrants.

The OSHA warrant requirement stems from a series of cases, beginning in the 1960s. Initially, *See vs. City of Seattle* established that administrative agencies, like law enforcement, need to obtain a warrant in order to enact a nonconsensual inspection.²⁴ The standard was then clarified in *Camara*, with the addition that administrative searches require a lower level of probable cause than criminal searches, at only a reasonable standard.²⁵ The requirement then extended to OSHA worksite inspections in *Marshall v. Barlow's Inc.*, in which the court ruled that such inspections also require a warrant if the inspector is denied entry to the site.²⁶ However, in *Trinity Industries, Inc. v. OSHRC*, the court ruled that employee complaints provided sufficient probable cause to secure a search warrant limited to the scope of the complaint, thus facilitating one major avenue of OSHA inspections.²⁷ Additionally, the court in *In re Trinity Industries, Inc.* made clear that, although *Barlow* requires OSHA to choose its inspection sites on a neutral basis, OSHA's automated

²⁰ Regulations are, however, preferable as they leave less room for employers to abuse discretion.

²¹ *Occupational Safety and Health Administration (OSHA) Inspections*, OCCUPATIONAL SAFETY AND HEALTH ADMIN. (Aug. 2016), https://www.osha.gov/OshDoc/data_General_Facts/factsheet-inspections.pdf [<https://perma.cc/H4NP-5NWX>] [hereinafter *OSHA Inspections*].

²² *Id.*

²³ *Id.*

²⁴ *See v. City of Seattle*, 387 U.S. 541 (1967) (Establishing administrative warrant requirement).

²⁵ *Camara v. San Francisco*, 387 U.S. 523 (1967) (Administrative searches have lower probable cause standard than police searches: reasonable standards of inspection).

²⁶ *Marshall v. Barlow's, Inc.*, 436 U.S. 307 (1978) (Establishing need for OSHA to obtain warrant for inspections).

²⁷ *Trinity Industries, Inc. v. OSHRC*, 16 F.3d 1455 (6th Cir. 1994) (Establishing sufficiency of employee complaints for limited probable cause).

“worst-first” ranking system was sufficient to meet this standard.²⁸ Nevertheless, the warrant requirement still presents an obstacle for OSHA when enforcing regulations.

The extension of a warrant requirement to OSHA inspections has significantly impacted OSHA’s ability to enforce its regulations. Due to the heightened level of scrutiny applied to its inspection justification, OSHA must be more selective as to whom it inspects and why.²⁹ Although employers are unlikely to demand a warrant, the possibility still presents a potential obstacle: employees will not be protected until OSHA obtains a warrant. Consequently, this means that if OSHA cannot obtain a warrant, they will be unable to inspect. Additionally, the warrant must be proper. A rushed or otherwise faulty warrant may create legal difficulties down the line.³⁰ OSHA now prioritizes such inspections according to the level of hazard of each situation. The most perilous situations receive first attention, and special consideration is granted where employees have submitted complaints.³¹ Due to the focus on highest peril, OSHA’s inspection ranking system would not prioritize a long-term health effect such as wildfire smoke. This prioritization would be problematic, considering the limited timeframe in which such inspections would be relevant.

OSHA may, however, rely on two factors to allow for more immediate inspections of sites during wildfire smoke events. First, non-complying worksites are likely to result in complaints from the workers. As noted above, employee complaints can provide sufficient probable cause for an inspection.³² Additionally, the unique nature of a wildfire smoke event helps satisfy warrant requirements. While most industries will have complaints spread out as violations occur, wildfire smoke creates a situation where complaints will occur simultaneously, thus creating a noticeable spike in complaints. An increased number of complaints should prompt OSHA to inspect workplaces affected by wildfire smoke more immediately.

²⁸ *In re Trinity Industries, Inc.*, 876 F.2d 1485 (11th Cir. 1989) (OSHA selection system meets *Barlow* neutrality requirement).

²⁹ Mark A. Rothstein, *OSHA Inspections after Marshall v. Barlow's, Inc.*, 1979 DUKE L.J. 63, 84-103 (Feb. 1979), <https://www-jstor-org.proxy.seattleu.edu/stable/1372225> [<https://perma.cc/F6GA-QZ37>] (Discussing impact of warrant requirement on OSHA enforcement).

³⁰ *Id.* at 98-100. For example, any evidence seized as a result of an improper warrant could potentially be excludable in court as the result of illegal seizure. *Silverthorne Lumber Co. v. U.S.*, 251 U.S. 385 (1920). If OSHA wished to impose fines or criminal penalties, it would then lack the evidence to do so.

³¹ *OSHA Inspections*, *supra* note 21.

³² *See Trinity Industries, Inc.*, 16 F.3d 1455.

However, reliance on employee complaints creates its own limitations. A significant number of outdoor employees exposed to wildfire smoke, such as farmworkers, are undocumented immigrants from Mexico.³³ Undocumented immigrants are less likely to report injuries and illnesses, often due to fear of retaliation, language barriers, or simply not knowing that dangerous work conditions are reportable.³⁴ The lack of reporting creates an obstacle for OSHA warrants because it reduces the number of complaints OSHA may follow up on. Therefore, OSHA must recognize this obstacle and work to counteract it. OSHA may accomplish this goal through increasing educational outreach to farmworkers so they know which requirements their employers must be held accountable to, as well as working to ensure OSHA inspections are not likely to result in retaliation by protecting whistleblower identity and aggressively pursuing any whistleblower retaliation.

Second, while OSHA often meets its probable cause requirement through its worst-first neutral sorting mechanism,³⁵ it may also meet this standard through other means. An extreme weather event, such as sudden wildfire smoke, creates a uniquely hazardous situation. This smoke ought to put OSHA on notice that employees may be inadequately protected. The uniqueness of wildfire smoke being highly visible may, on its own, provide sufficient probable cause for OSHA to increase inspections of affected sites. Additionally, wildfires frequently occur on a seasonal basis, with the greatest rate of occurrence at the height of summer.³⁶ Strong seasonal predictability can put OSHA on notice that they will likely need to conduct wildfire smoke inspections during the summer months to plan inspection schedules more accordingly. However, this scheduling is not infallible as wildfires such as the recent California Camp Fire do occasionally occur out of season.³⁷ Still, the seasonal nature of wildfires coupled with the notice of a hazard means that OSHA should be able to allocate

³³ NAT'L CTR. FOR FARMWORKER HEALTH, DEMOGRAPHICS (2012), http://www.ncfh.org/uploads/3/8/6/8/38685499/fs-migrant_demographics.pdf [<https://perma.cc/Q2WB-FCY6>] (As of 2012, 72% foreign born, many of whom come from Mexico).

³⁴ COMMITTEE ON EDUC. AND LABOR, HIDDEN TRAGEDY: UNDERREPORTING OF WORKPLACE INJURIES AND ILLNESSES 12 (2008), <https://www.bls.gov/iif/laborcommreport061908.pdf> [<https://perma.cc/NCQ7-VPPP>].

³⁵ Trinity Industries, Inc. v. OSHRC, *supra* note 27.

³⁶ P.J. BARTLEIN ET AL., THE SEASONAL CYCLE OF WILDFIRE AND CLIMATE IN THE WESTERN UNITED STATES, UNIV. OF OR, <https://ams.confex.com/ams/pdfpapers/66935.pdf> [<https://perma.cc/34PW-CAF9>].

³⁷ Hilary Brueck & Peter Kotecki, *California's Camp Fire Has Melted Cars and Reduced Bodies to Bone*, BUS. INSIDER (Nov. 16, 2018), <https://www.businessinsider.nl/california-camp-fire-death-toll-most-destructive-in-history-2018-11/> [<https://perma.cc/HB48-V88M>].

inspection time for summer, and be able to generally meet the probable cause requirement, though OSHA will still rely on employee complaints when employers deny inspectors access.

