UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Proposed New Source Performance Standards for the Synthetic Organic Chemical Manufacturing Industry and National Emission Standards for Hazardous Air Pollutants for the Synthetic Organic Chemical Manufacturing Industry and Group I & II Polymers and Resins Industry, 88 Fed. Reg. 25,080 (April 25, 2023)	Docket No. EPA-HQ-OAR-2022-0730

COMMENTS OF AIR ALLIANCE HOUSTON, CALIFORNIA COMMUNITIES AGAINST TOXICS, CLEAN AIR COUNCIL, CONCERNED CITIZENS OF ST. JOHN, DEL AMO ACTION COMMITTEE, ENVIRONMENTAL DEFENSE FUND, ENVIRONMENTAL INTEGRITY PROJECT, ENVIRONMENTAL JUSTICE HEALTH ALLIANCE FOR CHEMICAL POLICY REFORM, KENTUCKY RESOURCES COUNCIL, LOUISIANA ENVIRONMENTAL ACTION NETWORK, RISE ST. JAMES, SIERRA CLUB, TEXAS ENVIRONMENTAL JUSTICE ADVOCACY SERVICES, UNION OF CONCERNED SCIENTISTS, UTAH PHYSICIANS FOR A HEALTHY ENVIRONMENT, and EARTHJUSTICE

Submitted via regulations.gov and email on July 7, 2023 by Earthjustice

Earthjustice submits these comments on behalf of the above-listed environmental and community groups ("Commenters"), whose members and constituents live and work—and whose children play and attend school—near chemical manufacturing facilities, including those in both the Synthetic Organic Chemical Manufacturing Industry ("SOCMI") sources, regulated by the SOCMI New Source Performance Standards ("NSPS") and the Hazardous Organic National Emissions Standards for Hazardous Air Pollutants ("Hazardous Organic NESHAP" or "HON"), and the Group I & II Polymers and Resins Industry ("P&R"). Commenters support EPA's proposal to strengthen the NSPS and the Hazardous Organic NESHAP for SOCMI sources, and the NESHAP for P&R sources. However, EPA must further strengthen and address key shortcomings and gaps in its proposal in order to protect public health and satisfy the requirements of the Clean Air Act, as detailed below.[1]

INTRODUCTION

For years, EPA has allowed HON/SOCMI and P&R chemical plants to emit dangerous levels of toxic, cancer-causing pollutants—including chloroprene and ethylene oxide—into the air. In 2010 and 2016, EPA completed robust, scientific, and peer-reviewed toxicological reviews demonstrating the potent carcinogenicity of chloroprene and ethylene oxide respectively, among

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[1] All cited material in this Comment is hereby incorporated by reference.

other health harms.[2] As a result of the serious health risks these pollutants cause, the EPA Office of Inspector General called on EPA to conduct new residual risk and technology reviews for chloroprene- and ethylene oxide-emitting source categories to protect human health,[3] which for HON/SOCMI and P&R facilities were already years overdue. In this rulemaking, EPA recognizes for the first time that the health threat from HON/SOCMI and P&R chemical plants is unacceptable. Now, EPA must follow through on its promise to protect fenceline communities. EPA must also follow through on its promise to issue a health-protective rule for Group I Polymers and Resins ("P&R I") in lieu of resolving the claims that residents of St. John the Baptist Parish raised in their Title VI complaints with respect to the chloroprene emissions and excess cancer risk they have experienced from the Denka Performance Elastomer facility in the Neoprene Production source category.[4]

The proposed NESHAP covers about 207 facilities in HON (with 634 chemical manufacturing process units), 19 facilities in P&R I, and five facilities in Group II Polymers and Resins ("P&R II"). Collectively, these facilities emit over 8,200 tons per year of hazardous air pollutants ("HAPs"), including ethylene oxide, chloroprene, epichlorohydrin, 1,3-butadiene,

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[2] EPA IRIS, Toxicological Review of Chloroprene (Sep. 2010), https://iris.epa.gov/static/pdfs/1021tr.pdf; EPA IRIS, Evaluation of the Inhalation Carcinogenicity of Ethylene Oxide (Dec. 2016), https://iris.epa.gov/static/pdfs/1021tr.pdf.

[3] EPA OIG, EPA Should Conduct New Residual Risk and Technology Reviews for Chloroprene- and Ethylene Oxide-Emitting Source Categories to Protect Human Health (May 6, 2021), https://www.epa.gov/office-inspector-general/report-epa-should-conduct-new-residual-risk-and-technology-reviews; *see also* EPA OIG, Management Alert – Prompt Action Needed to Inform Residents Living Near Ethylene Oxide-Emitting Facilities About Health Concerns and Actions to Address Those Concerns (Mar. 31, 2020), https://www.epa.gov/office-inspector-general/report-management-alert-prompt-action-needed-inform-residents-living-near; NEJAC, Recommendation to regulate Ethylene Oxide to protect public health and to use the findings and conclusions of the EPA Integrated Risk Information System chemical assessments in regulatory determinations (May 3, 2019), https://www.epa.gov/sites/default/files/2019-08/documents/nejac-letter-ethylene_oxide-may-3-2019-final.pdf.

[4] Letter from EPA to Roger Gingles, Secretary of LDEQ Re: Administrative Closure EPA Complaint Nos. 01R-22-R6 and 04R-22-R6 (June 27, 2023) [hereinafter EPA Title VI Closure Letter to LDEQ], https://www.epa.gov/system/files/documents/2023-06/01R-22-R6%20and%2004R-22-R6%20Administrative%20Closure%20Letter%20for%20LDEQ%206.27.2023.pdf.

formaldehyde, and other toxic metals.[5] The proposed NSPS covers 668 SOCMI facilities.[6] The highest risk facilities are located across 17 states, and two-thirds of these high-risk facilities are located in Texas and Louisiana.[7]

Importantly, EPA recognizes that the health threats to communities from these facilities are unacceptable under the Clean Air Act.[8] Communities have known this for far too long. EPA predicts that HON/SOCMI sources cause two excess cases of cancer every year.[9] And communities of color and people of low-income disproportionately bear this pollution and risk.

EPA's proposed rule includes significant steps to reduce health risks. When fully implemented, EPA's proposed NESHAP is estimated to reduce emission of HAPs from HON/SOCMI and P&R sources by 5,981 tons per year, including 4,858 tons per year from flares.[10] These reductions include 58 tons per year of ethylene oxide and 14 tons per year of chloroprene.[11] EPA finds that these reductions will reduce the number of people exposed to a cancer risk of greater than 100-in-1 million from HON/SOCMI sources (including the Neoprene Production source) to zero.[12] However, 2.5 million people are still estimated to be exposed to a cancer risk greater than 1-in-1 million from these sources. These estimates are also based on models that EPA themselves have found underpredict exposure.

EPA must finalize important improvements in its proposal that would reduce HON/SOCMI and P&R sources' emissions of hazardous air pollution and require further reductions to remove all unacceptable health risks and assure an "ample margin of safety to protect public health," as required by section 7412(f)(2).

In addition to reviewing risk under section 7412(f)(2), EPA also proposes to revise the source categories' standards under section 7412(d)(6). Under section 7412(d)(6), EPA must review the standards, "taking into account developments in practices, processes, and control

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[5] *See* New Source Performance Standards for the Synthetic Organic Chemical Manufacturing Industry and National Emission Standards for Hazardous Air Pollutants for the Synthetic Organic Chemical Manufacturing Industry and Group I & II Polymers and Resins Industry, 88 Fed. Reg. 25,080, 25,179 (April 25, 2023); Lists of Facilities Subject to the HON, Group I and Group II Polymers and Resins NESHAPs , and NSPS Subparts VV, VVa, III, NNN, and RRR, EPA-HQ-OAR-2022-0730-0069 (Mar. 2023); Proposed SOCMI Residual Risk Assessment, *supra*, at 5-6, 37; Residual Risk Assessment for the Polymers & Resins I Neoprene Production Source Category in Support of the 2023 Risk and Technology Review Proposed Rule, EPA-HQ-OAR-2022-0730-0100 at 5, 34 (Mar. 2023).

[6] 88 Fed. Reg. at 25,179; EPA ECHO (searching by NSPS subparts), https://echo.epa.gov/ (last visited July 7, 2023).

[7] 88 Fed. Reg. at 25,183.

[8] *Id.* at 25,111.

[9] *Id.*

[10] *Id.* at 25,180.

[11] *Id.*

[12] *Id.* at 25,111.

technologies," and make all revisions "necessary," including to bring the standards into compliance with the Clean Air Act.[13]

EPA proposes key revisions, such as removing the unlawful startup, shutdown, and malfunction ("SSM") exemption, updating standards for the operation and monitoring of flares, and requiring fenceline monitoring for a subset of covered facilities. However, EPA may not lawfully finalize new "three strike" exemptions, which would allow unlimited emissions once or twice every three years from each pressure relief device and flare—SSM exemptions by another name. EPA has also refused to update equipment leak standards under section 7412(d)(6), arguing that any updates the agency considered would not be cost-effective, even though fugitive emissions constitute the majority of HAP emissions from the sources under the proposed rule. In order to properly control these emissions, EPA must update equipment leak standards for all facilities and expand and strengthen the proposed fenceline monitoring requirements.

EPA must take the actions described in further detail in these comments to satisfy the Clean Air Act, and to fulfill the Administrator's commitment to protect communities' and children's health and advance environmental justice.

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[13] 42 U.S.C. § 7412(d)(6); *Louisiana Envtl. Action Network v. EPA*, 955 F.3d 1088, 1096 (D.C. Cir. 2020) [hereinafter *LEAN*] ("The operative standard is 'revise as necessary,' with the parenthetical pointing to a non-exhaustive list of considerations.").

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DETAILED COMMENTS

I. EPA MUST FULLY ACCOUNT FOR RISKS AND FINALIZE STRONG RISK-BASED STANDARDS TO PROTECT PUBLIC HEALTH

Commenters support EPA's proposal reviewing cancer and other health risks and promulgating revised standards to reduce that risk. However, EPA must recognize its recurring obligation to review health risk and promulgate standards to protect public health with an ample margin of safety.[14] Moreover, EPA must better account for health risk from all pollutants, including from lead. Commenters additionally support EPA's finding that health risks from SOCMI/HON and P&R sources are unacceptable but emphasize that there is no "acceptable" level of health risk. As illustrated by EPA's community risk assessment, EPA must do more to reduce the health risk to communities living near HON/SOCMI and P&R facilities.

A. EPA is Legally Obligated to Conduct Additional Section 7412(f)(2) Risk Reviews.

The primary goal of the Clean Air Act is to protect public health by preventing air pollution.[15] Under section 7412, which governs pollution from cancer-causing HAPs like ethylene oxide, EPA must set standards that achieve "the maximum degree of reduction in emissions of the hazardous air pollutants" taking into account costs and other "non-air quality health and environmental impacts and energy requirements."[16] These are known as MACT standards. These initial standards require that all sources in a category match the level of emissions achieved by the best performing (i.e., lowest-emitting) sources within the category.[17] But Congress did not intend for EPA to stop there. At least every eight years, EPA must "review, and revise as necessary," these emission standards, "taking into account developments in practices, processes, and control technologies" under section 7412(d)(6).[18] This review, known as a "technology review" ensures—as one drafter of the Clean Air Act noted—that there will be "the continual tightening of existing source standards."[19]

In addition to reviewing and revising, as necessary, emission standards every eight years, the Clean Air Act also requires EPA to conduct a residual health-risk review "within 8 years after promulgation of standards for each category or subcategory of sources pursuant to subsection [7412](d)."[20] This rulemaking, also known as a 7412(f)(2) health risk review, requires EPA to "promulgate standards … is required in order to provide an ample margin of safety to protect

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[14] *See* 42 U.S.C. § 7412(f)(2).

[15] *Id.* § 7401(b)(1) ("purposes" include "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population"); *id.* § 7401(c) ("primary goal . . . is . . . pollution prevention"); *see also id.* § 7401(a)(2).

[16] *Id.* § 7412(d)(2).

[17] *Id.* § 7412(d)(3).

[18] *Id.* § 7412(d)(6).

[19] Hon. Henry A. Waxman, *An Overview of the Clean Air Act Amendments of 1990*, 21 Envtl. L. 1721, 1775-76 & n.256 (1991).

[20] 42 U.S.C. § 7412(f)(2).

public health … or to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect."[21] As the D.C. Circuit has recognized, the "aspirational goal" of the residual risk provision includes reducing excess lifetime cancer risk to the most-exposed person to no greater than one-in-one million.[22]

As part of a residual health-risk review, EPA conducts a two-step review of a rule's emission standards. In the first step, EPA determines if the risk posed by a source category are "acceptable" based on the remaining cancer risk after the standards are implemented.[23] If the risks are unacceptable, then EPA "must determine the emission standards necessary to reduce risk to an acceptable level without considering costs."[24] This two-step process is meant to ensure that NESHAP regulations will protect public health with an ample margin of safety.

For the HON/SOCMI source category, EPA finalized a residual risk and technology review on December 21, 2006.[25] EPA was thus required to review and, as necessary, revise the standards under section 7412(d)(6) by no later than December 21, 2014. An additional review rulemaking would have been due by no later than December 21, 2022. EPA's proposal intends to satisfy its nearly decade overdue obligation.

In its 2006 action, EPA also promulgated standards under section 7412(d)(2). This promulgation triggered the requirement of section 7412(f)(2) to conduct a residual health-risk review "within 8 years after promulgation of standards … pursuant to subsection (d)," by December 21, 2014. Additionally, EPA promulgated an alternative work practice standard to detect leaks from equipment in the HON/SOCMI source category under its section 7412(d)(6) authority on December 22, 2008.[26] This promulgation also triggered the requirement under section 7412(f)(2) to conduct a residual health risk review by December 22, 2016.

For the P&R I source categories, EPA finalized residual risk and technology reviews on December 16, 2008 and April 21, 2011.[27] EPA was thus required to review and, as necessary revise the standards under section 7412(d)(6) by December 16, 2016 and April 21, 2019.

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[21] *Id.* § 7412(f)(2)(A).

[22] *NRDC v. EPA*, 529 F.3d 1077, 1082 (D.C. Cir. 2008) (interpreting 42 U.S.C. § 7412(f)(2)).

[23] *See* 88 Fed. Reg. at 22,796; *see also NRDC*, 529 F.3d at 1082 (D.C. Cir. 2008).

[24] EPA OIG, EPA Should Conduct New Residual Risk and Technology Reviews for Chloroprene- and Ethylene Oxide-Emitting Source Categories to Protect Human Health at 3 (May 6, 2021).