III. FAILED REGULATIONS AND SOLUTIONS

A. Past Regulatory Failures by OSHA

1. Standard Creation

OSHA has already made multiple failed attempts to institute broad regulations on workplace air quality. The first of these attempts was a 1989 general rulemaking where OSHA sought to implement updated Permissible Exposure Levels for various hazardous airborne chemicals.³⁸ When establishing these exposure limits, OSHA adopted higher standards suggested by the American Conference of Governmental Industrial Hygienists (ACGIH) and the National Institute for Occupational Safety and Health (NIOSH) because studies had shown the already existing lower limits were unsatisfactory.³⁹ Reactions to these proposed regulations were roughly split between industry and union groups, with industry groups generally supporting the updated standards and union groups opposing the standards as being insufficient.

This split in support of the proposed air quality regulations was reflected during the 1988 public comment period, where labor and industry groups sent in numerous comments and responses supporting their positions.⁴⁰ OSHA attempted to incorporate these responses into its final rule yet was ultimately faced with a lawsuit in 1989.⁴¹ As a central point to their case, the plaintiffs raised the issue that OSHA had adopted these new standards without doing its own independent factfinding for each regulated substance.⁴² This case culminated in a 1995 decision, where the Eleventh Circuit Court ordered the new standards vacated. The Court further said that OSHA must individually assess each standard, and that for each standard OSHA must show that the substance created a

³⁸ Daniel A. Graff, *Safe Workplaces? Judicial Review of OSHA's Updated Air Contaminant Standards in AFL-CIO v. OSHA*, 11 THE LABOR LAWYER 151, 154 (1995), <https://www-jstor-org.proxy.seattleu.edu/stable/40862545> [<https://perma.cc/KL9P-5LQB>] (Discussing the Supreme Court decision to vacate OSHA's previous airborne hazards standard).

³⁹ *Id.* at 155.

⁴⁰ *Id.*

⁴¹ *Id.* at 155-156.

⁴² *Id.* at 156-157.

“‘significant’ risk of material health impairment” and that the proposed standard was necessary to alleviate that risk.⁴³

This ruling has set the standard that OSHA cannot solely rely on outside agencies to create adequate standards. Instead, OSHA must do its own independent review of proposed standards, even if the outside agency has already done extensive research. In its decision, the Court indicated that OSHA could potentially establish the requisite review by providing an estimate of the risk posed by each chemical, but OSHA must perform that review on an individualized basis for every chemical.⁴⁴

2. Industry Opposition

Following the 1995 court decision, OSHA experienced another failure in the realm of air quality rulemaking. Previously, in 1994, OSHA introduced a proposal for Indoor Air Quality Regulations, focusing primarily on protecting workers from exposure to tobacco smoke.⁴⁵ The proposal underwent a lengthy public comment period, which included testimonials and hearings focused primarily on the workplace tobacco smoke restrictions.⁴⁶ Ultimately, OSHA withdrew the proposal in 2001, citing efforts in intervening years by local government and private industry to accomplish similar goals to those in the proposal.⁴⁷ OSHA has not made a similar proposal since. Subsequent research has shown that the tobacco industry played a significant role in defeating the proposed regulations.⁴⁸ The failure of the Indoor Air Quality Regulations thus demonstrates the danger of industry opposition to a proposed rulemaking.

The tobacco industry was threatened by the proposed regulations due to its implementation of indoor smoking restrictions. Such regulations account for massive reductions in

⁴³ AFL-CIO v. OSHA, 965 F.2d 962, 973-974 (11th Cir. 1992) (Ordering OSHA to vacate 1989 airborne hazards standard).

⁴⁴ *Id.* at 973; With this standard, it is worth noting that OSHA is not barred entirely from adopting outside standards, it just needs to do extra work to ensure those standards are adequate. This means that OSHA could incorporate outside standards, such as those suggested by interested parties, but would need to conduct its own study to ensure that the standards are adequate.

⁴⁵ Indoor Air Quality, 59 Fed. Reg. 47570-47571 (proposed Sept. 16, 1994).

⁴⁶ See Katherine Bryan-Jones & Lisa A. Bero, *Tobacco Industry Efforts to Defeat the Occupational Safety and Health Administration Indoor Air Quality Rule*, 93 AM. J. OF PUB. HEALTH 4 (April 2003), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1447795/> [<https://perma.cc/Y38G-VS9A>].

⁴⁷ Indoor Air Quality, 66 Fed. Reg. 64946 (withdrawn Dec. 17, 2001).

⁴⁸ Bryan-Jones & Bero, *supra* note 46.

smoking rates and cigarette sales.⁴⁹ In responding to the proposed regulations, the tobacco industry implemented a large-scale, organized strategy of gathering support against the proposal while attempting to water it down through proposed alterations.⁵⁰ The success of this strategy is apparent in the rule's continued non-existence. Implementation of any future regulations must consider potential industry opposition, as it has proven capable of defeating proposed regulations.

Wildfire smoke regulation does not threaten industry interests in the same way that tobacco smoke regulation did. While tobacco smoke regulations threatened the tobacco industry's interests by labelling its primary product harmful and restricting consumption, no such product exists in the case of wildfire smoke. Wildfire smoke derives from a purely destructive process; no industry has an interest in promoting wildfires. However, that is not to say that no industry interest is imperiled by wildfire smoke regulations. During the recent California wildfires, farmworkers often continued to work in the fields despite the smoke.⁵¹ These farmworkers continue working in smoky conditions both out of fear of lost wages and of repercussions should they speak out. These fears are heightened amongst undocumented workers due to lack of access to legal protection and unemployment funds.⁵² Farm owners regularly fail to meet California's state OSHA (Cal/OSHA) safety requirements, and in some cases punished those who question the safety of working in such smoky conditions.⁵³ This behavior by farm owners indicates the possibility of opposition to OSHA wildfire smoke regulations from the agricultural industry.⁵⁴

⁴⁹ See S. Chapman et al., *The Impact of Smoke-Free Workplaces on Declining Cigarette Consumption in Australia and the United States*, 89 AM. J. OF PUB. HEALTH 7 (July 1999), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1508862/> [<https://perma.cc/GDZ5-24JS>].

⁵⁰ Bryan-Jones & Bero, *supra* note 46.

⁵¹ Danielle Paquette, *During California Wildfires, Farmworkers Say They Felt Pressure to Keep Working or Lose Their Jobs*, WASH. POST (Nov. 20, 2018), https://www.washingtonpost.com/business/economy/during-california-wildfires-farm-workers-felt-pressured-to-keep-working-or-lose-their-jobs/2018/11/20/757f92a0-ec06-11e8-baac-2a674e91502b_story.html?utm_term=.934fe96c338c [<https://perma.cc/AUY8-NBVS>].

⁵² *Id.*

⁵³ *Id.* (farmworker forced to take days off without pay after complaining of conditions).

⁵⁴ For examples of similar past industry opposition where agriculture faced increased regulation, see Memorandum of Opposition from the N.Y. Farm Bureau (May 18, 2017) (on file with author) (opposing collective farmworker bargaining and increased labor protections) and Laurie Greene, *Call for Action to Oppose Overtime Bill AB 1066*, CALIF. AG TODAY (June 27, 2016), <https://californiaagtoday.com/overtime-bill-ab-1066-ag-council/> [<https://perma.cc/KYP3-5UHL>] (Agricultural Council of California opposing increased overtime pay requirements).