[25] 71 Fed. Reg. 76,603 (Dec. 21, 2006).

[26] 73 Fed. Reg. 78,199, 78,200 (Dec. 22, 2008) ("including, but not limited to: … part 63, subparts … H, I, …") ("Once promulgated, EPA retains the authority to provide additional work practice alternatives. Such authority exists under EPA's general authority to review and amend its regulations as appropriate, e.g., 42 U.S.C. 7411(b)(1)(B), 42 U.S.C. 7412(d)(6).").

[27] 73 Fed. Reg. 76,220 (Dec. 16, 2008) (for neoprene rubber production, ethylene propylene rubber production, butyl rubber production, and polysulfide rubber production); 76 Fed. Reg. 22,566 (Apr. 21, 2011) (epichlorohydrin elastomers production; Hypalon production; polybutadiene rubber production; styrene butadiene rubber and latex production; and NMB production).

In its 2011 action, EPA promulgated new emissions standards under section 7412(d)(2) and (3). This promulgation triggered the requirement of section 7412(f)(2) to conduct a residual health risk review by April 21, 2019.

Given that a residual risk review is overdue for both P&R I and HON/SOCMI—and nearly a decade overdue for HON/SOCMI—EPA appropriately conducted a residual risk review under section 7412(f)(2) and proposes standards to provide an ample margin of safety to protect public health. However, EPA erroneously states that: "Section [7412](f) of the CAA requires the EPA to assess the risk to public health remaining after the implementation of MACT emission standards promulgated under CAA section [7412](d)(2)."[28] EPA also erroneously states that: "there is no statutory CAA obligation under CAA section [7412](f) for the EPA to conduct a second residual risk review of the HON or standards for affected sources producing neoprene subject to P&R I."[29] EPA cites its "discretion to revisit its residual risk reviews where the Agency deems that is warranted."[30] This is incorrect. Section 7412(f)(2) of the Clean Air Act instead states:

> …the Administrator shall, within 8 years after promulgation of standards for each category or subcategory of sources pursuant to subsection (d), promulgate standards for such category or subcategory if promulgation of such standards is required in order to provide an ample margin of safety to protect public health … or to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect.[31]

Section 7412(f)(2) requires EPA to conduct a residual risk review and promulgate standards if required within 8 years of promulgating section 7412(d) standards. EPA must satisfy its overdue obligation by finalizing (f)(2) standards in this rulemaking.

B. Analysis of HON and Neoprene Production Risk Reviews.

1. EPA correctly finds that the risk posed by SOCMI and P&R I facilities is unacceptable under section 7412(f)(2).

EPA must first assess the health risks remaining from a source category once an existing emission standard is in place and determine whether this risk is acceptable or unacceptable—that is, below or above EPA's benchmark of 100-in-1 million. As stated above, when remaining health risks are unacceptable, EPA must set an emission standard to eliminate unacceptable risk and provide an "ample margin of safety to protect public health."[32] This "ample margin of safety" acts as a buffer or cushion for uncertainties in EPA's risk assessment.

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[28] 88 Fed. Reg. at 25,083 (emphasis added).
[29] *Id.* at 25,089.
[30] *Id.*
[31] 42 U.S.C. § 7412(f)(2) (emphasis added).
[32] *Id.*

In the proposed rule, EPA correctly recognizes that risk from the SOCMI and P&R I (specifically Neoprene Production) source categories are unacceptable—as community members near these sources and facilities have known for far too long. EPA finds that cancer risk from breathing air near a SOCMI facility is as high as 2,000-in-1 million—20 times higher than EPA's benchmark of unacceptable risk. EPA predicts that breathing the pollution from these sources is causing another case of cancer every two years, and EPA recognizes that this pollution and risk falls disproportionately on communities of color and low-income communities.

EPA's finding that the health risks from SOCMI facilities are unacceptable is well supported by the administrative record. In fact, as explained in a separate section, the real-world health risks are much higher than the underestimated health risks captured by EPA's risk assessment. Importantly, EPA should recognize that there is no "acceptable" or safe level of risk from carcinogenic air pollutants.

2. EPA's modeling likely underestimates hazardous air pollution and risk.

EPA's SOCMI risk review, like all risk assessments, relies on important inputs. These include, among others, emission rates, source geometry/location characterization, and meteorological data. The risk assessment methodology is not self-correcting. Any error in these inputs will result in erroneous risk determinations. In particular, any under-predictions in emission rates, will, all other factors remaining the same, result in underpredicted risks.

In this instance, EPA's estimates of emissions of the key air toxics that are inputs to its risk assessment are highly likely to underestimate actual emissions. From almost every single source type, EPA's input emission rates rely uncritically on facility-reported emissions data with no verification. As Commenters note later, the fact that local monitoring data is often many times greater than estimates predicted by modeling directly confirms the underestimation in the emissions inventory/inputs used by EPA.

Based on Commenters' experience, emissions are likely to be underestimated from: (1) flares (via generous and unverifiable assumptions about destruction efficiency); (2) fugitives (by relying on poor data in LDAR databases); (3) tanks (by algorithms that have been known to underestimate emissions by many multiples); and (4) process vents (by not having accurate process data such as vent stream flow rates and compositions). EPA does not audit the emissions input values before using them in its risk review. As noted in the monitoring/modeling discrepancy, EPA's risk estimates are likely to be substantially low.

The implications of the model underestimating the measured concentrations at the fenceline, as well as at ambient monitoring sites across the country, are two-fold:

(1) Comprehensive and tailored fenceline monitoring work practice standards are urgently needed at all facilities to detect and control fugitive emissions and to understand the true exposure of workers and residents in neighboring communities.

(2) Given that real-world measured concentrations are many times greater than the model estimates—that are similar to those used in EPA's risk assessment—we would expect both pre-

control risk and post-control residual risk to be many times greater than calculated by EPA. Therefore, an even stronger rule is needed to accomplish the level of health risk being targeted.

An analysis conducted by the Environmental Defense Fund (EDF) comparing monitored to modeled emissions further confirms that EPA's model likely underestimated emissions and risk to a great extent.

According to EPA, "[o]verwhelmingly (as indicated by the monitor to model ratio), monitored concentrations exceeded concentrations established by the modeling. In some cases, this exceedance occurred by multiple orders of magnitude."[33] This is in reference to the monitor-to-model concentrations that EPA evaluated from a CAA section 114 information collection request at 11 covered facilities for the six chemicals for which fenceline monitoring is proposed (ethylene dichloride, ethylene oxide, vinyl chloride, benzene, 1,3-butadiene, and chloroprene). EPA's Table 5 shows, for example, that the Dow Chemical Company's Louisiana Operations had measured concentrations that were more than one-thousand-times the model-estimated concentrations.

EDF analyzed national ambient air toxics monitoring data for the six chemicals and found that EPA's AirToxScreen model typically underestimated annual mean ambient measured concentrations for all six chemicals, corroborating EPA's finding that monitored concentrations exceed modeled concentrations by multiple orders of magnitude.

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[33] *See* Memorandum from Andrew Bouchard et al., EPA, to Docket No. EPA-HQ-OAR-2022-0730, Re: Clean Air Act Section 112(d)(6) Technology Review for Fenceline Monitoring located in the SOCMI Source Category that are Associated with Processes Subject to HON and for Fenceline Monitoring that are Associated with Processes Subject to Group I Polymers and Resins NESHAP, EPA-HQ-OAR-2022-0730-0091 at 12 (Mar. 2023) [hereinafter Fenceline Monitoring Technology Review Memo].

Table 1: Comparison of 2019 annual mean HAP concentrations at ambient monitoring sites and AirToxScreen model estimates. Results shown for mean and 95th percentile over all sites, nationally.

	Mean comparison (ug/m3)			**95th percentile comparison (ug/m3)**			
Chemical	**Model (AirToxScreen)**	**Monitors**	**Monitor/ model bias (ratio)**	**Model (AirToxScreen)**	**Monitors**	**Monitor/ model bias (ratio)**	**Number of monitors/ tracts**
1,3-BUTADIENE	0.03	0.16	5.6	0.08	0.34	4.4	184
BENZENE	0.31	0.85	2.8	0.58	2.16	3.7	193
ETHYLENE DICHLORIDE (1,2-DICHLOROETHANE)	0.00	0.08	22.5	0.01	0.23	15.4	166
ETHYLENE OXIDE	0.00	0.26	264.8	0.00	0.32	70.9	12
FORMALDEHYDE	1.14	2.66	2.3	1.66	4.23	2.5	75
VINYL CHLORIDE	0.00	0.01	4.7	0.01	0.04	3.7	164

3. EPA must properly assess quantitative risk from HON sources lead emissions.

EPA acknowledges that lead is a persistent and bioaccumulative and toxic pollutant (PBT) and it must assess the health risk it causes.[34] Yet EPA refuses to assess any quantifiable health risk from lead; instead, EPA compares emissions to the Lead National Ambient Air Quality Standards (NAAQS), without considering the real-world health threat from these emissions. EPA recognizes that HON sources emit an astounding 4000 pounds of lead (2 tons) each year. Lead has no safe level of human exposure and is particularly harmful to children and the developing fetus. Yet EPA assigns a health risk value of zero to lead emissions from these sources. EPA proposes not to quantify the health risk lead causes and to ignore this risk completely because the agency does not believe any individual source is causing an exceedance

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[34] EPA, Residual Risk Assessment for the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Source Category in Support of the 2023 Risk and Technology Review Proposed Rule, EPA-HQ-OAR-2022-0730-0085 at 24 (Mar. 2023) [hereinafter Proposed SOCMI Residual Risk Assessment].

of the Lead NAAQS. EPA may not lawfully or rationally ignore the serious health risks lead causes.

Lead is a well-known toxic heavy metal with diverse and severe health impacts that has no safe level of human exposure.[35] In particular, lead is associated with neurological, hematological, and immune effects on children, and hematological, cardiovascular, and renal effects on adults. Children are particularly sensitive to the effects of lead, including sensory, motor, cognitive, and behavioral impacts. No safe blood lead level in children has been identified; even low levels of lead in blood have been shown to affect IQ, ability to pay attention, and academic achievement; and effects of lead exposure cannot be remedied.[36] One study found that for every 0.2 μg/dL of lead in the blood, an adolescent's IQ was reduced one point.[37]

Concerning the health risks caused by lead, EPA considered only the 2008 Lead NAAQS. EPA performed no section 7412(f)(2) health risk assessment for lead—it simply assessed compliance with a different standard. As EPA states in the Risk Assessment:

> In evaluating the potential multipathway risks from emissions of lead compounds, rather than developing a screening threshold emission rate, we compare the maximum estimated chronic exposure concentrations to the level of the current National Ambient Air Quality Standard (NAAQS) for lead (0.15 μg/m^3)… [Lead emissions were reported from 103 facilities.] Based on the results of the risk screening analysis, we do not expect an adverse health and/or environmental effect because of lead emissions from this source category if facilities are complying with the NESHAP.[38]

EPA, Centers for Disease Control and Prevention (CDC), California EPA, and the American Academy of Pediatrics (AAP) acknowledge that no safe level of lead can be identified.[39] EPA has unlawfully and arbitrarily failed to evaluate and recognize that lead risks are unacceptable pursuant to section 7412(f)(2). By solely relying on the NAAQS for lead rather than conducting an independent risk assessment, EPA has failed to complete or create a lawful

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[35] *See* National Ambient Air Quality Standards for Lead, 73 Fed. Reg. 66,964, 66,975-76 (Nov. 12, 2008).

[36] Center for Disease Control and Prevention, *What do Parents Need to Know to Protect Their Children?* (last updated May 17, 2017), http://www.cdc.gov/nceh/lead/acclpp/blood_lead_levels.htm.

[37] Lucchini, R.G., et al., *Inverse association of intellectual function with very low blood lead but not with manganese exposure in Italian adolescents*, 118 Envtl. Research 65 (Oct. 2012), *available at* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3477579/.

[38] Proposed SOCMI Residual Risk Assessment, *supra*, at 9.

[39] EPA, Basic Information about Lead in Drinking Water (last updated Aug. 21, 2017), https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water; CDC, Lead (last updated Aug. 21, 2017), https://www.cdc.gov/nceh/lead/; American Academy of Pediatrics (AAP), With No Amount of Lead Exposure Safe for Children, American Academy of Pediatrics Calls For Stricter Regulations (June 20, 2016), https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/With-No-Amount-of-Lead-Exposure-Safe-for-Children,-American-Academy-of-Pediatrics-Calls-For-Stricter-Regulations.aspx.

and rational risk assessment for lead, including the interaction of different risks from lead—i.e., inhalation (risks from breathing) and multipathway (risks from other types of exposure). But EPA has not shown there is *no* risk from such exposure. It therefore does not evaluate health risks from lead further and does not even attempt to quantify the health risks that new lead emissions are causing from these sources in communities already contaminated by prior lead emissions. Thus, in this proposal, EPA fails to assess either inhalation or multipathway risks for lead in the way it has recognized the need to do for all other pollutants. EPA must do so rather than only relying on the NAAQS.

As EPA is well aware, the Children's Health Protection Advisory Committee (CHPAC) has advised EPA that it should strengthen the Lead NAAQS by an order of magnitude (to 0.02 $\mu g/m^3$) or below, require better monitoring, and base the measurements on a one-month period) because it "is insufficient to protect children's health."[40] The NAAQS in place now only seeks to avoid an air-related population mean IQ loss in excess of 2 points—recognizing that on average that, or in some communities even higher neurological harm is occurring under the 2008 Lead NAAQS.[41] There can be no doubt that risks and likely harm occur below the level of the 2008 NAAQS. It is unacceptable for EPA to ignore this harm and by doing so to tolerate such significant IQ loss in children as an indicator of and in addition to all of the neurological and other harms of lead. This is particularly true when these impacts do not fall equally across the country but hit poor children and communities of color the most.[42]

In regard to lead emissions, therefore, EPA may not merely rely on the lead NAAQS to decide what is "acceptable" risk under section 7412(f)(2). EPA must address and incorporate the best currently available information on children's exposure, including the CHPAC recommendation of lowering the lead standards to 0.02 $\mu g/m^3$ from the current EPA NAAQS level of 0.15 $\mu g/m^3$.[43] The CDC has now recognized that there is no safe level of exposure and has replaced the now-outdated 10 µg/dL standard with a recognition that action is required at the reference level of 5 µg/dL.[44] California's health benchmark for lead shows EPA should look at a blood-lead level change of 1.0 g/dL as the level at which measurable neurological harm, illustrated by a correlating loss of 1 IQ point, can occur.[45]

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[40] Letter from Sheela Sathyanarayana, CHPAC to Gina McCarthy, EPA (Jan. 8, 2015), https://www.epa.gov/sites/production/files/2015-01/documents/naaqs_for_lead_letter.pdf.