Further, the agricultural industry is likely to oppose regulations due to compliance costs. OSHA regulations carry with them hefty compliance costs for regulated industries.⁵⁵ Growers may view these costs as especially onerous if they are only likely to affect certain regions; a grower in California may have to spend more on compliance than a grower in Vermont due to the increased occurrence of wildfire smoke in California. Additionally, farm owners have argued that wildfire smoke conditions make uninterrupted farm labor during the crisis vital, given the effect of wildfire smoke on crops.⁵⁶ As farm owners consider uninterrupted labor during wildfire events important, they are likely to consider regulations imposing work restrictions adverse to their interests. While wildfire smoke regulations would not be as directly opposed to agricultural interests as tobacco smoke regulations were to the tobacco industry, OSHA should still anticipate significant pushback from the agricultural industry. OSHA may be able to reduce some complaints by creating a less burdensome set of regulations; however, it must also be aware of the aforementioned strategies used by powerful industries to protect their interests. It would be detrimental to the overall goal of wildfire smoke regulations if the agricultural industry were able to make them completely ineffective.

When an industry defeats proposed OSHA regulations, the problem remains unfixed. The tobacco industry's defeat of Indoor Air Quality Regulations is illustrative: OSHA withdrew the proposed indoor air quality rule and scholarship has shown that ten years later tobacco smoke in the workplace continues to be a problem with many workplaces still without any smoking rules in place.⁵⁷ The lack of regulation is at odds with OSHA's assertion in its notice of withdrawal that the rule was no longer necessary because "a great many state and local governments and private employers have taken action to curtail smoking in public areas and in workplaces."⁵⁸ The disparity between OSHA's claimed reason for abandoning the rulemaking and the resultant lack of effective action shows the dangerous consequences of successful industry opposition.

⁵⁵ Harvey S. James, Jr., *Estimating OSHA Compliance Costs*, 31 REG. BUDGETING 321, 321-341 (1998) <https://www-jstor-org.proxy.seattleu.edu/stable/4532440> [<https://perma.cc/2RE4-KKXK>] (Discussing budgetary costs of complying with OSHA regulations).

⁵⁶ Paquette, *supra* note 51.

⁵⁷ See David Ahrens, *Ten Years After: Is It Time to Revisit the 1994 OSHA Indoor Air Quality Rule?*, 21 NEW SOLUTIONS 2 (2011), <https://www.ncbi.nlm.nih.gov/pubmed/21733802> [<https://perma.cc/Q4GT-PMKJ>] (In 2011, estimating 20 mil. workers in unregulated workplaces).

⁵⁸ Indoor Air Quality, 66 Fed. Reg. 64946 (withdrawn Dec. 17, 2001).

While this disparity lends support to the idea that the rule was in fact abandoned due to heavy opposition from the tobacco industry, it also supports another theory that OSHA should not abandon proposed regulations simply because local governments and private groups have already attempted to address the problem. Public concerns are always likely to prompt some form of local or private action. These responses may take the form of local regulations or employer policies. Yet, if every attempt at federal rulemaking were abandoned because of such small-scale attempts, significant federal regulations would never be implemented. OSHA should therefore be hesitant to abandon any possible wildfire smoke regulations simply because other groups have also attempted to address the problem. As the number of remaining unregulated workplaces show in the case of tobacco smoke, significant gaps are likely to persist if such rulemaking abandonment takes place.

B. Failures of Current Models

1. Cal/OSHA Standards

The recent spate of wildfires in California over the past few years has put Cal/OSHA's wildfire smoke regulations to the test. During the November 2018 California wildfire, farm laborers continued to work the fields despite hazardous smoke conditions, many without sufficient protection.⁵⁹ Farm owners have shown a consistent tendency to prioritize profits over worker safety, despite the agricultural industry claiming otherwise.⁶⁰ Under these same conditions, schools had been closed and public officials had advised that everyone remain indoors.⁶¹

Cal/OSHA's rules require that employers provide respiratory protections in potentially harmful air conditions such as wildfire smoke.⁶² Despite this requirement, aid workers had to distribute masks at many sites where employers had failed to provide adequate protections for the farmworkers.⁶³ Further, at some sites, aid workers were turned away or prevented from

⁵⁹ Brooke Anderson, *The Other Victims of California's Fires: Workers Inhaling Toxic Fumes*, IN THESE TIMES (Nov. 13, 2018), https://inthesetimes.com/working/entry/21576/california_wild_fire_wildfire_workers_prison_toxic_fumes [<https://perma.cc/889A-J7HY>] [hereinafter *The Other Victims*]. (Farm laborers continued to work fields, not given masks).

⁶⁰ Etehad, *supra* note 13.

⁶¹ Jack Herrera, *As Wildfire Smoke Fills the Air, Farmworkers Continue to Labor in the Fields*, PAC. STANDARD (Nov. 14, 2018), <https://psmag.com/environment/as-wildfire-smoke-fills-the-air-farmworkers-continue-to-labor-in-the-fields> [<https://perma.cc/7XLD-TKVD>] [hereinafter *Smoke Fills the Air*]

⁶² *Id.*

⁶³ *Id.*

handing out respiratory masks by farm owners and managers, who expressed concerns over food safety—though worker advocates believe the opposition relates more to fears of volunteers helping workers organize into unions.⁶⁴ Farm managers even lied to volunteers, saying that workers had chosen not to wear protection, despite workers later saying they had not been aware protection was an option.⁶⁵ Farm owners attempting to resist regulations—and their success in doing so—shows that industry resistance may be a difficult obstacle in the way of enforcing regulations.

Attempts by farm owners to avoid following safety regulations are part of a larger history of conflict between farmworkers and farm owners.⁶⁶ The precarious legal position of undocumented immigrant farmworkers helps to solidify this tension, as workers often fear reprisal if they report unsafe conditions. This fear has only heightened under a presidential administration pushing a strongly anti-immigration agenda.⁶⁷ Indeed, union groups have expressed concerns that an atmosphere of increased immigration enforcement could lead to decreased workplace safety enforcement due to OSHA's reliance on employee-reported violations.⁶⁸ OSHA uses worker reports to satisfy probable cause for a warrant when denied entry to worksites, meaning that a lack of reports can leave OSHA warrantless and unable to inspect sites and punish violations.⁶⁹

The failure of Cal/OSHA to protect workers from wildfire smoke conditions is a consequence of Cal/OSHA's limitations as a bureaucratic institution. Wildfire smoke is not the only area where farmworkers have found themselves unprotected by California labor laws. Heat stroke, a threat fairly unique to California farmworkers, has proven deadly despite Cal/OSHA regulations meant to protect workers against the threat.⁷⁰ The failure of

⁶⁴ Jack Herrera, *Though Wildfire Smoke Threatens Farmworkers' Health, Volunteers are Being Blocked from Distributing Protective Masks*, PAC. STANDARD (Nov. 16, 2018), <https://psmag.com/news/though-wildfire-smoke-threatens-farmworkers-health-volunteers-are-being-blocked-from-distributing-protective-masks> [<https://perma.cc/4KK3-RPXV>] [hereinafter *Farmworkers' Health*].

⁶⁵ *Id.*

⁶⁶ Etehad, *supra* note 13.

⁶⁷ Laura D. Francis, *Fear of Immigration Raids May Harm Workplace Rights*, BLOOMBERG LAW (Mar. 1, 2017), <https://www.nelp.org/press-clips/fear-of-immigration-raids-may-harm-workplace-rights/> [<https://perma.cc/2VA6-HJAK>] (abbreviated article, original no longer in existence).

⁶⁸ *Id.*

⁶⁹ See *Trinity Industries, Inc. v. OSHRC*, 16 F.3d 1455 (6th Cir. 1994) (Establishing sufficiency of employee complaints for limited probable cause).

⁷⁰ Bill Meyer, *Despite Crackdown, Heat Kills More Farm Workers*, CLEVELAND.COM (Aug. 21, 2008), https://www.cleveland.com/nation/index.ssf/2008/08/despite_crackdown_more_farm_wo.html [<https://perma.cc/7GWS-VT9G>].

Cal/OSHA to address these threats has been tied to the lack of manpower available to the agency.⁷¹ Employers are able to violate Cal/OSHA regulations with less fear of consequences, because they lack the inspectors to follow up on violations and hazardous work sites.⁷² Cal/OSHA's inability to enforce general worksite regulations such as heat stroke protection reveals that it would equally have trouble enforcing wildfire smoke regulations.

Just as with Cal/OSHA, federal OSHA is limited by a lack of inspectors. This inspector shortage is especially severe following the Trump administration's hiring freeze on federal personnel and the resultant drop in personnel numbers.⁷³ However, federal OSHA regulations on wildfire smoke precautions would give inspectors a reason to inspect worksites for violations. When coupled with state-level inspectors, federal investigators looking for wildfire smoke protection violations would add to the total pool of investigators inspecting worksites. While both agencies face shortages in inspection personnel, having two agencies able to respond to wildfire smoke complaints would still be an improvement over only one agency.

Another reason Cal/OSHA inspections fail to protect workers is due to the limited reach of applicable regulations. California's respiratory⁷⁴ and harmful exposure⁷⁵ regulations provide the brunt of the state's wildfire smoke requirements. While the regulations are not written specifically to address wildfire smoke conditions, Cal/OSHA has provided guidance on how they are to be applied in a wildfire smoke context.⁷⁶ However, this guidance only creates vague and limited duties to alter worker schedules and work environments.⁷⁷ For example, employers are directed to implement a system for communicating hazards, yet the guidelines do not specify what form these communications must take. While this guidance at least notifies employers that they cannot conduct normal business in a wildfire smoke event, the regulations do not clearly define what is and is not a violation. The most definitive requirement is that employers must provide workers with respiratory protection in harmful work environments.

⁷¹ *Id.*

⁷² *Id.*

⁷³ Suzy Khimm, *Number of OSHA Workplace Inspectors Declines Under Trump*, NBC NEWS (Jan. 8, 2018), <https://www.nbcnews.com/politics/white-house/exclusive-number-osha-workplace-safety-inspectors-declines-under-trump-n834806> [<https://perma.cc/XGE5-4E3N>].

⁷⁴ Cal. Code Regs. tit. 8, § 5144 (2018).

⁷⁵ Cal. Code Regs. tit. 17, § 5141 (2018).

⁷⁶ *Protecting Outdoor Workers Exposed to Smoke from Wildfires*, CAL/OSHA (Nov. 2018), <https://www.dir.ca.gov/dosh/wildfire/Worker-Protection-from-Wildfire-Smoke.html> [<https://perma.cc/EJ6S-BHGW>].

⁷⁷ *Id.*

However, if an employer determines conditions are not harmful, then providing respiratory protections becomes only optional.⁷⁸ Where the employer has such high levels of discretion and ill-defined duties, workers may be left unprotected if the employer decides that protections are not necessary.

More stringent wildfire smoke protection requirements on both a state and federal level would help to solve the issue of unprotected workers. OSHA would have an easier time of enforcing regulations, despite personnel shortages and obstacles to employee reporting, if its own requirements were harder to circumvent. Additionally, increasing education for employees about potential hazards may help increase enforcement, because workers are more likely to report violations if they know they have a protected right. In comparison, OSHA's asbestos rules require that employers inform workers about the dangers of working with asbestos.⁷⁹ Similar rules requiring employers to inform employees about the dangers of working in wildfire smoke conditions would help reduce this information deficit and increase health protections.⁸⁰

2. EPA Public Official Guidelines

The EPA, in association with other interested agencies, has released an in-depth set of guidelines for public officials on how to respond to wildfire smoke conditions.⁸¹ These guidelines establish an Air Quality Index (AQI) used to determine the hazard level of a smoke event, and make recommendations for each level within the AQI.⁸² Under these recommendations, conditions meeting the AQI "Unhealthy" hazard level warrant possible cancellation of outdoor events, such as concerts and sporting events.⁸³

A recent smoke event in Seattle provides an illustration of these AQI levels. In August of 2018, Seattle suffered high levels of smoke for multiple weeks due to wildfires in the region.⁸⁴ During this period, conditions reached as high as "Very Unhealthy" on the

⁷⁸ *Id.*

⁷⁹ 29 C.F.R. § 1910.1001 (2016).

⁸⁰ However, given farm managers' circumvention of the respiratory requirements, there may be some question as to whether these knowledge requirements would actually be met.

⁸¹ U.S. ENVTL. PROT. AGENCY ET AL., WILDFIRE SMOKE: A GUIDE FOR PUBLIC HEALTH OFFICIALS (May 2016), https://www3.epa.gov/airnow/wildfire_may2016.pdf [<https://perma.cc/X2JB-ZGRG>] [hereinafter EPA ET AL.].

⁸² *Id.* at 42-45 (recommended action tables).

⁸³ *Id.* at 45.

⁸⁴ Umair Irfan, *Breathing Seattle's Air Right Now is Like Smoking 7 Cigarettes. Blame Wildfires*, VOX (Aug. 22, 2018), <https://www.vox.com/energy-and-environment/2018/8/21/17761908/seattle-air-quality-haze-smoke-wildfire-health> [<https://perma.cc/3A9D-WQNG>].

AQI, with smoke remaining in the atmosphere for an extended period because there was a lack of rain.⁸⁵ During this period of extended smoke conditions, the National Women's Soccer League (NWSL) continued to hold games despite conditions reaching "Unhealthy for Sensitive Groups" levels on the AQI and having previously reached "Unhealthy" levels earlier the same day.⁸⁶ While the NWSL did institute some precautions, such as water breaks and oxygen, the NWSL ultimately elected to hold the public event despite the possibility of continued "unhealthy" conditions. The NWSL's decision to hold the event exposed both players and fans to unhealthy conditions. Thus, holding games during such conditions caused employees to work under poor conditions, and encouraged large numbers of fans to ignore AQI safety recommendations when the risk could have been avoided.⁸⁷ In addition to the employees, fans in attendance were subjected to extremely poor air quality. This additional affected group is important because fan attendance is contingent upon employee performance. If there were more strict OSHA regulations on wildfire smoke, they could have protected both groups from exposure to the poor air quality.

When industries ignore recommendations, it reveals how ineffective non-binding guidelines are, as opposed to strict regulations. Though not as dramatically illustrative as farm owners ignoring worker safety, the NWSL's decision to continue holding events does represent a cautionary scenario: with non-binding recommendations, an industry was free to ignore the safety of employees, players, and fans in the interest of profits. While this single event did not result in disastrous health consequences, it does serve as a reminder that government recommendations, while informative, have little power of their own to ensure compliance. This event illustrates that public safety advisories are best supported by enforceable regulations, such as a federal standard. Where an industry has profit-based motivations to ignore recommendations, they are likely to do so without a countervailing interest in avoiding sanctions. OSHA regulations must allow such sanctions by clearly defining when an industry has violated its duties to protect workers from wildfire smoke. This clarity would

⁸⁵ *Id.*

⁸⁶ Susie Rantz, *Seattle Reign Match Will Be Played Tonight Despite Poor Air Quality*, SOUNDER AT HEART (Aug. 15, 2018), <https://www.sounderatheart.com/2018/8/15/17696768/seattle-reign-chicago-fires-haze-smoke-continues> [<https://perma.cc/4ZP5-2QZJ>].

⁸⁷ For context, in 2018 Seattle Reign FC had an average game attendance of 3,824 fans. *2018 NWSL Attendance*, SOCCER STADIUM DIGEST, <https://soccerstadiumdigest.com/2018-nwsl-attendance/> [<https://perma.cc/5MAG-9E8S>].

prevent employers from abusing their discretion, thus protecting workers from employers who value profits over worker safety.