[41] 73 Fed. Reg. at 67,006.

[42] 84 Fed. Reg. at 69,212 Tbl. 5.

[43] Letter from Dr. Melanie A. Marty, Chair, Children's Health Protection Advisory Comm., to Administrator Stephen L. Johnson, (June 16, 2008), *available at* http://www2.epa.gov/sites/production/files/2014-05/documents/61608.pdf.

[44] CDC, What Do Parents Need to Know to Protect Their Children? (last updated May 17, 2017), http://www.cdc.gov/nceh/lead/acclpp/blood_lead_levels.htm.

[45] *See* OEHHA, J. Carlisle et al., Development of Health Criteria for School Site Risk Assessment Pursuant to Health and Safety Code Section 901(g): Child-Specific Benchmark Change in Blood Lead Concentration for School Site Risk Assessment, Final Report at 1 (Apr. 2007) (explaining that this blood-lead level increase may occur from a daily intake of 6 µg of ingested soluble lead or 5 µg of inhaled lead),

EPA has shown that there are significant emissions and has refused to assess the risk that is caused by an additional 4000 pounds per year, going into the air in communities that have already faced this level of emission for years. EPA has failed to show how it can ignore this simply because there is no exceedance of the Lead NAAQS in a given year. The record shows, instead, that EPA must evaluate the additional health risk that these lead emissions are causing, based on the best available science, and that risk is likely unacceptable in view of the serious harm lead causes, particularly to children and to communities of color and low- income communities facing already high levels of lead exposure and harm.

4. EPA should tangibly reduce the risk caused by chronic non-cancer HAPs.

The National Academy of Sciences (NAS) recommends that cancer and chronic non-cancer risk assessment use the same approach in order to address the fact that very low levels of non-carcinogen exposures can pose health risks.[46] The use of reference doses (RfDs) for dose-response risk assessment of chronic non- cancer health effects may significantly underestimate risk according to NAS. For these health effects, risk assessments focus on defining the reference dose or reference concentration (RfC), which is defined as a dose "likely to be without an appreciable risk of deleterious effects" over a lifetime of exposure. In fact, these levels may pose appreciable risks.[47] For this reason, EPA should follow the NAS recommendation to use similar approaches for chronic non-cancer as for cancer risk assessment, which assumes deleterious health effects for any amount of exposure.

EPA also fails to assess an accurate chronic non-cancer risk total—because it looks only at a target organ or target organ system. EPA has focused on each individual "TOSHI," not a combined TOSHI. EPA has not added the TOSHI's even for inhalation. EPA recognizes that for the noncancer risk, some TOSHI values may be underestimated.[48] The TOSHI largely underestimates risk by calculating the hazard index based on risk driven by a specific organ system as opposed to aggregating risk across all organ systems. The human body does not distinguish risk based on the highest risk driver to a particular organ system—risk is distributed

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https://oehha.ca.gov/media/downloads/crnr/pbhgv041307.pdf; see also Cal. EPA, Prioritization of Toxic Air Contaminants Under the Children's Environmental Health Protection Act at 25-26 (Oct. 2001) ("Lead is in Tier 1 because it is a developmental neurotoxin. The increased susceptibility of infants and children is well established and the neurological effects are extremely prolonged. In addition, lead is a carcinogen. Although airborne lead exposures have dropped due to removal of lead from gasoline, airborne lead exposures still occur as a result of stationary source emissions and reentrainment of soil contaminated with lead. In addition, deposition of airborne lead onto soil, vegetation, and other surfaces results in exposure via ingestion.").

[46] NAS, Science and Decisions: Advancing Risk Assessment at 265-66 (2009), http://www.nap.edu/catalog.php?record_id=12209 [hereinafter "NAS 2009"].

[47] NRDC, *Strengthening Toxic Chemical Risk Assessments to Protect Human Health* at 10 (Feb. 2012) (citation and quotation marks omitted), *available at* http://www.nrdc.org/health/files/strengthening-toxic-chemical-risk-assessments- report.pdf.

[48] Proposed SOCMI Residual Risk Assessment, *supra*, at 37 ("Because impacts on organs or systems that occur above the critical dose have not been included in the TOSHI calculations, some TOSHIs may have been underestimated.").

across organ systems with pollutants affecting multiple organs or organ systems at once. EPA should aggregate or combine TOSHI values to account for total risk to chemical mixtures. EPA should also report and disclose in the proposed rule the TOSHI it found for each target organ or target organ system, so the public can evaluate each of these chronic risk values (not only the highest TOSHI, which is the only value EPA provides in the proposed rule preamble).

EPA has not assessed the chronic health risk associated with multiple high TOSHI exposures occurring simultaneously. Consequently, the chronic risk is also too narrowly defined, and EPA should evaluate what this means for the most exposed individual who faces respiratory harm in addition to neurological and other chronic non-cancer risks.

Lastly, the EPA should employ these same principles to develop a method for assessing the total acute risk posed by chemical mixtures, at least in the same manner as it is developing the TOSHI for chronic risk, which aggregates the acute effects on the same organ systems for all pollutants. It is unlawful and arbitrary for the EPA to assess acute hazards chemical by chemical when it is aware that HAPs are being emitted together. Consequently, the total acute health risks to which the most-exposed individual and adjacent community members are exposed are underestimated.

5. By failing to apply the California OEHAA Reference Exposure Level (REL) for acute risks from benzene, 1,3-butadiene, carbonyl sulfide, and nickel, EPA severely underestimates acute risks.

In order to assess acute risk from benzene, 1-3 butadiene, carbonyl sulfide, and nickel, instead of applying the best-available science (current OEHHA reference exposure levels), EPA uses emergency response values or ignores the risk completely. EPA applies an ERPG-1 of 160 mg/m3 for benzene, instead of the current OEHHA reference exposure level (REL) of 0.027 mg/m^3.[49] EPA uses an ERPG-1 value of 22 mg/m^3 for 1,3-butadiene, and an AEGL-2 value of 150 mg/m3 for carbonyl sulfide.[50] And, rather than using the REL for nickel from OEHHA, EPA ignores and does not count any acute risk from nickel at all.

To ensure it follows the best available science, EPA should use the latest OEHHA REL value for each of these pollutants. Failing to do so is unlawful and arbitrary in view of EPA's longstanding recognition of the need to use OEHHA values as a reliable scientific source, in addition to IRIS.

Refusing to follow the OEHHA value conflicts with the Act's direction to employ the best available science, and with EPA's own scientific risk assessment guidelines. As EPA admits, EPA has long recognized that the Cal. EPA Office of Environmental Health Hazard Assessment "process for developing [dose-response assessments] is similar to that used by EPA to develop IRIS values and incorporates significant external peer review," as well as recommendations of

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[49] Proposed SOCMI Residual Risk Assessment, *supra*, at 39-46 Tbl. 3.1-1(Summary of Emissions from the SOCMI Source Category and Dose-Response Values Used in the Residual Risk Assessment).

[50] *Id.*

EPA and the National Academies of Sciences.[51] Therefore, it is EPA's longstanding policy to prioritize use of this value as the only non-federal source of dose-response value listed in EPA's hierarchy of scientific values (starting with IRIS).[52] EPA has made this determination "and prioritized according to (1) conceptual consistency with EPA risk assessment guidelines and (2) level of peer review received," with the goal of "incorporating into our assessments the best available science with respect to dose response information."[53]

For years, in recent health risk assessments, EPA has used California OEHHA's Reference Exposure Level (REL) for benzene, of 1.3 mg/m^3, to assess acute risk, recognizing the REL as the best available science. In 2014, OEHHA updated that value, strengthening it from 1.3 mg/m^3 to 0.027 mg/m^3.[54] In 2012, OEHHA created an acute risk REL for nickel of 0.2 µg/m^3.[55] In 2017, OEHHA created an acute REL of 660 µg/m^3 for carbonyl sulfide, and an h-hour REL of 10 µg/m^3.[56] Similarly, in 2013, OEHHA created an acute REL for 1,3- butadiene, of 660 µg/m^{3}or 0.66 mg/m^3.[57] EPA has recognized the benzene, 1,3-butadiene, and nickel REL values in its Table of "Acute Dose-Response Values for Screening Risk Assessments," which was last updated June 18, 2018 and remains EPA's reference list for these values.[58]

These RELs are well-supported. They reflect scientific evidence that these chemicals can cause acute risks and harm at even low levels of exposure. In this proposed rule, however, EPA does not use these RELs to assess acute risks. Instead, it uses values that are *orders of magnitude less protective* and underestimates the acute risk by a factor of 100. For nickel, EPA chooses simply to ignore the risk completely because by not using the REL it does not count the acute risk at all.

For benzene, EPA uses a value that is *two orders of magnitude less protective* than the REL that EPA has previously used, and that is *five orders of magnitude less protective* than the current REL. Further illustrating how extremely problematic this is, the Occupational Safety and Health Administration's (OSHA) permissive exposure level for *workers* is lower than the value EPA used here. OSHA's 8-hour PEL is 1 ppm, and its acute or short-term PEL is 5 ppm as

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[51] *Id.* at 33.
[52] *Id.* at 32-35.
[53] *Id.* at 32-33.
[54] CalEPA, Acute, 8-hour and Chronic Reference Exposure Level (REL) Summary (August, 2020), http://www.oehha.ca.gov/air/allrels.html.
[55] CalEPA, *Nickel and Nickel Compounds*, https://oehha.ca.gov/chemicals/nickel-and-nickel-compounds; CalEPA, Nickel Reference Exposure Levels (Feb. 2012), https://oehha.ca.gov/media/downloads/crnr/032312nirelfinal.pdf.
[56] CalEPA, *Carbonyl sulfide*, https://oehha.ca.gov/air/chemicals/carbonyl-sulfide.
[57] CalEPA, Notice of Adoption of Revised Ref. Exposure Levels for 1,3-butadiene (July 25, 2013), https://oehha.ca.gov/air/crnr/notice-adoption-revised-reference-exposure-levels-13-butadiene.
[58] EPA, Acute Dose-Response Values for Screening Risk Assessments (June 18, 2018), https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf.

averaged over any 15 minute period.[59] Thus, the value EPA is using to consider how much protection it will consider for community residents—who, unlike workers, have no protective equipment or other occupational safeguards, who live near the facility (and do not just work for a period of the day), and who may well be more vulnerable to the health risks of pollution than the average worker—is *30 times less protective* than the value OSHA uses to address health and safety threats for workers.

EPA's proposal thus relies on a significant underestimate of the acute health hazards of the regulated facilities' emissions. It is both unlawful and arbitrary, as it is out of step with EPA's longstanding practice, an unsupported change with that practice, and a failure to apply the best available science.

In addition to underestimating acute non-cancer health hazards, EPA is willingly and knowingly exposing communities of color and low-income communities to increased and unnecessary harm from short-term benzene exposure. The ERPG-1 is a guideline level calculated by the U.S. Department of Energy that recognizes exposure to a chemical, like benzene, at this limit will lead to certain health effects.[60] Even short-term exposure to benzene is known to lead to a number of adverse neurotoxic effects. Conversely, the REL developed by OEHHA represents the reference level of exposure under which no adverse effects will occur. EPA provides no explanation for its decision to deviate from years of practice and allow acute health harm to affected communities from exposure to these chemicals.

The agency has long recognized CalEPA RELs as authoritative and regularly uses them in risk assessments. It gives no reasoned scientific explanation for refusing to use this value as the best available reference dose here. It must use the most up-to-date and best available scientific information on the risks and health effects of benzene, 1,3-butadiene, carbonyl sulfide, and nickel RELs in its risk assessment. Doing so will lead to a recognition of increased acute risk from MON facilities' emissions.

EPA provides inadequate acknowledgment and no rational explanation for this change in course. EPA recognizes that it is not using the current REL for benzene only in a tiny and cryptic footnote in the risk assessment document.

> Based on examination of California EPA's acute (1-hour) REL for benzene, and considering aspects of the methodology used in the derivation of the value and how this assessment stands in comparison to the ATSDR toxicological

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[59] 29 C.F.R. § 1910.1028(c)(1)-(2), https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10042&p_table=STANDARDS.

[60] EPA, Dose-Response Assessment for Assessing Health Risks Associated With Exposure to Hazardous Air Pollutants (last updated June 27, 2018), https://www.epa.gov/fera/dose-response-assessment-assessing-health-risks-associated-exposure-hazardous-air-pollutants#tables; EPA, Table 2. Acute Dose-Response Values for Screening Risk Assessments (last updated Aug. 31, 2021) https://www.epa.gov/sites/default/files/2014-05/documents/table2.pdf.

> assessment, we have decided not to use this value to support EPA's risk and technology review rules.[61]

This is a conclusory statement that is arbitrary and unsupported. EPA has a policy of using OEHHA's value. It has given no rational basis to question that or decide not to do so here. It has provided no scientific basis or any evidence at all for ignoring the more protective value. Besides, the 2007 ATSDR toxicological profile for benzene discusses acute risk and describes a "minimal risk level" of 0.009 ppm which translates to 0.028 mg/m^3.[62] That is equivalent to the OEHHA value. If anything, the ATSDR *supports* rather than undermines the REL in any way.

EPA also neither explains, if it deems the ATSDR value to be more protective or more accurate, why EPA is not using that instead of the ERPG which is not an appropriate factor for risk assessment from regulation of routine air pollution. EPA does not acknowledge that EPA has long used the 1.3 mg/m^3 value, which is less protective than the ERPG-1 value but is at least *closer* to the most accurate acute risk value. EPA gives no justification for using a much less-protective value—160 mg/m^3—which it knows will mean acute risk is two orders of magnitude lower.

Similarly, EPA cannot justify using the ERPG-1 for 1,3-butadiene. This is a guideline level calculated by the U.S. Department of Energy that recognize exposure to a chemical at the designated levels will lead to certain health effects.[63] Even short-term exposure to 1,3-butadiene can cause adverse developmental harm, as well as harm to the eyes, skin, nasal passages, and exposure can also cause reproductive harm.[64] The REL developed by OEHHA represents the reference level of exposure under which no adverse effects will occur. EPA provides no explanation for its decision to deviate from years of practice and allow acute health harm to affected communities.