IV. REGULATORY MODELS

A. Asbestos

OSHA's current regulations on asbestos exposure in the workplace may serve as a model for creating wildfire smoke regulations. Although not a perfect fit, asbestos is a similar type of threat to wildfire smoke: airborne particulate matter with dangerous respiratory effects. Therefore, the similar threat means that employers may use similar prevention methods. OSHA should consider what has worked well for its asbestos regulations when deciding what wildfire smoke regulations to implement. Asbestos does, however, pose a far greater health risk to employees than PM2.5. As such, asbestos regulations are far more stringent than is necessary for PM2.5.

After a lengthy history of regulation starting in 1970,⁸⁸ OSHA has implemented an extensive set of rules governing Asbestos use and exposure in the workplace.⁸⁹ These rules go beyond OSHA's baseline airborne contaminant standards and include regulations on safety factors such as respiratory facemasks, lunch and break locations, and notice to workers.⁹⁰ Similar to PM2.5 pollution from wildfire smoke, asbestos creates long-term health risks due to inhalation of miniscule airborne particles, with the small size of the particles adding to the negative health effects.⁹¹ As both asbestos and PM2.5 enter the body through inhalation of fine particles, similar methods focused on preventing inhalation of fine particulate would be effective for both asbestos and PM2.5.⁹² As such, OSHA's current asbestos regulations provide a particularly informative model for any future wildfire smoke regulations.

⁸⁸ See John F. Martonik et al., *The History of OSHA's Asbestos Rule Makings and Some Distinctive Approaches That They Introduced for Regulating Occupational Exposure to Toxic Substances*, 62 AM. INDUS. HYGIENE ASS'N JOURNAL 2 (2001), <https://search-proquest-com.proxy.seattleu.edu/pqrl/docview/236212095/E733045903F943DBPQ/5?accountid=28598> [<https://perma.cc/76X9-5BQQ>].

⁸⁹ 29 C.F.R. §1910.1001 (2016).

⁹⁰ *Id.*

⁹¹ *Asbestosis*, MAYO CLINIC, <https://www.mayoclinic.org/diseases-conditions/asbestosis/symptoms-causes/syc-20354637> [<https://perma.cc/5KWS-YFTB>].

⁹² See Guillaume Boulanger et al., *Quantification of Short and Long Asbestos Fibers to Assess Asbestos Exposure: A Review of Fiber Size Toxicity*, 13 ENVTL. HEALTH 59 (July 21, 2014), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4112850/> [<https://perma.cc/4EAF-XAWT>] (Current regulations focus on particle sizes close to PM2.5 in size).

In addition to the similarity in risk factors between asbestos and PM2.5 pollution, there is another reason to look towards asbestos regulation for a wildfire smoke model: OSHA has successfully implemented asbestos into law, and those regulations have remained in place in varying forms for over 40 years.⁹³ OSHA promulgated these successful regulations by finding compromise between labor and industry groups, as well as through implementing construction-specific standards when construction industry groups complained that the general standards were difficult to apply to their specific work environment.⁹⁴ Additionally, OSHA created specific standards controlling work practices following the request of labor unions, a move that clarified what OSHA expected of employers. In comparison, OSHA failed when it attempted to broadly incorporate indoor air quality standards.⁹⁵ Considering the failure to implement a broad set of air quality regulations, it would be more logical to implement a more constrained rule, focusing on a more singular issue, as asbestos does.

Since OSHA's founding, it has placed restrictions on asbestos exposure in the workplace.⁹⁶ Over the years, OSHA has adjusted these restrictions and exposure limits as new research changes scientific consensus on the health risks posed by asbestos exposure, and litigative pressures from unions shape administrative understanding of worker safety concerns.⁹⁷ In 1984, OSHA proposed specific standards for asbestos exposure in the workplace, going beyond a simple acceptable exposure standard.⁹⁸ This change has allowed for a more tailored set of standards, which are better suited to the unique health risks posed by asbestos.

OSHA's current standards reflect this tailoring and provide extensive requirements and guidance for employers with workers exposed to asbestos.⁹⁹ While these standards provide exposure limits, as OSHA does with other chemical hazards, they also address many other facets of dealing with asbestos. These other standards include acceptable clothing¹⁰⁰ and respiratory protections,¹⁰¹ signage requirements,¹⁰² employee information and training,¹⁰³ exposure monitoring,¹⁰⁴ and work practice controls.¹⁰⁵

⁹³ Ctr. for Asbestos Safety in the Workplace, *Workplace Asbestos Regulatory History*, MESOLTHELIOMA.ORG, <http://www.mesothelioma-mesothelioma.org/regulation.htm> [<https://perma.cc/EU63-MH3N>].

⁹⁴ Martonik et al., *supra* note 88.

⁹⁵ Indoor Air Quality, 66 Fed. Reg. 64946 (withdrawn Dec. 17, 2001).

⁹⁶ Ctr. for Asbestos Safety in the Workplace, *supra* note 93.

⁹⁷ *Id.*

⁹⁸ *Id.*

⁹⁹ 29 C.F.R. §1910.1001 (2016).

¹⁰⁰ 29 C.F.R. §1910.1001(h) (2016).

¹⁰¹ 29 C.F.R. §1910.1001(g) (2016).

Asbestos hazards generally arise due to the presence of asbestos in existing buildings and materials.¹⁰⁶ This means that asbestos is generally encountered as an environmental hazard, as opposed to a hazard more directly under the control of an employer. Similarly, OSHA must design wildfire smoke precautions with the acknowledgement that employers cannot control the source of the danger—they can only react to its effects. OSHA must therefore design regulations towards reactionary measures, rather than preventative.

The similarities in risk factors between asbestos and wildfire smoke have resulted in asbestos rules which OSHA could adapt to a wildfire smoke context. Respiratory requirements and face-mask standards would directly help prevent PM2.5 inhalation, with N95 masks shown to be the most efficient.¹⁰⁷ Signage and employee information requirements would help reduce employee reporting barriers.¹⁰⁸ Workplace air quality monitoring would make employers more accountable for keeping track of wildfire smoke conditions, an activity that has become more practicable in recent years as portable detection technology has become more available.¹⁰⁹ Work practice controls, such as moving breaks inside to a properly ventilated environment would help reduce overall exposure to and inhalation of PM2.5 particles.¹¹⁰

OSHA must also consider the contrast between asbestos and wildfire smoke in designing wildfire smoke regulations.

¹⁰² 29 C.F.R. §1910.1001(j)(4) (2016).

¹⁰³ 29 C.F.R. §1910.1001(j) (2016).

¹⁰⁴ 29 C.F.R. §1910.1001(d) (2016).

¹⁰⁵ 29 C.F.R. §1910.1001(f)(1) (2016).

¹⁰⁶ *Asbestos*, CTR. FOR DISEASE CONTROL AND PREVENTION (Mar. 16, 2012), <https://www.cdc.gov/niosh/topics/asbestos/default.html> [<https://perma.cc/WND6-5FYC>] (NIOSH asbestos information).

¹⁰⁷ Kabindra M. Shakya et al., *Evaluating the Efficacy of Cloth Facemasks in Reducing Particulate Matter Exposure*, 27 J. OF EXPOSURE SCI. AND ENVTL. EPIDEMIOLOGY 352-357 (Aug. 17, 2016), <https://www.nature.com/articles/jes201642> [<https://perma.cc/ZP8Q-8XQC>].

¹⁰⁸ OCCUPATIONAL SAFETY AND HEALTH ADMIN., 3021-06R, WORKERS' RIGHTS, OSHA 3 (2017), <https://www.osha.gov/Publications/osha3021.pdf> [<https://perma.cc/ACV3-DEAY>] (OSHA considers information regarding hazards an important worker right, as it enables identification of violations. OSHA additionally requires this information be available in a language that workers understand).

¹⁰⁹ Stephen Shankland, *California Fires Boost Interest in PurpleAir's Pollution Sensors*, CNET (Nov. 21, 2018), <https://www.cnet.com/news/california-fires-boost-interest-in-purpleair-air-pollution-sensors/> [<https://perma.cc/AQ5H-SFF9>].

¹¹⁰ See Gaofeng Deng et al., *Indoor/outdoor Relationship of PM2.5 Concentration in Typical Buildings With and Without Air Cleaning in Beijing*, 26 INDOOR AND BUILT ENV'T 1 (Sept. 3, 2015), <https://journals.sagepub.com/doi/pdf/10.1177/1420326X15604349> [<https://perma.cc/B8JC-HWXQ>] (Properly ventilated indoor environments have substantially less PM2.5 than outdoors).

Simply copying asbestos rules over to a wildfire smoke context would result in poorly tailored rules to protect against wildfire smoke. One key difference is that any exposure to asbestos may potentially lead to mesothelioma in a human.¹¹¹ Mesothelioma is a tumor in the lung or stomach membrane, and can be fatal.¹¹² In comparison, PM2.5 exposure increases health risks only as exposure increases.¹¹³ This difference indicates that asbestos precautions are, by necessity, much more extreme than wildfire smoke would require. Asbestos regulations must prevent any exposure, whereas wildfire smoke regulations would be better suited to focus on reducing or limiting exposure.

When creating new regulations, it is additionally important to consider the threat of industry opposition. In order to avoid unnecessarily creating industry resistance, OSHA should tailor regulations to not burden employers more than needed to address the risk. Using standards designed for a hazard which is dangerous at any exposure level would be seen as excessive for wildfire smoke and would likely result in significant pushback from affected industries. Thus, OSHA must not adopt any standards useful for asbestos but not for wildfire smoke, as doing so would be unnecessarily burdensome on affected industries.

When designing regulations, OSHA must consider the unique nature of wildfire smoke, which has unique physical impacts and cannot be prevented with traditional equipment. Because wildfire smoke impacts the heart and lungs, regulations must take into account the impact of the labor itself, as opposed to focusing on cancer risk.¹¹⁴ Asbestos rules which require clothing and respirators to prevent exposure may be overly burdensome to farmworkers, to the extent that physically restrictive equipment affects breathing and heart rate. If farmworkers are overburdened by protective gear to the extent that their heart and lungs are impacted, both employers and employees will be less likely to comply with regulations. In light of the impact on farm work, OSHA must design regulations to minimize impact on physical exertion, despite the resulting increased exposure risk. Asbestos regulations provide a useful guideline, but OSHA must carefully tailor regulations to the particular needs of farmworkers.

Lastly, employers have less risk prevention mechanisms in a wildfire smoke context because it is easier for employers to control asbestos than wildfire smoke, even though asbestos is similar to wildfire smoke in that it is generally an environmental

¹¹¹ *Asbestos*, OCCUPATIONAL SAFETY AND HEALTH ADMIN., <https://www.osha.gov/SLTC/asbestos/> [<https://perma.cc/X45Z-TBZB>] [hereinafter OSHA].

¹¹² *Id.*

¹¹³ Hart et al., *supra* note 8.

¹¹⁴ *Fine Particles*, *supra* note 12.

hazard. Whereas wildfire smoke permeates all the air in an environment, asbestos is localized to where it has been used as a material in objects or construction.¹¹⁵ This localization gives employers more flexibility in creating safe zones away from the asbestos, and in controlling how long and when employees are exposed to the hazard. In comparison, wildfire smoke permeates the entirety of an outdoor environment and may only be avoided through an indoor ventilation system.¹¹⁶ Thus, OSHA may use safe zone principles from asbestos regulations, but must require employers to create these safe zones through indoor ventilation, rather than simply moving away from the source of danger.

OSHA must also account for the harm that workers exposed to wildfire smoke have already suffered and include remedial measures for this past harm within its regulations. Asbestos provides a useful model as it creates a similar risk for delayed impact respiratory illness.¹¹⁷ OSHA requires employers to conduct regular health screenings for employees exposed to asbestos, at no cost to the employee.¹¹⁸ As this requirement includes exams at employee termination, it provides employees with both notice of any health issues and evidence that those issues exist. Such evidence is valuable to workers who may later need to claim damages against an employer in order to recover medical costs. As such medical exams would otherwise be prohibitively expensive, OSHA must add medical surveillance requirements in order to make future recovery actions more available. Mandatory examinations will help identify health issues before they progress. OSHA must therefore create regulations, which not only prevent exposure to PM2.5, but create screening methods for past effects, using asbestos regulations as a model.

B. Cal/OSHA

Asbestos does not represent the only model OSHA might consider. California's state OSHA (Cal/OSHA) has implemented a set of guidelines for employers with outdoor workers in wildfire smoke conditions.¹¹⁹ These state OSHA guidelines, while not regulations in themselves, provide insight as to how Cal/OSHA expects employers to comport with its respiratory¹²⁰ and harmful exposure¹²¹ regulations. These guidelines include details such as mask specifics, workplace accommodations, and schedule changes.

¹¹⁵ OSHA, *supra* note 111.

¹¹⁶ Deng et al., *supra* note 110.

¹¹⁷ MAYO CLINIC, *supra* note 91.

¹¹⁸ 29 C.F.R. §1910.1001(I)(1)(i) (2016).

¹¹⁹ CAL/OSHA, *supra* note 76.

¹²⁰ Cal. Code Regs. tit. 8, § 5144 (2018).

¹²¹ Cal. Code Regs. tit. 17, § 5141 (2018).

Such specific guidelines help to remove any doubt as to what Cal/OSHA considers necessary to respond to wildfire smoke conditions. Such clarification aids groups such as United Farm Workers in helping workers demand protections from employers by providing specific rights that employees may demand.¹²²

Though Cal/OSHA and other regulatory agencies have not proven entirely successful in addressing the wildfire smoke threat, they might still serve as useful models for a federal regulation. Many of the issues encountered by Cal/OSHA and EPA guidelines were in the form of limited enforceability.¹²³ Strict federal standards would make it easier for OSHA to inspect worksites alongside state inspectors, and would remove the discretion industries have abused with state-level regulations. As OSHA relies on employees to report violations,¹²⁴ clearer and more explicit standards, coupled with hazard communication requirements accounting for language barriers, create greater certainty on when a violation has occurred. However, Cal/OSHA's wildfire smoke guidelines create only minimal respiratory protection requirements for employers,¹²⁵ which results in many employers only pretending to offer respiratory protection.¹²⁶ Regulations that are even more extensive than Cal/OSHA and with greater mandatory protection requirements would help prevent this sham-protection.

If OSHA adopts the Cal/OSHA standards, OSHA must avoid any requirements that workers stay at home. Many of the workers most at risk from wildfire smoke, such as immigrant farmworkers, do not have access to unemployment benefits or paid leave and would not comply with such a requirement due to the economic reality of loss of income.¹²⁷ Although the rules or guidelines advising staying home when possible would provide

¹²² Jocelyn Sherman, *Amid Heavy Smoke, UFW Helps Ventura County Farm Workers Protect Themselves*, UNITED FARM WORKERS (Dec. 8, 2017), <https://ufw.org/fires1217/> [<https://perma.cc/8B6V-RUJ8>].

¹²³ See *Smoke Fills the Air*, *supra* note 61 (noting state officials didn't travel to rural areas, resulting in non-enforcement of standards); Esmey Jiminez, *Smoke Makes Washington Farmworkers Cover Up, But No Regulations Require Provided Masks*, NORTHWEST PUB. BROAD. (Aug. 17, 2018), <https://www.nwpb.org/2018/08/17/smoke-makes-washington-farmworkers-cover-up-but-no-regulations-limit-work-hours/> [<https://perma.cc/GXC6-SF7H>] (noting EPA recommendations don't require action by employers where no state regulations in place).