The AEGL values and Emergency Response Planning Guidelines (ERPG) values were created for emergency exposure scenarios. Levels defined for "once-in-a-lifetime, short-term exposures" and "emergency planning" for "single exposures" to chemical releases or accidents, are not appropriate tools to use to measure the acceptability of acute risks over a lifetime from one or more potential exposures due to an industrial source's emissions.[65] The SAB has approved use of the RELs but *not* the EPRGs. As the SAB has explained:

> The incorporation of the available California Reference Exposure Levels (RELs) for the assessment of acute effects is a conservative and acceptable approach to characterize acute risks. The Panel has some concern with the use of the Acute

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[61] Proposed SOCMI Residual Risk Assessment at 46 Table3.1-1 note c.

[62] ATSDR, Benzene Toxicological Profile at 21, https://www.atsdr.cdc.gov/ToxProfiles/tp3.pdf.

[63] EPA, Dose-Response Assessment for Assessing Health Risks Associated with Exposure to Hazardous Air Pollutants (last updated June 27, 2018) https://www.epa.gov/fera/dose-response-assessment-assessing-health-risks-associated-exposure-hazardous-air-pollutants#tables; EPA, Table 2. Acute Dose-Response Values for Screening Risk Assessments (last updated Aug. 31, 2021) https://www.epa.gov/sites/default/files/2014-05/documents/table2.pdf.

[64] CalEPA, OEHHA REL, 1,3-Butadiene (July 2013), https://oehha.ca.gov/media/downloads/crnr/072613bentcrel.pdf.

[65] 84 Fed. Reg. at 69,192.

> Exposure Guidelines Limits (AEGLs) and Emergency Response Planning Guidelines (ERPGs). AEGL-2 and ERPG-2 values should never be used in residual risk assessments because they represent levels that if exceeded could cause serious or irreversible health effects.[66]

The AEGL and ERPG numbers would be expected to underestimate risk. Using these numbers is likely to discount or cloak the level of risk to the maximum exposed individual. These values are therefore not appropriate for relying on as health-protective in a § 7412(f)(2) residual risk analysis. They simply do not provide sufficient protection for health.

The D.C. Circuit recently held in reviewing an EPA risk assessment pursuant to § 7412(d)(4) that EPA had not sufficiently justified refusing to use the most up-to-date Cal. EPA OEHHA reference values.[67] EPA uses the REL where available, to assess acute risks from other chemicals in is rulemaking. It has failed to justify its refusal to use such values for benzene, 1,3-butadiene, carbonyl sulfide, and nickel here. EPA regularly uses OEHHA values, and it has failed to show any rational ground for ignoring these as the best available science for these pollutants in this rulemaking.

In regard to nickel, EPA states that "based on an in-depth examination of the available acute value for nickel [California EPA's acute (1-hour REL], we have concluded that this value is not appropriate to use."[68] EPA includes only a conclusory statement that this "takes into account: the effect on which the acute REL is based; aspects of the methodology used in its derivation; and how this assessment stands in comparison to the ATSDR toxicological assessment, which considered the broader nickel health effects database."[69] EPA appears to be not using the REL for a 1-hour period of exposure—partly because it is the same as the ATSDR intermediate MRL, which supposedly provides protection for 364 days. Thus, the REL could be 364 * 24, or 8736, times more protective. Such a difference in the magnitude of protection should cast doubt on the protective nature of the MRL, not on the REL. EPA does not provide any further explanation but cites to a prior Federal Register notice. EPA's prior similar error does not justify this one, nor does a conclusory citation substitute for the reasoned explanation the Act requires EPA to provide, based on the best-available science.

For nickel, refusing to use the REL is also unlawful and arbitrary because this means EPA will fail to quantify in any way the acute risk it knows nickel exposure causes. EPA has no statutory authority to ignore health risks from any emitted HAP. It must evaluate the risk for each emitted HAP pursuant to § 7412(f)(2). This provision is the health-risk round of review and

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[66] EPA, Science Advisory Board, Review of EPA's draft entitled, "Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board with Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing," EPA-HQ-OAR-2010-0682-0103 at 6 (May 2010).

[67] *See Sierra Club v. EPA*, 895 F.3d 1, 11-12 (D.C. Cir. 2018).

[68] Proposed SOCMI Residual Risk Assessment, *supra*, at 47 Tbl. 3.1-1 note h.

[69] *Id.*

rulemaking for the pollutant-by-pollutant analysis that the Act requires pursuant to § 7412.[70] It is also arbitrary for EPA to fail to use the REL as the best available method to use to quantify this risk. Refusing to do so means that EPA is treating this additional risk as zero when it knows that is not true.

In sum, it is both unlawful and arbitrary, as out of step with EPA's longstanding practice, an unsupported change with that practice, and a failure to apply the best available science for EPA not to use the current OEHHA values to assess acute risk from these hazardous chemicals.

6. EPA completely ignores some HAP emissions by considering pollutants with no reference value as having zero risk.

EPA acknowledges that "some [emitted] HAP have no peer-reviewed values," and states that, as a result, EPA has not assessed the risks from those pollutants at all.[71] Yet lack of knowledge cannot possibly be equated either with a lack of harmful effects, or with safety; it can only be equated with lack of knowledge. EPA's failure to account in any way for these pollutants, when they are listed by statute as section 7412 HAPs and have known health risks associated with them is unlawful and arbitrary.

EPA may not lawfully or rationally ignore any HAP emissions in its risk assessment, by treating risk as zero when the science shows risk is present. Just because EPA has not yet developed a reference value for a pollutant, type of exposure, or type of risk, does not mean risk does not exist and can be ignored.[72] As the NAS explained, EPA should develop "explicitly stated defaults to take the place of implicit or missing defaults," and "[k]ey priorities should be development of default approaches to support risk estimation for chemicals lacking chemical-specific information to characterize individual susceptibility to cancer . . . and to develop a dose-response relationship."[73]

If EPA chooses not to follow the NAS recommendation to use defaults then, at minimum, it must engage in the interim in a qualitative assessment of the additional, missing risks, and account for them in its analysis. It can have no valid or reasonable basis for failing to attempt to account in any way for all risks known to be present in some amount, due to the existence of HAP emissions.

EPA provides insufficient information regarding which HAPs for which it is not accounting for any health risk, or certain health risks. For example, the table it provides notes

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[70] *See, e.g.*, *Nat'l Lime Ass'n v. EPA*, 233 F.3d 625, 641-42 (D.C. Cir. 2000), *as amended on denial of reh'g* (Feb. 14, 2001) (holding section 7412(d) requires emission limits for each HAP listed in section 7412).

[71] Proposed SOCMI Residual Risk Assessment, *supra*, at 66 ("Although every effort is made to identify peer-reviewed dose-response values for all HAP emitted by the source category included in an assessment, some HAP have no peer-reviewed values. Since exposures to these pollutants cannot be included in a quantitative risk estimate, an understatement of risk for these pollutants at estimated exposure levels is possible.").

[72] *See, e.g.*, NAS 2009.

[73] *Id.* at 207.

which values it is using, but does not state whether EPA is aware of information showing a pollutant causes a particular risk, but has not found a health-reference or dose-response value to use in EPA's risk assessment equation It appears that EPA has not assessed any risk at all for nearly thirty pollutants, including at least: Asbestos, 2,2,4-Trimethylpentane, Acetophenone, p-Phenylenediamine, Dibutylphthalate, Catechol, Captan, 2,4-Dinitrophenol, Dibenzonfuran, Dimethyl Pthalate, 4-Aminobiphenyl, Quinoline, chromium III compounds, 2,4-d, Salts and Esters, Hexamethylphosphoramide, Diethyl Sulfate, Methoxychlor, 4-nitrophenol, 3,3'-Dimethoxybenzidine, 3,3'-Dimethylbenzidine, Benzotrichloride, Dimethylcarbamoyl Chloride, N-Nitroso-n-methylurea, Trifluralin, 2,4,5-Trichlorophenol, phenanthrene, pyrene, and anthracene, but EPA has not made that clear.[74] EPA provides no lawful or rational justification to assume these or any other pollutants cause no risks when Congress listed them for regulation under section 7412 as "hazardous air pollutants."[75]

EPA concedes that "an understatement of risk for these pollutants at environmental exposure levels is possible," due to the lack of reference values for a chemical and/or for a particular type of health risk.[76] Because there is information showing actual health risks from the un-assessed chemicals, here it is not just possible but also a fact. Although these chemicals can cause demonstrated health impacts, EPA has performed no quantitative assessment of health risk for those pollutants at all. The absence of a reference value means that EPA does not know by how much it is underestimating risk to human health, but it does know that its assessment is an underestimation.

It is also arbitrary and capricious for EPA to treat all health risks from these pollutants as zero or non-existent due to the lack of a reference value quantifying a specific risk. As the NAS explained, it is a problem that "agents that have not been examined sufficiently in epidemiologic or toxicologic studies are insufficiently included in or even excluded from risk assessments" by EPA.[77] The NAS has made clear that it is not appropriate as a scientific matter to treat such compounds "as though they pose no risk that should be subject to regulation."[78] Instead, the NAS has recommended that EPA develop "explicit defaults to use in place of missing defaults," including for its "untested-chemical assumption," i.e., that a chemical with no reference value poses no risk.[79] Yet, EPA has not done that here and has not provided any lawful or rational basis for not following the NAS expert scientific guidance.

In the absence of an available reference dose, EPA must, at minimum, use a default or add an uncertainty factor, as the NAS advises, to account for the additional risk that a HAP likely causes, until such time as EPA does have a reference value to use. The NAS has described an approach EPA can use to account for this risk, and explained that this approach "is based on the notion that for virtually all chemicals it is possible to say something about the uncertainty

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[74] Proposed SOCMI Residual Risk Assessment, *supra*, at 39-46, Tbl. 3.1-1 (Summary of Emissions from the SOCMI Source Category and Dose-Response Values Used in the Residual Risk Assessment).

[75] 42 U.S.C. § 7412(a).

[76] Proposed SOCMI Residual Risk Assessment, *supra*, at 66.

[77] NAS 2009 at 193, 203.

[78] *Id.* at 193.

[79] *Id.* at 203.

distribution regarding dose-response relationships."[80] The use of a protective uncertainty factor, in the absence of a known reference value, would allow EPA to satisfy its duty to prevent unacceptable health risk, and ensure an "ample margin of safety to protect public health."

C. Commenters Support EPA's Community Risk Assessment and Urge the Agency to Take Further Measures to Reduce Risk

Commenters commend the agency for attempting to account for community risk within the limited scope of this rule. However, EPA did not rely on this assessment to inform the rulemaking. Additionally, the proposal falls short of ensuring a reduction in cancer risk across all populations within the 10-kilometer radius of the HON-reporting facilities. Specifically, Table 3 indicates that millions of people will continue to be exposed to cancer risk above one in a million.[81] We advise the agency to carefully evaluate what could be done to reduce the number of persons with cancer risks exceeding one in a million.

EPA should go further and perform a cumulative risk assessment. In performing a cumulative risk assessment, the National Academy of Sciences (NAS) recommends taking into account chemical and non-chemical stressors, as well as how these stressors interact to promote adverse health effects.[82] In the residual risk assessment, EPA acknowledges that it must assess the combined impact of cancer risks from different sources in order to determine the combined cancer risk from inhalation, but it does not evaluate the combined chronic non-cancer risk associated with different sources within the 10-kilometer radius. This evaluation is essential and consistent with existing scientific knowledge on conducting cumulative risk assessment. In its recently released draft *Guidelines for Cumulative Risk Assessment Planning and Problem Formulation,* EPA acknowledges that "for assessment of cumulative noncancer hazard, target organ-specific hazard indices are estimated."[83] However, the community risk assessment does not account for noncancer health risks across populations near HON facilities.

Moreover, according to the EPA's own analysis, these sources pose a disproportionate health risk to minority and low-income communities. This problem is exacerbated by the concentration of multiple toxic air sources in minority and low-income communities, which creates a severe environmental justice issue.[84] And although EPA has evaluated risk based on exposure to adjacent existing sources within a 10-kilometer radius, it has not proposed any adjustments to emission standards based on exposure to multiple sources. For years, EPA has calculated what it calls "facility-wide" risk for multiple sources collocated at the same address, but it has not used that number to set standards and its community-based risk assessment continues to fall short. The EPA should acknowledge that the multiple-source exposure risk and the increased risk created by exposing individuals to multiple sources necessitates action.

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[80] *Id.*

[81] *See* 88 Fed. Reg. at 25,110 Tbl. 3.

[82] NAS 2009 at 9-10, 219-2https://nap.nationalacademies.org/catalog/12209/science-and-decisions-advancing-risk-assessment.

[83] EPA, Guidelines for Cumulative Risk Assessment Planning and Problem Formulation, EPA-HQ-ORD-2013-0292-0169 (May 2023).

[84] CalEPA, Cumulative Impacts: Building a Scientific Foundation (Dec. 2010), https://oehha.ca.gov/media/downloads/calenviroscreen/report/cireport123110.pdf.

EPA's failure to analyze the combined, cumulative impact on health risk from multiple pollution source categories is inconsistent with SAB's recommendation that EPA include cumulative risk in its residual risk analysis. The SAB stated, "RTR assessments will be most useful to decision makers and communities if results are presented in the broader context of aggregate and cumulative risks, including background concentrations and contributions from other sources in the area."[85] At a minimum, EPA can and should account for the combined risk results for these sources near one another and acknowledge that the overall risk is much higher than it has estimated for the most-exposed person near a source, necessitating stricter standards for these source categories.

D. Commenters Support EPA's Use of IRIS Values for Ethylene Oxide and Chloroprene.

EPA appropriately proposes to rely on the 2016 IRIS cancer risk value for ethylene oxide, which EPA reaffirmed in December 2022.[86] Setting emissions standards under section 7412(f)(2) requires using the best available science to protect public health.[87] The IRIS value is the product of a robust, 10-year long, peer-reviewed process, that included public notice-and-comment, including from the American Chemistry Council. EPA has long treated IRIS as the preferred source of toxicity information.[88] EPA must fully apply the 2016 IRIS value, which is the only value that represents the best available science.

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[85] EPA, Science Advisory Board, Review of EPA's draft entitled, "Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board with Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing," EPA-HQ-OAR-2010-0682-0103 at ii (May 2010).

[86] EPA IRIS, Evaluation of the Inhalation Carcinogenicity of Ethylene Oxide, EPA-HQ-OAR-2018-0746-0253 at 1-1 (Dec. 2016), [hereinafter IRIS 2016]; Reconsideration of the 2020 National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing Residual Risk and Technology Review; 87 Fed. Reg. 77,985 (Dec. 21, 2022).