¹²⁴ COMMITTEE ON EDUC. AND LABOR, *supra* note 34.

¹²⁵ CAL/OSHA, *supra* note 76.

¹²⁶ *Farmworkers' Health*, *supra* note 64.

¹²⁷ E. A. Crunden, *California's Farmworkers are Still Working Despite Deadly Wildfires*, THINKPROGRESS (Nov. 14, 2018), <https://thinkprogress.org/california-farmworkers-wildfires-climate-change-c2846eff73be/> [<https://perma.cc/7LF3-GCU4>].

good advice to economically stable workers, OSHA cannot forego any alternate regulations under the assumption that at-risk employees will follow a stay-at-home advisory. Alternately, a mandatory stay-at-home rule could prove harmful for undocumented immigrants because they would suffer economic harm from the lost days of work.

C. EPA Guidelines

Besides state-level OSHA equivalents, other federal agencies might prove as useful models for wildfire smoke regulation. The Environmental Protection Agency (EPA), in conjunction with other agencies like the Centers for Disease Control and Prevention (CDC) and United States Forest Service, has released a sizeable set of guidelines and advisories for public officials faced with wildfire smoke conditions.¹²⁸ These guidelines, while aimed at advising city and state level managers, include a wealth of advice on protecting large groups against the dangers of wildfire smoke, and categorize what precautions are necessary in given smoke concentrations. The guidelines from the EPA are more wildfire-smoke specific than OSHA's asbestos regulations, and more extensive than Cal/OSHA's guidelines. Given these benefits, the EPA guidelines provide a useful and preferred complementary model.

The EPA's wildfire smoke standards and recommendations provide the best source of wildfire-specific standards for OSHA to draw from, as they are extensive and directly tailored to wildfire smoke.¹²⁹ If adopting these standards, OSHA must keep in mind precedent from *AFL-CIO*¹³⁰ establishing that OSHA may not simply adopt blanket standards from other agencies, but must perform its own independent review of whether the standards are necessary and sufficient.¹³¹ In performing this review, OSHA should keep in mind recent research indicating that PM2.5 may pose a long-term health risk at lower exposure levels than previously thought.¹³² This higher risk means that OSHA will likely need to adopt stricter standards than those suggested by the EPA.

¹²⁸ EPA ET AL., *supra* note 81.

¹²⁹ *Id.* at 4-5.

¹³⁰ *AFL-CIO v. OSHA*, 965 F.2d 962, 973-974 (11th Cir. 1992) (*AFL-CIO* is the American Federation of Labor and Congress of Industrial Organizations).

¹³¹ Graff, *supra* note 38, at 159-60.

¹³² Hart et al., *supra* note 8.

V. SOCIAL JUSTICE IMPLICATIONS

A. Demographic Impact

Wildfire smoke has a disproportionate impact on communities of color,¹³³ as well as lower income communities,¹³⁴ and OSHA must tailor its regulations to account for this already existing disparity. By not providing adequate protections to farm laborers, who are predominantly Latinx, the agricultural industry adds to this disproportionate impact.¹³⁵ As a demographic, Latinx laborers already face higher rates of industrial accidents and injuries due to an increased presence in high-risk occupations, as well as increased exposure to unsafe work conditions.¹³⁶ Additionally, workplace safety issues are exacerbated by obstacles undocumented workers face in reporting workplace safety violations, such as fear of reprisal and lack of information.¹³⁷

Despite significant obstacles to reporting, undocumented immigrants are guaranteed the same protections under health and safety laws as legal residents.¹³⁸ This guarantee indicates that OSHA has as much interest in protecting undocumented workers as documented workers. Due to the additional obstacles and risks posed to undocumented laborers such as language barriers and fear of reprisal, it is necessary for OSHA to go to greater lengths with undocumented workers than with documented if it wishes to guarantee the two the same level of safety. As undocumented immigrants in the agricultural industry represent a large proportion of workers impacted by wildfire smoke, OSHA must account for

¹³³ Ian P. Davies et al., *The Unequal Vulnerability of Communities of Color to Wildfire*, PLOS ONE (Nov. 2, 2018), <https://doi.org/10.1371/journal.pone.0205825> [<https://perma.cc/LMY4-M8BU>] (Finding higher vulnerability to the effects of wildfires in Latinx, Native, and Black communities; noting also special vulnerabilities in Latinx farm worker communities due to lack of danger communication).

¹³⁴ Ana G. Rappold et al., *Cardio-Respiratory Outcomes Associated with Exposure to Wildfire Smoke Are Modified by Measures of Community Health*, 11 ENVTL. HEALTH 71 (Sept. 24, 2012), <https://ehjournal.biomedcentral.com/track/pdf/10.1186/1476-069X-11-71> [<https://perma.cc/4QU2-LRBW>] (Finding higher health risk from wildfire smoke in poorer communities even after accounting for higher exposure rates).

¹³⁵ NAT'L CTR. FOR FARMWORKER HEALTH, *supra* note 33 (Farmworker demographics).

¹³⁶ Center for Disease Control and Prevention, *Work-Related Injury Deaths Among Hispanics --- United States, 1992—2006*, MORBIDITY AND MORTALITY WEEKLY REPORT (June 4, 2008), <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5722a1.htm> [<https://perma.cc/43UB-68V4>].

¹³⁷ COMMITTEE ON EDUC. AND LABOR, *supra* note 34, at 12.

¹³⁸ *Undocumented Workers' Employment Rights*, LEGAL AID AT WORK, <https://legalaidatwork.org/factsheet/undocumented-workers-employment-rights/> [<https://perma.cc/2EVY-N9S7>].

the unique obstacles this group faces when creating regulations. More stringent rules are necessary to prevent harm to these workers by preventing employer abuse of discretion and vague standards, as has been observed in California.

Aside from specific and strict wildfire smoke regulations, there are broader steps OSHA may take in order to protect undocumented and immigrant workers. The American Public Health Association (APHA), in association with the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO), has proposed a set of actions it believes would help protect immigrant workers.¹³⁹ These actions largely focus on whistleblower protections and immigrant outreach programs, recognizing that obstacles to reporting represent one of the greatest threats to worker safety. OSHA adopting these policies would not only help ensure the success of wildfire smoke regulations, but also improve overall protection of undocumented and immigrant workers.

Furthermore, the National Institute for Occupational Safety and Health (NIOSH) has seen success in its recent collaboration with the Mexican Ministry of Foreign Affairs, as both organizations have worked to improve working conditions for Mexican-American populations.¹⁴⁰ Collaboration with Mexican federal programs provides three major benefits: (1) it helps reduce language barriers, (2) it spreads knowledge and resources through a source more trusted by and familiar to the immigrant community, and (3) it allows for OSHA to specifically tailor programs to Mexican-American culture.¹⁴¹ OSHA has already signed a collaboration agreement with the Mexican Ministry of Foreign Affairs, making it easier to use this relationship in service of immigrant workers. Considering the impact of wildfire smoke regulations on Mexican-American workers, close partnership with the Mexican Government—and usage of this relationship to increase enforcement efficacy—would create more effective regulations. OSHA has a unique advantage over Cal/OSHA, in that the federal partnership with the Mexican government allows OSHA to more directly protect the safety of Mexican-American

¹³⁹ *Occupational Health and Safety Protections for Immigrant Workers*, AMERICAN PUB. HEALTH ASS'N (Dec. 14, 2005), <https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/09/15/19/occupational-health-and-safety-protections-for-immigrant-workers> [<https://perma.cc/GG4B-FA4C>] [hereinafter APHA] (Immigrant worker policy statement).

¹⁴⁰ Michael A. Flynn et al., *Improving Occupational Safety and Health Among Mexican Immigrant Workers: A Binational Collaboration*, 128 PUBLIC HEALTH REP. 33-38 (Dec. 2013), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3945447/#B5> [<https://perma.cc/ELR8-JTM8>].