[87] *See* Comments on MON Proposed Rule of Louisiana Envt'l Action Network, Louisiana Bucket Brigade, California Communities Against Toxics, Texas Environmental Justice Advocacy Services, Ohio Valley Environmental Coalition, Environmental Integrity Project, Environmental Justice Health Alliance for Chemical Policy Reform, People Concerned About Chemical Safety, Air Alliance Houston, Union of Concerned Scientists, and Sierra Club, EPA-HQ-OAR-2018-0746-0154 at 77-78 (Mar. 19, 2020) (citing sources), [hereinafter MON 2020 Comments].

[88] EPA so stated in its Residual Risk Report to Congress in 1999, which partially triggered this and all other section 7412(f)(2) rulemakings. 42 U.S.C. § 7412(f)(1); *see* EPA, Residual Risk Report to Congress at 56-57 (1999) ("Regardless of the endpoint of interest (acute, chronic non-cancer, or cancer effects), consensus toxicity criteria are preferred for conducting risk assessments. For chronic non-cancer and cancer criteria, the preferred source of data is EPA's IRIS…."), https://www.epa.gov/sites/default/files/2013-08/documents/risk_rep.pdf; *see also* Proposed Reconsideration of the 2020 Emission Standards for Hazardous Air Pollutants: MON, 87 Fed. Reg. 6,466, 6,471 (Feb. 4, 2022) (citing EPA prioritization of health reference values approved by SAB).

The 2016 IRIS value is well-supported by the facts and the science, including the extensive record of the IRIS value itself. In the IRIS assessment, EPA properly applied a two-piece linear spline model. This model was selected after extensive review by both EPA and the Science Advisory Board ("SAB").[89] As EPA explains, it "selected a model that best represented potential general population exposures, making it align well with the purpose of the risk assessment in the 2020 MON final rule, which sought to assess general risk exposure to the public."[90]

EPA also properly found that ethylene oxide exposure causes breast cancer in humans, determining that the epidemiological evidence is "strong."[91] The SAB agreed.[92] EPA has well-supported its conclusion based on the science that "[t]he IRIS cancer risk value is representative of potential health risks to the general population because it reflects the combined cancer risk of developing lymphoid cancers in all people, and breast cancer in women."[93]

Despite the robust scientific record, both the American Chemistry Council and TCEQ have argued that the IRIS value should not be used to assess cancer risk from ethylene oxide exposure and that EPA should use a factor developed by TCEQ that is several orders of magnitude weaker. The American Chemistry Council and TCEQ have submitted these arguments to EPA repeatedly, in comments on the IRIS value; in a request for correction, which EPA denied, and a request for reconsideration of that denial;[94] in comments on the proposed Miscellaneous Organic NESHAP ("MON") and other proposed rules;[95] in petitions for reconsideration of the

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[89] 87 Fed. Reg. at 6,472.

[90] *Id.*

[91] *Id.*

[92] *Id.*

[93] *Id.*

[94] ACC, Request for Correction (Sept. 20, 2018) and ACC Request for Reconsideration (Mar. 14, 2022), both available at https://www.epa.gov/quality/epa-information-quality-guidelines-requests-correction-and-requests-reconsideration. EPA properly denied the ACC's request for correction (RFC) and ACC's request for reconsideration of EPA's denial of the RFC. EPA Denial of ACC's RFC (Dec. 13, 2021), ORD memo (Aug. 25, 2021), and EPA's Denial of ACC's Request for Reconsideration, all available at https://www.epa.gov/quality/epa-information-quality-guidelines-requests-correction-and-requests-reconsideration.

[95] *See e.g.,* ACC Comments on Proposed MON Rule, EPA-HQ-OAR-2018-0746-0164 (Mar. 19, 2020); TCEQ Comments on Proposed MON Rule, EPA-HQ-OAR-2018-0746-0071 (Feb. 20, 2020).

MON rule;[96] and again on EPA's proposal reaffirming the IRIS value,[97] which EPA finalized in December 2022.[98]

As described in detail in comments that community and environmental groups submitted in response to EPA's proposal to reaffirm the 2016 IRIS value for ethylene oxide, incorporated here by reference, the TCEQ factor is scientifically flawed.[99] TCEQ applied an inappropriate model and ignored breast cancer risk, among other problems.[100] EPA has previously rejected the arguments underlying the TCEQ value. Moreover, TCEQ's DSD shows that it relies heavily on industry-funded articles and the "analyses" of an industry-funded consultant,[101] and has not undergone an adequate and rigorous peer review.

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[96] ACC, Petition for Reconsideration, EPA-HQ-OAR-2018-0746-0243 (Oct. 27, 2020),; ACC, Petition for Reconsideration, EPA-HQ-OAR-2018-0746-0263 (Dec. 23, 2020); TCEQ, Petition for Reconsideration, EPA-HQ-OAR-2018-0746-0245 (Oct. 12, 2020); Huntsman Petrochemical, Petition for Reconsideration, EPA-HQ-OAR-2018-0746-0244 (Oct. 9, 2020).

[97] ACC, Comments on Proposed MON IRIS Reconsideration, EPA-HQ-OAR-2018-0746-0320 (Mar. 24, 2022); TCEQ, Comments on Proposed MON IRIS Reconsideration, EPA-HQ-OAR-2018-0746-0303 (Mar. 24, 2022).

[98] Reconsideration of the 2020 National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing Residual Risk and Technology Review, 87 Fed. Reg. 77,985 (Dec. 21, 2022).

[99] Comments of Air Alliance Houston et al., EPA-HQ-OAR-2018-0746-0315, -0316 (Mar. 24, 2022).

[100] *See* UCSF Program on Reproductive Health, Comments on TCEQ Proposed DSD (Sept. 26, 2019) (attached as Exhibit 1); Sierra Club *et al.*, Comments on TCEQ Proposed DSD (Sept. 26, 2019) (attached as Exhibit 2) (discussing scientific errors such as TCEQ's arguments on endogenous exposure; cancer incidence vs mortality; and more). In addition, during a comment period in January 2021, scientists and community members submitted comments to EPA's Office of Pesticides that provide additional information on why the IRIS value is the best available science and on the serious flaws with the TCEQ risk factor. *See* UCSF Program on Reproductive Health, Comments on Office of Pollution Prevention "Ethylene Oxide (EtO). Draft Human Health and Ecological Risk Assessment in Support of Registration Review" (Jan. 19, 2021) (attached as Exhibit 3); Air Alliance Houston *et al.,* Comments on Office of Pollution Prevention Registration Review (Jan. 19, 2021) (attached as Exhibit 4).

[101] *See, e.g.*:

(1) Teta, Sielken, & Valdez-Flores, *Ethylene Oxide Cancer Risk Assessment Based on Epidemiological Data: Application of Revised Regulatory Guidelines* (1999) ("The work of Drs. Sielken and Valdez-Flores was supported by the Ethylene Oxide Industry Panel of the Chemical Manufacturers Association."), https://pubmed.ncbi.nlm.nih.gov/10765453/;

(2) Sielken & Valdez-Flores, *Calculating Excess Risk with Age-Dependent Adjustment Factors and Cumulative Doses: Ethylene Oxide Case Study* (2009) ("The funding for this paper was a contract between Sielken & Associates Consulting, Inc. and the American Chemistry Council, Inc. … on behalf of its Ethylene Oxide Panel."), https://www.sciencedirect.com/science/article/abs/pii/S027323000900107X?via%3Dihub;

Additionally, after TCEQ released the proposed DSD, Commenter Sierra Club submitted a Texas Public Information Act request for the full record of information underlying the DSD. TCEQ filed a Public Information Act lawsuit against the Texas Attorney General opposing disclosure in response to Sierra Club's request, and TCEQ has appealed to the Texas Supreme Court. As a result, the information at issue in that litigation is undisclosed and unavailable for consideration or use in these comments or in this rulemaking. [102]

EPA also appropriately proposes to rely on the 2010 IRIS cancer risk value for chloroprene, which is based on the best-available science. The Toxicological Review of Chloroprene (2010) evaluated the evidence base of dozens of relevant studies—including epidemiological, toxicological, and mechanistic studies—and concluded that chloroprene is "likely carcinogenic to humans" via a mutagenic mode of action following inhalation exposure.[103] Evidence from occupational studies and toxicological studies showed an increased risk of liver cancer and lung cancer among workers, while animal studies revealed multi-tumor sites, including "tumors of the lung (bronchiolar/alveolar adenomas and carcinomas), forestomach, Harderian gland (adenomas and carcinomas), kidney (adenomas), skin and mesentery, mammary gland and liver…" - all of which was used to estimate the inhalation unit risk (IUR).[104] Notably, IRIS determined that it was appropriate to apply age-dependent adjustment factors to account for early-life susceptibility that cause increased lifetime cancer risk.[105]

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(3) Valdez-Flores (2010) ("The funding for this paper was from contracts with the American Chemistry Council, Inc. … on behalf of its Ethylene Oxide Panel.");
(4) Valdez-Flores (2013) ("The authors are exposure-response assessment consultants to both EO chemical and sterilant trade groups. Funding for this research and its publication was received from the Ethylene Oxide Sterilant Association (EOSA) and the American Chemistry Council (ACC).");
(5) Bogen, Sheehan, Valdez-Flores & Li Reevaluation of Historical Exposures to Ethylene Oxide Among U.S. Sterilization Workers in the National Institute of Occupational Safety and Health (NIOSH) Study Cohort (May 2019) ("Funding and technical information for this research were provided by the Ethylene Oxide Sterilization Organization, an international consortium of industrial facilities that perform ethylene oxide sterilization. Funding also was received from the American Chemistry Council's Ethylene Oxide panel."), https://pubmed.ncbi.nlm.nih.gov/31100939/.

Excerpts of the above are attached as Exhibit 5.

[102] TCEQ sought a ruling from the TX Attorney General, then state district court, and then state court of appeals on Sierra Club's public-information request. A protective order prevents disclosure of the information at issue pending litigation. *TCEQ v. Paxton*, No. 23-0244 (Tex. Supreme Court), https://search.txcourts.gov/Case.aspx?cn=23-0244&coa=cossup.

[103] EPA, Toxicological Review of Chloroprene, EPA/635/R-09/010F (Sept 2010), https://cfpub.epa.gov/ncea/iris/iris_documents/documents/toxreviews/1021tr.pdf.

[104] EPA, Response to Request for Correction 17002, Jennifer Orme-Zavaleta, PhD, NCEA, to Robert Holden, Denka (January 25, 2018), https://www.epa.gov/sites/production/files/2018-01/documents/epa_repsonse_to_mr._holdren_jan_25_2018_complete.pdf.

[105] *Id.*

IRIS's evidence and conclusions are directly supported by or consistent with findings of similarly highly regarded, scientific agencies, like the National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC), which conclude that based on available evidence chloroprene is classified as "reasonably anticipated to be a human carcinogen" (NTP) and it is "possibly carcinogenic to humans" (IARC).[106] The high standards set by each of these agencies results in chemical assessments that are both unbiased and reliable.[107]

Importantly, the IRIS chloroprene assessment underwent review by "internal science experts within EPA, by science reviewers from other federal agencies, and by the White House, and it was externally peer reviewed by independent experts including opportunity for public comment."[108] At the time of the review, "many of the topics and assertions raised by Denka Performance Elastomer (DPE) in the Request for Correction [(RfC)] were considered by agency and external peer reviewers during assessment development and external peer review because DuPont (the former owner of the La Place Louisiana facility that currently produces chloroprene) provided extensive comments during the public comment period."[109] According to EPA's response to the Request for Correction EPA evaluated DPE's claims that "the [chloroprene] IUR must be corrected by employing the PBPK model to sufficiently account for differences in mice and humans" and "concluded that the PBPK model available at the time of the assessment was inadequate for calculation of internal dose metrics or interspecies dosimetry extrapolations…"[110] As a part of its review for the Request for Correction, EPA carried out a systematic review of any studies published since the development of the IRIS chloroprene assessment.

In response to DPE's initial Request for Correction, EPA conducted a systematic review process of literature published since the 2010 IRIS assessment "to determine whether any new evidence is likely to have an impact on the current IRIS toxicity values…"[111] and its review identified nearly 200 studies and systematically narrowed the review to only relevant studies. At the conclusion of this process, EPA stated: "Ultimately, the Agency stands behind the conclusions made in the 2010 IRIS Toxicological Review of Chloroprene, including the derived cancer values. The new studies on chloroprene do not provide a reasonable basis for reassessing

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[106] NTP, Report on Carcinogens, Fourteenth Edition – Chloroprene (2016), https://ntp.niehs.nih.gov/ntp/roc/content/profiles/chloroprene.pdf; IARC, IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 71 – Chloroprene. https://monographs.iarc.fr/wp- content/uploads/2018/06/mono71-9.pdf.

[107] Similarly, California's Office of Environmental Health Hazard Assessment has long recognized chloroprene as a chemical "known to cause cancer." https://oehha.ca.gov/proposition-65/crnr/chloroprene-cobalt-sulfate- heptahydrate-and-fenoxycarb-listed-known-cause-cancer (listing chloroprene as a carcinogen in June 2000).

[108] EPA, Response to Request for Correction 17002, Jennifer Orme-Zavaleta, PhD, NCEA, to Robert Holden, Denka (January 25, 2018), https://www.epa.gov/sites/production/files/2018-01/documents/epa_repsonse_to_mr._holdren_jan_25_2018_complete.pdf.

[109] *Id.*

[110] *Id.*

[111] *Id.*

the human health effects due to chronic chloroprene exposure."[112] In 2018 – after nearly seven months of review – EPA issued a denial to DPE's Request for Correction and rightly concluded that the underlying review was consistent with EPA's Information Quality Guidelines (IQR) and after thorough review, EPA has correctly continued to deny each and every request.

EPA must apply the 2016 ethylene oxide IRIS value and 2010 chloroprene IRIS value to assess cancer risk from HON/SOCMI and P&R sources' emissions to satisfy the Act and to protect fenceline communities.

E. By Relying on its 100-in-1 Million Cancer Risk Benchmark, EPA Continues to Accept Risks That Are Far Too High.

Currently, the EPA considers only cancer risks exceeding 100-in-1 million to be presumed as unacceptable. However, EPA should strengthen its policy and recognize that, even if its risk assessment is accurate, its benchmark is excessively high. EPA must also address its benchmarks for chronic non-cancer and acute health hazards. No level of health risks associated with HAPs can be assumed to be safe or "acceptable," and the EPA must instead reduce risks to the lowest level possible in order to protect public health.