¹⁴¹ *Id.*

workers. As immigrant and migrant workers do not only come from Mexico, OSHA must also pursue similar relationships with the governments of other countries.

B. Deportation Risk

An additional obstacle for OSHA in implementing wildfire smoke regulations is that groups such as the Bureau of Immigration and Customs Enforcement of the Department of Homeland Security (ICE) may potentially find ways to use the new regulations to arrest undocumented workers. ICE has already done this by luring undocumented workers to sham OSHA meetings and deporting them.¹⁴² Additionally, workers may be hesitant to report violations out of fear of being referred to ICE and deported.¹⁴³

APHA has proposed two actions OSHA might take to address these concerns.¹⁴⁴ First, OSHA should codify a policy that it will not refer undocumented immigrants to ICE.¹⁴⁵ This codification would ensure that workers do not hesitate to report violations and allow OSHA to stay aware of violations as they occur. Second, the Department of Labor should establish regional divisions to work with organizations trusted by immigrant communities in order to keep them informed about their rights and provide a means of reporting violations.¹⁴⁶ OSHA could help workers to avoid sham meetings such as those used by ICE, by creating officially recognized access points.¹⁴⁷

It is vital that OSHA address these deportation risks, as it relies on employee reports to create probable cause for inspections. In industries largely composed of undocumented workers, fear of reporting violations stifles investigation. OSHA must enforce regulations in undocumented worker-heavy industries, and to do so it must remove this fear of reporting. ICE is likely to use a regulation which protects undocumented workers against them, as it has already done. OSHA must therefore act to ensure the rule is used to protect workers, rather than as a weapon against them.

VI. ARGUMENTS AGAINST A FEDERAL STANDARD

As with any set of federal laws, issues of federalism arise. Under OSHA, states may create their own state-level OSHA plans

¹⁴² APHA, *supra* note 139 (ICE agents use a sham OSHA meeting to lure and arrest undocumented immigrants).

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ *Id.*

¹⁴⁶ *Id.*

¹⁴⁷ For example, workers would have less reason to attend meetings not put on by trusted organizations if they knew those organizations had official support.

with standards as strict, or more strict than the equivalent OSHA standards.¹⁴⁸ Research has indicated that states with their own plans in place have lower rates of workplace fatalities.¹⁴⁹ This disparity in fatality rates suggests that state-level rules are more effective at protecting worker safety.

In addition, creating additional federal rules may impair states' abilities to govern themselves. An oft-cited opinion in *New State Ice Co. v. Liebmann* set forth the idea that states should be able to act as laboratories to try new ideas, and that doing so requires some freedom from federal mandate.¹⁵⁰ Just as states may choose to regulate, states might also choose not to regulate. Creating a federal standard would remove this choice and make wildfire smoke regulation mandatory. If wildfire smoke is not considered a serious threat, then it could be seen as imposing a significant burden on all states in the name of a dubious federal interest. Creating a federal regulation could therefore be seen as an infringement of state sovereignty.

There is, however, precedent in federal OSHA adopting standards from its stricter state level OSHA equivalents. In 2016, OSHA proposed regulations applying strict standards for preventing workplace violence in the health care industry.¹⁵¹ The OSHA proposal closely follows a similar adoption by Cal/OSHA, representing a much stricter standard than is present in other states.¹⁵² This precedent suggests that OSHA does not currently view adoption of strict yet specific regulations as overstepping the federal role. Additionally, a federal rule provides the benefit of a uniform standard. State standards, in comparison, are oftentimes mismatched and can be overly impacted by political considerations or preference for state business interests.¹⁵³ The risk of state political preferences is of special concern with an issue such as

¹⁴⁸ *State Plans*, OCCUPATIONAL HEALTH AND SAFETY ADMIN., <https://www.osha.gov/dcs/osp/index.html> [<https://perma.cc/PY9T-3RD9>].

¹⁴⁹ John C. Bradbury, *Regulatory Federalism and Workplace Safety: Evidence from OSHA Enforcement, 1981–1995*, 29 J. OF REG. ECON. 211, 211–224 (Mar. 2006), <https://link.springer.com/article/10.1007%2Fs11149-006-6036-1> [<https://perma.cc/7FEF-7F5G>] (Abstract).

¹⁵⁰ *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (States as laboratories).

¹⁵¹ Prevention of Workplace Violence in Healthcare and Social Assistance, 81 Fed. Reg. 88147–88167 (Proposed Dec. 7, 2016).

¹⁵² Daniel R. Birnbaum, *Federal OSHA Aims to Follow California's Lead in Adopting Strict Rules Preventing Workplace Violence in Health Care Settings*, BAKER & HOSTETLER LLP (Jan. 2, 2017), <https://www.lexology.com/library/detail.aspx?g=2eef7812-c995-4db6-8c93-a5583616cfa0> [<https://perma.cc/G9WV-HRTJ>] (OSHA Forum Blog).

¹⁵³ Joseph F. St. Cyr, *OSHA and Federalism in Times of Crisis: Issues in Federal and State Relations*, 30 S. ILL. U. L.J. 273, 280–281 (Winter 2006), <https://heinonline.org/HOL/P?h=hein.journals/siulj30&i=305> [<https://perma.cc/HPD9-RD8Q>].

wildfire smoke, which especially affects undocumented workers. A federal standard would extend these regulations to states which would not otherwise prioritize the safety of undocumented immigrants.

A last note in favor of a federal standard is that, although the Western United States is at the highest risk of wildfires,¹⁵⁴ wildfire smoke affects a broader area than just in the immediate vicinity. During the recent California wildfires, smoke reached as far as New York in high enough concentrations to allow visibility.¹⁵⁵ While states closest to wildfires are most likely to be affected on a regular basis, wildfire smoke has the potential to affect air quality across the country, especially as wildfire rates increase. If necessary, a federal standard would ensure that regulations are present in less prepared states.

VII. CONCLUSION

Federal OSHA regulations on wildfire smoke would fill a gap in current administrative law. This gap has important social justice implications for the nation, as the country's Latinx immigrant population is most severely affected by the lack of regulation. In adopting standards to fill this administrative gap, OSHA should look to existing asbestos regulation as well Cal/OSHA and the EPA's wildfire smoke guidelines. However, case precedent requires that OSHA not blindly adopt these standards but rather apply its own independent review to ensure they are a good fit.

OSHA should first look to asbestos standards in determining specific methods for dealing with airborne hazards. Specifically, OSHA should incorporate a modified form of the protection, signage, and work practice requirements from the asbestos standards, as well as requiring ongoing medical screening. OSHA should use Cal/OSHA as a model for how to modify these standards to a wildfire context, specifically incorporating the lessened respirator requirements (N95 masks) and work practice accommodations created for an outdoor environment. Additionally, OSHA should implement current EPA AQI categories as an organizational basis for its employer standards. In this case, OSHA will need to do its own fact-finding studies on PM2.5 health risks in order to determine appropriate responses to each category of hazard.

In adopting these standards, OSHA must take into consideration past failures to adopt national standards. Of weight is the lesson that industry interests can prove fatal for a proposed

¹⁵⁴ PETERSON & LITTEL, *supra* note 3.

¹⁵⁵ Corbett, *supra* note 4.

regulation. OSHA must both prepare for possible resistance from the agricultural industry, as well as be cautious not to unnecessarily burden farm owners. However, OSHA must also structure its standards to protect farm workers. OSHA must prevent discretionary abuse by owners through clearly defined standards. Additionally, OSHA must work with union and Mexican federal partners, as well as partners in other countries, to increase undocumented workers' understanding of their rights under the new rule. If it fails to protect undocumented workers from retaliation for reporting violations, OSHA risks creating an unenforceable standard as it depends on those reports to enforce its regulations.