EPA estimates that if this rule is promulgated as proposed, no one will be exposed to risks exceeding the upper limit of EPA's acceptable cancer risk range (100-in-1 million). This estimate, however, implies that no other factors besides hazards from HON/P&R facilities are taken into account. According to the Residual Risk Report to Congress, however, EPA is responsible for balancing the determination of Maximum Individual Risk (MIR) with other health measures and factors.[113] The recent Biden Administration's Executive Order on Revitalizing Our Nation's Commitment to Environmental Justice for All must inform at least one of these health measures and determinants.[114] This Executive Order directs federal agencies to strengthen their protection of overburdened communities from pollution and environmental damage, particularly cumulative impacts.[115] The current risk assessment practice that evaluates pollutants emitted by a single category of regulated air pollution sources does not support the

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[112] *Id.*

[113] EPA, Office of Air and Radiation. Residual Risk Report to Congress (1999) ("In establishing a presumption for MIR, rather than a rigid line for acceptability, the Agency intends to weigh it with a series of other health measures and factors. These include the overall incidence of cancer or other serious health effects within the exposed population, the numbers of persons exposed within each individual lifetime risk range and associated incidence within, typically, a 50 km exposure radius around facilities, the science policy assumptions and estimation uncertainties associated with the risk measures, weight of the scientific evidence for human health effects, other quantified or unquantified health effects, effects due to co-location of facilities, and co-emission of pollutants.").

[114] White House, Executive Order on Revitalizing Our Nation's Commitment to Environmental Justice for All (April 21, 2023), https://www.whitehouse.gov/briefing-room/presidential-actions/2023/04/21/executive-order-on-revitalizing-our-nations-commitment-to-environmental-justice-for-all/.

[115] *Id.*

directive outlined in the aforementioned Executive Order, which is designed to protect against cumulative impacts.

EPA's current method of determining risk "acceptability" based on perceived risk is insufficient for protecting public health, particularly in light of the inherent uncertainties in EPA's risk assessment and the agency's lack of information on so many pollutants. EPA's scientists must reconsider the agency's antiquated assumptions regarding what levels of risk are presumptively unacceptable and that require policy interventions. No level of risk is safe or "acceptable," and in order to protect public health, EPA must reduce risks to the lowest level achievable.

It is important to note that the benchmark level for cancer risk was not derived from scientific information about health risk, but rather from the Survey of Societal Risk, an atypical 1988 study of people's perceptions of their own numerous risks.[116] EPA examined other types of perceived risk, such as the perceived risk of being involved in a car accident, and determined that "the presumptive level established for MIR [maximum individual risk of cancer] of approximately 1 in 10,000 is within the range for individual risk in the survey, and provides health protection at a level lower than many other risks prevalent 'in the world in which we live.'"[117] In other words, because a perceived risk of 1 in 10,000 or 100 in 1,000,000 was comparable to other perceived daily risks, the EPA determined that it was "acceptable." EPA has not revisited or updated this outdated assumption, which was not based on the science of health risk to begin with, to reflect advances in scientific understanding, including in understanding early-life exposure and vulnerability and in understanding socioeconomic disparities, or to reflect advances in technologies to analyze and control the impacts of pollutants on human health. EPA must recognize that there is no "acceptable" level of cancer risk and establish a benchmark for unacceptable risk that is based on the science of health risks from hazardous air pollution.

The risk summary for the HON source category describes inhalation cancer risk to be driven by EtO and proposes that the source category can achieve risk reductions (via the application of post-control measures) that will result in a 100-in a million cancer risk for the maximum individual risk. The associated rulemaking docket consists of supporting material – including documents detailing written exchanges between the rule writers and feedback from other federal agency staff reviewing the rule. Public documentation of the Office of Management and Budget's (OMB) review is required under Executive Order 12866, and the draft rule states,

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[116] Survey of Risks, Benzene Rule Legacy Docket ID No. OAQPS 79-3, Part I, Docket Item X-B-1 (cited at National Emission Standards for Hazardous Air Pollutants; Benzene Emissions from Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, and Coke By-Product Recovery Plants, 53 Fed. Reg. Reg. 28496, 28512/3-13/3 (July 28, 1988)), https://www.federalregister.gov/documents/2020/07/10/2020-05896/national-emission-standards-for-hazardous-air-pollutants-site-remediation-residual-risk-and#footnote-7-p41687.
[117] *Id.*

"The total estimated cancer incidence of 2 drops to 0.4 excess cancer cases per year."[118] In response, a corresponding federal reviewer wrote the following:

> Appreciate the essential emission and health risk reductions the proposal would assure and believe this proposal should move forward promptly ASAP to the public comment stage. As EPA completes this proposal for comment, it could be helpful to ensure the policy proposed is strong enough to protect public health and assure protection for the most overburdened communities. Is it accurate that EPA is proposing to find that it is acceptable to allow 4 cancer cases every decade in affected communities from the hazardous air pollution from these petrochemical sources alone? In view of a range of considerations (e.g., the EJ impacts and the disproportionate exposure for communities from multiple sources, the particular vulnerability of children and the benefit of reducing these emissions to protect children, along with the President's cancer moonshot goal of prevention), encourage EPA to consider recognizing these risks are unacceptable. EPA has the ability to find cancer risk from inhalation below 100-in-1 million to be unacceptable and require further reductions. This high cancer incidence provides a strong justification for doing so here – particularly where these risks have been occurring for a long time in communities since the rules appear not to have been reviewed or updated for over a decade. It also appears that there are additional measures available that could further reduce these health risks that are available, and on which EPA is taking comment in other parts of this proposal. Even if EPA finds no such measures, the factual finding of unacceptability should be a determination made independently of that question. As a policy matter these risks still stand out as extremely high and concerning.[119]

EPA's response to the comment fails to fully address the comment and simply states: "As pointed out in the last paragraph of this section, we considered all health information, which includes cancer incidence, in making our acceptability determination."[120] As stated, EPA's current approach of determining risk "acceptability" by perceived risk is insufficient to protect public health, especially considering the uncertainties built into EPA's risk assessment, including the lack of information on many pollutants. It is time for EPA scientists to revisit the EPA's outdated assumptions on what levels of risk are presumptively unacceptable and trigger policy interventions. No level of risk is safe or "acceptable," and EPA must instead reduce risks to the lowest possible level to protect public health.

EPA's finding that the health risks from HON/P&R facilities are unacceptable is well supported by the administrative record. In fact, as explained above, the real-world health risks are much higher than the underestimated health risks captured by EPA's risk assessment. But as Commenters have pointed out, EPA's proposed standard, even if implemented as proposed, will still leave communities with an unacceptable cancer risk, as high as 100-in-1 million. As EPA

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[118] *See also* Documentation of OMB Review Under Executive Order 12866, Appendix D, attached to EPA-HQ-OAR-2022-0730-0093 at 151 [hereinafter OMB EPA Passback 1].

[119] *Id.*

[120] *Id.*

explains in its proposed rulemaking, citing its 2005 Guidelines for Carcinogen Risk Assessment "the primary goal of EPA actions is protection of human health; accordingly, as an Agency policy, risk assessment procedures, including default options that are used in the absence of scientific data to the contrary, should be health protective."[121] Commenters as well as many community groups and scientists have argued that its benchmark is far too high. EPA did not base its threshold for cancer risk on scientific information about health risk and in reality, the national average for cancer risk from air pollution falls closer to 30-in-1 million. Allowing communities that have already faced years of undue exposure to ethylene oxide to continue to face over three times the national cancer risk is unacceptable and fails to demonstrate that it has fully eliminated health risks posed by EtO, chloroprene, and the dozens of other HAPs emitted by HON/P&R facilities.

II. EPA MUST STRENGTHEN THE PROPOSED RULE'S NESHAP AND NSPS CONTROLS FOR EQUIPMENT LEAKS

One of the most important and significant parts of this proposed rule is with respect to the controls EPA has proposed to update and strengthen—or not—for equipment leaks. Equipment leaks, and fugitive emissions more broadly, are a significant and difficult to characterize source of HAP emissions and risk from chemical plants. As EPA found in its HON risk review, equipment leaks of EtO drove 20 percent of the risk from the facility with the source category MIR of 2,000-in-1 million, and the EtO emissions from equipment leaks alone constitute unacceptable risk greater than 100-in-1 million at seven EtO-emitting facilities.[122] Similarly, reviewing *post-control* cancer risk in the Neoprene Production source category, EPA found that "[a]pproximately 14 percent of the Neoprene Production source category cancer incidence after the proposed controls . . . is due to chloroprene emissions from equipment leaks."[123]

For these reasons, Commenters believe that standards for equipment leaks are among the highest-priority areas in the proposed rule and that EPA must ensure that the equipment leak standards in the final rule across all three types of standards—risk-based standards under section 7412(f)(2), technology-based standards under section 7412(d), and NSPS under section 7411(b)—are as strong and protective as possible.

As it currently stands, there are four main issues with EPA's review and the standards that it has proposed:

- First, EPA has largely failed to account for developments in equipment leak controls that have proven successful and cost-effective in reducing equipment leaks at chemical plants, refineries, and related facilities. These include area monitoring, leak detection sensor networks, low-leak and leakless equipment, optical gas imaging, and components of

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[121] 88 Fed. Reg. at 25,103.
[122] 88 Fed. Reg. at 25,113.
[123] *See id.* at 25,123.

"enhanced LDAR" programs such as training requirements. EPA must account for these developments in the final rule.

- Second, while EPA has adopted revised risk-based equipment leak standards to address unacceptable EtO risk from HON sources, EPA must improve these standards by seeking further reductions through application to other equipment and must examine the methodologies it used to estimate the potentially inaccurate EtO reductions from its "combined option."
- Third, EPA wholly failed to adopt revisions pursuant to its section 7412(d)(6) review, due to EPA finding the options not to be cost-effective. EPA must correct this by accounting for further developments and by reexamining its cost-effectiveness conclusion and not refusing to revise the standards on that basis.
- Fourth, while EPA has proposed to revise the NSPS for equipment leaks, it must correct certain shortcomings in the proposed rule, including an insufficient technology review, EPA's improper decision to remove connector monitoring from Subpart VVa, and proposed definitions of "capital expenditure" that impermissibly narrow the applicability of the NSPS via modification.

EPA must take the opportunity to address these shortcomings in the proposed rule and strengthen the final standards such that they more effectively reduce emissions of HAPs and VOCs from leaks and better protect public health.

A. EPA Must Update the Equipment Leak Standards to Account for Significant Developments.

The Clean Air Act requires EPA to review emission standards every eight years and revise them, as necessary, taking into account developments in practices, processes, and pollution control technologies.[124] When such "developments" exist, EPA must update the standards, although many factors warrant revision.[125]

Unfortunately, EPA has fallen short of this requirement in this proposed rule. There are several significant developments for equipment leaks that EPA did not take into account in the standards it set pursuant to section 7412(f)(2) for equipment in ethylene oxide service and/or under its section 7412(d)(6) review, in which the agency declined to update the standards.[126] EPA almost entirely focuses its risk and technology reviews on Method 21 monitoring and does not spend significant time considering other technologies or practices to control equipment leaks. As discussed in further detail below, these developments include area monitoring, leak detection sensor networks, low-leak and leakless equipment, optical gas imaging, and components of "enhanced LDAR" programs such as training requirements. While EPA is aware of its failure to

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[124] 42 U.S.C. § 7412(d)(6).

[125] *See Nat. Res. Def. Council v. EPA*, 529 F.3d at 1084.

[126] *See*, *e.g.*, 88 Fed. Reg. at 25,138-39 n.96 ("we have insufficient information on how use of such monitoring technology compares to current EPA Method 21 practices for chemical sector sources.").

account for these developments and invites comment on at least some of them,[127] the agency must take clear action to correct this failure in the final rule.

One cause of EPA's insufficient review is that the agency has continued to rely on its outdated 2011 memo of leak control technologies.[128] EPA should recognize the inherent problem with relying on a document that is over a decade old for compliance with section 7412(d)(6)'s eight-year technology review requirement. While EPA should have taken the opportunity to update the memo under this rulemaking, at a minimum the agency should look to other more up-to-date sources—including those already in the agency's possession, such as the expertise and consent decrees of EPA's enforcement division—to fill in the gaps and account for more recent developments.

EPA must ensure that both its proposed risk-based standards for EtO and chloroprene and its technology-based standards for all other sources reflect these "developments" to satisfy section 7412(d)(6) and to provide an "ample margin of safety to protect public health" pursuant to section 7412(f)(2). Commenters urge EPA to take the developments discussed below into account and to adopt them in the final rule into a set of combined requirements—for example, combining Method 21, one or more other technologies such as optical gas imaging or area monitoring, leakless components, and elements of "enhanced LDAR programs"—in order to fill gaps, detect and repair leaks more quickly, and effectively reduce fugitive emissions.

1. Area Monitoring

One development in equipment leak monitoring that EPA must take into account is area monitoring. These types of area monitoring have long been used, for example, at sterilization plants, to continuously (e.g., once every 30 to 45 minutes at a location) monitor numerous locations where EtO may be present. These monitors are typically gas chromatographic devices.[129] Several chemical manufacturing facilities currently use area monitoring technology to better and more rapidly detect leaks, particularly from equipment in highly hazardous service.

For example, the Chemours Fayetteville Works—a chemical manufacturing facility subject to the MON standards under Subpart FFFF—conducts area monitoring with points located throughout the facility, including indoor and outdoor process areas.[130] The area monitoring system detects emissions of acid fluorides, with alarm levels set at 0.5 ppm and 100 ppb.[131] Following an alarm, operations personnel conduct investigations "using various methods

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[127] *See id.* at 25,138-39 n.96 ("we have insufficient information on how use of such monitoring technology compares to current EPA Method 21 practices for chemical sector sources.").

[128] *See* Memorandum from RTI International to EPA, Re: Analysis of Emissions Reduction Techniques for Equipment Leaks, EPA-HQ-OAR-2022-0730-0090 (Dec. 21, 2011) [hereinafter 2011 Equipment Leaks Memo].

[129] *See, e.g.*, NAS 2009, *supra*, at 203-04, 207.

[130] *See* ERM, *Third-Party LDAR Program Review: Fayetteville Works Facility, Fayetteville, North Carolina* 7-8 (Jan. 2018) (attached as Exhibit 6) [hereinafter Chemours LDAR Audit].

[131] *Id.* at 8.

that include, but are not limited to, using a soap solution to identify leaks by the formation of bubbles, pressure testing, Method 21 . . . instrument monitoring, or ammonia spray solution." [132]

Similarly, the Westlake Vinyls, Inc. facility in Calvert City, Kentucky—a chemical manufacturing plant subject to HON standards—must conduct area monitoring for vinyl chloride pursuant to a 2011 consent decree with EPA.[133] The Westlake facility's area monitoring plan includes monitoring points throughout the plant, action levels of 5 ppm and 10 ppm, and prompt investigation and repair.[134] If a monitoring point exceeds the 5 ppm action level three times or the 10 ppm action level one time, a leak detection operator must investigate using handheld equipment within 15 minutes.[135] The consent decree also requires an attempt to repair all leaks within the area within 60 minutes of identifying the source.[136]

Given that area monitoring is a development and has the potential to reduce emissions from equipment leaks and provide an ample margin of safety to protect public health—particularly for especially toxic HAPs—EPA must account for this development both in its section 7412(d)(6) review of equipment leak standards and in equipment leak standards set pursuant to section 7412(f)(2).

2. Leak Detection Sensor Networks

EPA must also take into account leak detection sensor networks (LDSN) as a technology for monitoring equipment leaks. As EPA states in the proposed rule, "[a] LDSN comprises a network of leak detection sensor nodes installed to provide coverage of all LDAR applicable components in a process unit and an accompanying analytics platform for identifying potential leak source locations."[137] "The network, analytics platform, and detection response framework are generally designed to enable timely detection of significant emissions so that facilities can more rapidly mitigate leaks."[138] Given the technology's current application at one or more HON facilities, EPA's role in developing and evaluating the technology, and the benefits the technology may offer for more rapid detection of leaks and greater emissions reductions at lower costs than Method 21, EPA must take this development into account.

EPA already has a great deal of information available on LDSN as a leak detection technology, given EPA's collaborative role in developing and testing the technology. Specifically, EPA's Office of Research and Development, the electronics company Molex, and Flint Hills Resources conducted a collaborative research project to develop and test "a fugitive leak

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[132] *Id.*

[133] *See* Consent Decree, *United States v. Westlake Vinyls, Inc.*, No. 5:10-cv-00168-TBR (W.D. Ky. Feb. 24, 2011) (attached as Exhibit 7).

[134] *Id.* at 22-23.

[135] *Id.* at 23.

[136] *Id.*

[137] 88 Fed. Reg. at 25,196.

[138] *Id.*

detection approach that provides environmental, safety, and cost saving advantages over the current manual EPA Method 21 inspection procedure."[139]

This new approach was developed with the aim of "enabl[ing] leaks to be detected and repaired faster and more efficiently than with quarterly or annually executed Method 21."[140] EPA also specifically noted that the LDSN approach was meant to address shortcomings[141] in Method 21-based monitoring:

> Due to the implementation burden of M21-based LDAR, it is conducted infrequently (quarterly to annually), creating the potential for emissions to go undetected for extended periods of time. Additionally, M21 LDAR programs are not designed to comprehensively monitor all potential fugitive emission points in a facility. This likely increases the risk that unintended emissions can go undiscovered indefinitely, or until worsening to the point of human detection by audio-visual-olfactory (AVO) procedures or safety monitors in more serious cases.[142]

Most recently, EPA approved use of an LDSN with a detection response framework as an Alternative Means of Emission Limitation (AMEL) at the Flint Hills Resources West Refinery in Corpus Christi, Texas.[143] The AMEL applied to a HON source within the West Refinery,[144] and EPA specifically noted both HON and SOCMI NSPS LDAR requirements that the AMEL would replace.[145] Responding to a comment questioning the performance of the AMEL over Method 21, EPA noted that it had "found the performance of the LDSN to be equivalent or better than current work practice requirements for the Mid-Crude and Meta-Xylene process units at FHR's

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[139] *See* EPA, *Progress on LDAR Innovation: Report on Research Under CRADA #914-16*, at 6 (Jan. 28, 2021), *available at* https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=CEMM&dirEntryId=350905.

[140] *Id.*

[141] For a fuller assessment of the well-known deficiencies of LDAR, long known to EPA, *see* EPA/305/B-98/011, December 1998, Inspection Manual: Federal Equipment Leak Regulations for the Chemical Manufacturing Industry. Volume I: Inspection Manual. See also, EPA-305-D-07-001, October 2007, EPA LDAR – A Best Practices Guide, https://www.epa.gov/sites/default/files/2014-02/documents/ldarguide.pdf.

[142] *Id.* For a fuller assessment of the deficiencies of LDAR long known to EPA, *see* EPA, *Inspection Manual: Federal Equipment Leak Regulations for the Chemical Manufacturing Industry, Vol. I: Inspection Manual* (Dec. 1998), https://archive.epa.gov/compliance/resources/publications/assistance/sectors/web/pdf/insmanvol1.pdf; *see also* EPA, *Leak Detection and Repair: A Best Practices Guide* (Oct. 2007), https://www.epa.gov/sites/default/files/2014-02/documents/ldarguide.pdf.

[143] *See* Notice of Final for Approval of Alternative Means of Emission Limitation, 88 Fed. Reg. 8,844 (Feb. 10, 2023).

[144] *See* Lists of Facilities Subject to the HON, Group I and Group II Polymers and Resins NESHAPs, and NSPS Subparts VV, VVa, III, NNN, and RRR, EPA-HQ-OAR-2022-0730-0069 (Mar. 2023).

[145] 88 Fed. Reg. at 8,854 Tbl. 1 (noting NSPS VV, NSPS VVa, and HON LDAR provisions).

West Refinery in Corpus Christi, Texas."[146] Additionally, EPA's study found the leak repair time using the LDSN system to be relatively quick: "there was a median repair time of 2 and 3 days for the Mid-Crude and Mid-Xylene units, respectively. Based on this information, the EPA finds no reason that the average repair time would exceed 7 days."[147]

Given EPA's first-hand observation and study of this leak detection approach at a HON facility, its performance equivalent to or better than Method 21 monitoring, and the potential for greater reductions of emissions from equipment leaks, EPA must account for this development in the present rulemaking.

3. Leakless and Low-Emission Components

Another development that EPA must take into account is "leakless" and low-emission components, including pumps, valves, and connectors. Such components have been in place at chemical manufacturing facilities for decades now, and EPA has considered and co-proposed them in related rulemakings. EPA included leakless pumps as one of its not-selected options in the risk-based standards for equipment in EtO service and considered but dismissed low-emission valves in the NSPS standards, but wholly failed to account for any leakless/low-emission components as developments in its section 7412(d)(6) technology review. Given the significant potential that such components have for reduction of emissions from equipment leaks and EPA's duties under the Clean Air Act, EPA must correct this error and account for this development.

EPA appears to be aware of the potential of leakless and low-emission components and their application throughout chemical manufacturing sectors, as the agency included leakless pumps as one of the options for pumps in its risk-based standards for equipment in EtO service.[148] In particular, EPA acknowledged that such leakless pumps are used "primarily in processes where the pumped fluid is hazardous, highly toxic, or very expensive" and noted that certain kinds of leakless pumps "are widely used in ethylene oxide service."[149] In its comparison of the options, EPA also attributed a 100 percent reduction in EtO emissions to the use of leakless pumps, but ultimately did not select them in the "combined option."[150]

In fact, in the recent and similar MON rule, which also involved similar chemical manufacturing facilities with significant EtO emissions, EPA actually co-proposed leakless pumps as a control option for equipment leaks in EtO service. Under that option, facilities with a risk greater than 100-in-1-million would have been required to use leakless pumps.[151]

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[146] *Id.* at 8,845.
[147] *Id.*
[148] *See* EPA, Memorandum from Eastern Research Group, Inc., to Andrew Bouchard, EPA, Re: Analysis of Control Options for Equipment Leaks to Reduce Residual Risk of Ethylene Oxide in the SOCMI Source Category for Processes Subject to HON, EPA-HQ-OAR-2022-0730-0003 at 7, 12 (March 2023) [hereinafter EtO Equipment Leaks Memo].
[149] *Id.* at 7.
[150] *Id.* at 12 Tbl. 6-3; 88 Fed. Reg. at 25,114.
[151] *See* 84 Fed. Reg. at 69,231.

Leakless components also appear in the 2011 memorandum that EPA relied upon with respect to equipment leak control technologies.[152] More recently, several HON facilities have adopted leakless and low-emission components pursuant to consent decrees. For example, pursuant to a 2014 consent decree, the Flint Hills Port Arthur facility must install low-emission valves and connectors "least likely to leak" in different scenarios.[153] With respect to valves, all newly installed valves must be low-emission valves, and any existing valve with a monitoring value above a certain concentration must be replaced with a low-emission valve or repacked with low-emission packing.[154] For connectors, the consent decree recognizes that certain types of connectors are "least likely to leak"—with welded connections ranked above all other types—and therefore requires:

- During replacement of connectors or installation of new connectors, the facility "shall use best efforts to select a connector that is least likely to leak"; and
- Upon finding that any connector surpasses a certain monitoring threshold on several occasions, the facility "shall replace or improve the connector" in accordance with certain standards.[155]

Similarly, the 2017 consent decree for the Alon Big Spring facility, which includes a HON source, requires that "for each existing valve that has a Screening Value at or above 500 ppm during any monitoring event, Alon shall either replace or repack the existing valve with a Low-E Valve or Low-E Packing."[156]

Given their potential for reducing the large amount of HAP emissions from equipment leaks, their application at other HON and related facilities, and EPA's apparent awareness of the benefit of such developments, EPA must take these developments into account across this rule, including in particular its section 7412(d)(6) technology review.

4. Optical Gas Imaging

EPA must also take into account optical gas imaging (OGI) as a development for monitoring equipment leaks. Specifically, EPA should require OGI to be used in conjunction with existing leak detection methods and/or propose OGI as an alternative. In either case, EPA must set a protocol for using OGI as a leak detection technology in the chemical sector, if the agency does not yet have one in place. While EPA previously proposed to allow OGI as an

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[152] *See* 2011 Equipment Leaks Memo, *supra*, at 8 (discussing low-leak packing for valves and gaskets).

[153] *See* Consent Decree, *United States v. Flint Hills Res. Port Arthur, LLC*, No. 14-cv-0169, at 58-65 (E.D. Tex. March 20, 2014) (attached as Exhibit 8) [hereinafter FHR Port Arthur Consent Decree].

[154] *See id.* at 58-59.

[155] *See id.* at 63-64.

[156] *See* Consent Decree, *United States v. Alon USA, LP*, No. 1:17-cv-00087, at 74 (N.D. Tex. May 30, 2017) (attached as Exhibit 9) [hereinafter Alon Big Spring Consent Decree].

alternative in the petroleum refineries NESHAP rule, it ultimately did not include the alternative in the final rule, as EPA had not yet developed a protocol at that time.[157] Given the potential that OGI offers with respect to detecting equipment leaks more quickly and thereby reducing HAP emissions, EPA should immediately develop any necessary protocols and take this action in the final rule.

In the proposed rule, EPA specifically noted the potential of OGI "to find large leaks faster" and requested comment on "the emissions reductions that have been or could be achieved by use of" OGI and other technologies.[158] OGI can and should be a part of an overall improved program for monitoring and reducing equipment leaks.[159] OGI can provide an extremely low cost means of working in conjunction with other leak detection methods—and, in fact, fenceline monitoring—and filling LDAR program gaps in several key ways.

For example, the regular employment of OGI can allow for quicker identification of potential leaks for prompt repair or, if needed, follow-up with Method 21 or other monitoring technology.[160] Operators can also integrate OGI scans in the gap periods between regularly required Method 21 monitoring—e.g., daily or weekly scans—to identify plant areas containing significant emissions for targeted inspections. Additionally, OGI can serve to identify hard-to-access problem areas that may not be regularly monitored using Method 21 or other technologies, yet are significant sources of HAP emissions. In total, OGI inspections could save operators money by detecting leaks early, while improving the facility's environmental performance and reducing health risks posed by excess emissions.

Several HON facilities have adopted OGI as part of their equipment leak controls pursuant to consent decrees. For example, pursuant to a 2004 consent decree, at least two HON sources operated by Equistar must conduct "LDAR monitoring of process units in hydrocarbon service using an infrared camera" once every two months.[161] Similarly, the Flint Hills Resources Port Arthur facility's 2014 consent decree sets out a provision for "Optional Pro Active Monitoring and Repair Practices relating to all Valves."[162] Under the option, "FHR may undertake Method 21 or FLIR monitoring" after valves are placed back into service. "Any leaks detected by FLIR monitoring either shall be followed up with Method 21 monitoring as soon as practicable but not more than 1 day after the FLIR monitoring or shall be recorded as a leak within FHR's electronic

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[157] 80 Fed. Reg. at 75,191; NESHAP for Petroleum Refineries, Proposed Rule, 79 Fed. Reg. 36,880, 36,917 (June 30, 2014).

[158] *See* 88 Fed. Reg. at 25,196.

[159] *See* 79 Fed. Reg. at 36,916.

[160] *See*, *e.g.*, FHR Port Arthur Consent Decree, *supra*, at 57-58 ("Any leaks detected by FLIR monitoring either shall be followed up with Method 21 monitoring as soon as practicable but not more than 1 day after the FLIR monitoring or shall be recorded as a leak within FHR's electronic LDAR data management system and repaired consistent with Paragraph 52.").

[161] *See United States v. Equistar Chemical, LP*, No. 07-4045, at 42 (N.D. Ill. Jan. 28, 2008) (attached as Exhibit 10) [hereinafter Equistar Consent Decree].

[162] *See* FHR Port Arthur Consent Decree, *supra*, at 57-58.

LDAR data management system and repaired . . . ."[163] The consent decree also integrates OGI monitoring as part of the fenceline monitoring field investigation.[164]

As EPA noted in the proposed rule, OGI is part of the LDAR requirements under the recent proposed NSPS for the oil and natural gas sector—including for onshore natural gas processing plants, which have many similarities to the chemical plants under consideration here.[165] As discussed in greater detail in Part II.D.1, *infra*, EPA found bimonthly OGI monitoring to be the best system of emission reduction (BSER) for equipment leaks at onshore natural gas processing plants.[166] Additionally, EPA found bimonthly OGI to be cost-effective for reduction of VOC emissions at both large and small natural gas processing plants—at $4,700/ton and $5,000/ton, respectively—and "approximately half the annualized cost of EPA Method 21 surveys through NSPS VVa."[167] The rulemaking docket includes a great deal of up-to-date documentation of OGI as a leak detection technology, which EPA should review and account for in the present rulemaking.[168]

For these reasons, including OGI's potential for detecting equipment leaks quickly and inexpensively and thereby reducing HAP emissions—particularly large leaks and leaks occurring in the "gaps" between other leak monitoring, EPA should account for OGI as a development and take action to adopt OGI for use in conjunction with other equipment leak technologies in the final rule. In doing so, EPA should immediately develop any necessary protocols and set reporting requirements for OGI scans, in order to ensure that there is proper oversight and compliance.

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[163] *Id.*

[164] *Id.* at App. 5.1, 3 ("Contact the LDAR Group for leak detection assistance. LDAR technicians can assist using their TVA or a FLIRT IR Gas Detection Camera.").

[165] *See* Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, 86 Fed. Reg. 63,110, 63,120 Tbl. 2, 63,231-33 (Nov. 15, 2021).

[166] *See* 86 Fed. Reg. at 63,231-33; *see also* Comments of EDF et al. Re: Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, EPA-HQ-OAR-2021-0317-0844 at 175-176 (Jan. 31, 2022); Comments of EDF et al. Re: Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, EPA-HQ-OAR-2021-0317-02433 at 131-132 (Feb. 13, 2023).

[167] *See* 86 Fed. Reg. at 63,232-33.

[168] *See*, *e.g.,* Memo to Docket No. EPA-HQ-OAR-2021-0317 from Gerri G. Garwood, P.E., Re: References Listed in the Technical Support Document for Appendix K, EPA-HQ-OAR-2021-0317-0177 (Nov. 8, 2021); EPA, Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, Background Technical Support Document, Chapter 10, EPA-HQ-OAR-2021-0317-0166 (Oct. 2021) [hereinafter O&G NSPS Technical Support Document].

5. Enhanced LDAR Requirements

EPA also must take into account the "enhanced LDAR" requirements that the agency's enforcement has regularly included in consent decrees for chemical plants, with the specific aim of controlling fugitive emissions of air toxics.[169] While many of the elements of an enhanced LDAR program are typical of the requirements that EPA has included in previous rules and proposed here—e.g., leak definitions, monitoring frequency, and repair requirements—other elements are common to consent decrees but not accounted as developments here. As described in a recent presentation by EPA Region 5, enhanced LDAR is "[a] set of requirements that go beyond regulatory LDAR requirements to systematically raise the quality and effectiveness of a facility's LDAR program."[170]

For example, one such element is with respect to upgrading to leakless/low-emission equipment. Specifically, as discussed in greater detail in Part II.A.3., *supra*, facilities must use low-emission components when installing new valves and connectors and must replace existing components that are found to be leaking above certain thresholds.[171]

Another element is the requirement for employees to receive training in LDAR practices and annual refreshers.[172] While this may seem like an obvious requirement for the individuals handling leak detection equipment and responsible for certifying on a relatively infrequent basis whether leaks are occurring or not, no such requirement appears in the existing HON, P&R I, or P&R II standards, and EPA has proposed no such requirement in the proposed rule. Indeed, every consent decree cited above with respect to equipment leak developments includes LDAR training requirements.[173] Again, EPA must take these important requirements into account in the present rule.

Finally, another important element is with respect to audits of facilities' LDAR programs and the requirement of corrective action as needed.[174] Given how much depends on the proper implementation of a facility's LDAR program—for example, as discussed above, EPA attributes a great deal of EtO reductions to the proposed equipment leak requirements—the compliance assurance of periodic audits of a facility's LDAR program can be just as critical as inspections and emissions reporting. The Chemours audit cited above with respect to area monitoring is an example of a third-party audit report, and all the consent decrees cited above also include audit

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[169] *See* Kosta Loukeris, EPA Region 5, *Air Toxic Enhanced Leak Detection and Repair Program*, EPA-HQ-OAR-2021-0317-0177 (Reference 66) at 2 (Nov. 2021) [hereinafter EPA Enhanced LDAR Presentation].

[170] *Id.*

[171] *Id.* at 8-11.

[172] *Id.* at 12

[173] *See*, *e.g.,* Alon Big Spring Consent Decree, *supra*, at 67-68; FHR Port Arthur Consent Decree, *supra*, at 66; Equistar Consent Decree, *supra*, at 36-37.

[174] *See* EPA Enhanced LDAR Presentation, *supra*, at 13.

and corrective action requirements.[175] EPA must account for these important requirements in the proposed rule.

6. Developments for Equipment Types Not Accounted for by the Proposed Rule

Finally, EPA must account for developments with respect to other equipment that the agency did not address in the proposed rule. Namely, although EPA notes that HON and P&R sources include agitators and open-ended valves or lines and that the current equipment leaks standards include requirements for these types of equipment, the agency notably fails to account for any developments for either of these two equipment types.[176]

EPA must account for developments that have occurred for equipment leaks from these equipment types, as consent decrees have included better requirements than those that currently appear in the source categories' standards. For example, the FHR Port Arthur consent decree includes LDAR requirements for both agitators and open-ended lines, with leak definitions and monitoring frequencies superior to those in the existing standards:[177]

Equipment	**HON Requirements**	**FHR Port Arthur Consent Decree Requirements**
Agitators	10,000 ppm leak definition Monthly M21 monitoring Weekly visual monitoring	500 ppm leak definition Monthly monitoring
Open-ended lines/open-ended line closure devices (OELCDs)	For all open-ended lines/valves: equip with a cap, flange, plug, or second valve For connectors (OELCDs not specified): 500 ppm leak definition Annual monitoring For valves (OELCDs not specified): 500 ppm leak definition Monthly monitoring	For valves serving as OELCDs: 250 ppm leak definition Quarterly monitoring For connectors serving as OELCDs: 250 ppm leak definition Semiannual monitoring

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[175] *See* Chemours LDAR Audit, *supra*; *see also* Alon Big Spring Consent Decree, *supra*, at 70-72; FHR Port Arthur Consent Decree, *supra*, at 68-71; Equistar Consent Decree, *supra*, at 38-41.

[176] *See* Memorandum from Eastern Research Group, Inc., to Andrew Bouchard, EPA, Re: Clean Air Act Section 112(d)(6) Technology Review for Equipment Leaks Located in the SOCMI Source Category that are Associated with Processes Subject to HON and for Equipment Leaks that are Associated with Processes Subject to Group I and II Polymers and Resins NESHAP, EPA-HQ-OAR-2022-0730-0090 at 2-3, 6, 8 (March 2023) [hereinafter Equipment Leaks Technology Review Memo]; 88 Fed. Reg. at 25,138.

[177] *See* FHR Port Arthur Consent Decree, *supra*, at 52-53.

Given that these requirements are more stringent than the existing HON/P&R standards in a number of ways, and given that EPA has otherwise not accounted for any developments for these two equipment types, EPA should account for these and likely other developments in consent decrees for agitators and open-ended lines.

B. EPA Must Ensure that the Proposed Equipment Leak Standards for HON Equipment in EtO Service Protect Public Health, as Required by Section 7412(f)(2).

Pursuant to its risk assessment of the SOCMI source category, EPA proposed controls to address unacceptable risk for equipment in EtO service.[178] Among these are EPA's proposed controls for equipment leaks, in which EPA has proposed a suite of requirements for pumps, valves, and connectors under a "combined option" that EPA estimates will reduce EtO emissions by 70-74 percent.[179]

As provided below, Commenters raise two key issues with these proposed equipment leak controls and their ability to reduce risk from EtO emissions. First, Commenters assert that EPA should have proposed equipment leak controls that would reduce EtO emissions to a much greater extent than the estimated 70-74 percent reduction. Second, Commenters strongly question whether the proposed equipment leak controls under the "combined option" will achieve the EtO emissions reductions in actuality, given EPA's reliance on non-traditional emissions estimates and the opaqueness of the underlying analysis.

For both reasons, EPA must revise the equipment leak standards to incorporate controls that will achieve EtO emissions reductions to a greater extent and with more certainty.

1. EPA Must Strengthen Its Proposed Equipment Leak Standards for HON Equipment in EtO Service to Achieve Greater Reductions of EtO Emissions.

In its summary of proposed controls to address unacceptable risk for equipment in EtO service, EPA estimated that the equipment leak controls would reduce EtO emissions by 70-74 percent.[180] While this is a significant reduction in EtO emissions compared to previous controls, it is an outlier in comparison to the percent of EtO emissions reductions that EPA estimated from the other categories of proposed control options. Specifically, each other category of proposed controls would reduce EtO emissions between 93 and 99.9 percent:

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[178] *See* 88 Fed. Reg. at 25,111.

[179] *Id.* at 25,114-15, 25,119 Tbl. 4.

[180] *See* 88 Fed. Reg. at 25,119 Tbl. 4.

Table 2: Comparison of Emission Reductions of Proposed Control Options for the SOCMI Source Category (Abridged)[181]

Emission Source	Percent Reduction of EtO Emissions
Process vent controls	99.9 percent
Storage vessel controls	99.9 percent
Equipment leak controls	70-74 percent
Heat exchange system controls	93 percent
Wastewater controls	98 percent
PRD releases	99.9 percent (assumed)

While this comparison alone demonstrates the failed opportunity and need to achieve greater reductions in EtO emissions from equipment leaks, this is more apparent in consideration of the significance of equipment leaks in driving the SOCMI source category's EtO risk. For example, "for the source category [Maximum Incidence of Cancer Risk (MIR)] of 2,000-in-1 million, approximately 20 percent is from emissions of EtO related to HON equipment leaks."[182] And at seven EtO-emitting facilities, the EtO emissions from equipment leaks alone constitute unacceptable risk greater than 100-in-1 million.[183]

In fact, looking at the facility driving the MIR, EPA found that two main emissions sources accounted for almost this entire risk: "PRDs (74 percent) and equipment leaks (20 percent)."[184] While EPA has proposed controls for PRDs that it estimates will achieve a 99.9 percent reduction in EtO emissions, it has not taken the same stringency of controls for the significant EtO emissions from equipment leaks.[185] In order to fulfil its duty to provide an "ample margin of safety to protect public health" under section 7412(f)(2), EPA can and must require stronger equipment leak controls.

While the "combined option" for equipment leak controls that EPA selected does include more stringent requirements—and in some cases, the most stringent of the requirements that EPA considered—there are several opportunities for EPA to improve.

First, one clear opportunity for improvement is with respect to pumps in light liquid service. While light liquid pumps are responsible for a relatively small amount of ethylene oxide emissions as compared to the other two types of components—0.76 tons per year versus 22.55 tons per year for valves and 37.11 tons per year for connectors—they are the one type of components for which EPA selected the least stringent of the three control options.[186] EPA identified and considered three control options for pumps:

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[181] *See id.* (omitting control options for which EPA did not estimate the percentage of EtO emission reductions).

[182] *Id.* at 25,113.

[183] *Id.*

[184] *Id.* at 25,106.

[185] *Id.* at 25,119 Tbl. 4.

[186] *See* EtO Equipment Leaks Memo, *supra*, at 12, Tbl. 6-3.

- Lower the leak definition (from 1,000 ppm) to 500 ppm, with monthly monitoring;
- Lower the leak definition to 100 ppm, with monthly monitoring;
- Require the use of leakless pumps (i.e., canned pumps, magnetic drive pumps, diaphragm pumps, pumps with tandem mechanical seals, pumps with double mechanical seals) with annual monitoring with a leak definition of any reading above background concentration levels.[187]

EPA ultimately selected the first option (500 ppm, monthly monitoring), which would achieve a reduction of only 0.14 tons per year (approximately 18 percent).[188] By contrast, the second option (100 ppm, monthly monitoring) would achieve a reduction of 0.25 tons per year (approximately 33 percent), and the third option (leakless pumps) would achieve a reduction of 0.76 tons per year (100 percent).[189]

As discussed above with respect to other leakless and low-emission components, EPA co-proposed leakless pumps in the MON rule as a control option for equipment leaks in EtO service.[190] Even though EPA has relied here on the cost-effectiveness analysis of the MON rule and admitted that "[l]eakless pumps are used for processes that handle toxic materials and may also be already used at processes that use ethylene oxide," the agency seemed to quickly dismiss the control option, at least partially on the basis that "data on leakless equipment that are currently in use at HON ethylene oxide facilities are not available."[191] (By contrast, as discussed below, the lack of emissions factors for more frequent monitoring of connectors did not stop the agency from modeling emissions reductions.)

Requiring leakless pumps would be a relatively easy improvement to EPA's proposed equipment leak controls. While the EtO emissions from pump leaks are comparatively small against other component types, leakless pumps would achieve emissions reductions more than five times greater than EPA's proposed option and would also have the benefits of far greater certainty than Method 21-based controls and less frequent monitoring.[192] Moreover, the benefits of leakless pumps at HON facilities may well be underestimated. We evaluated a dataset EPA included along with its review of NSPS Subpart OOOOb for natural gas processing plants, which includes nearly 3,000 Method 21 readings on components at chemical plants. We isolated the 26 readings from pumps in light-liquid service, all of which exceed 10,000 ppm (with the greatest reading at almost 80,000 ppm). These data underscore the benefits and vital importance of eliminating leaks using leakless pumps.

Second, another opportunity for additional reductions of EtO emissions is with respect to connectors. Unlike pumps, EPA selected the most stringent leak control option for connectors of

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[187] *See* 88 Fed. Reg. at 25,114.

[188] *See id.*

[189] *Id.*

[190] *See* 84 Fed. Reg. at 69,214, 69,231.

[191] *See* EtO Equipment Leaks Memo, *supra*, at 7.

[192] *Id.* at 14.

the options it considered: a leak definition of 100 ppm and monthly monitoring frequency.[193] But connectors warrant particularly special attention, given that they "are the most numerous equipment components at chemical facilities, and they contribute the most to the baseline emissions from leaking equipment at the EtO emitting facilities."[194] For this reason, EPA must account for developments outside the three options it considered in the proposed rule.

As noted above, one of these developments recognizes that certain types of connectors are "least likely to leak" and therefore requires:

- During replacement of connectors or installation of new connectors, the facility "shall use best efforts to select a connector that is least likely to leak"; and
- Upon finding that any connector surpasses a certain monitoring threshold on several occasions, the facility "shall replace or improve the connector" in accordance with certain standards.[195]

Given the significance of EtO emissions from connector leaks, the fact that this is a development with minimal (if any) additional cost, as discussed above, and the potential issues with EPA's estimates of EtO emission reductions from the connector provisions in the "combined option" discussed below, EPA should account for this development and adopt it to reduce EtO emissions from connectors to a greater extent and with more certainty.

A final opportunity for more effectively reducing EtO emissions from equipment leaks is with respect to valves in gas/vapor and light liquid service. Like connectors, EPA selected the most stringent of the options it considered.[196] But also like connectors, valves are responsible for a large proportion of the baseline emissions of EtO-emitting facilities: 22.55 of 60.42 tons per year.[197] And while valves are not quite as numerous as connectors, EPA's model values assume 308 gas valves and 530 light liquid valves per HON process.[198] As mentioned above, the use of low-emission valves and valve packing has become common practice across the chemical manufacturing industry. These valves and valve packings come with a five-year manufacturer guarantee not to have emissions above 100 ppm. EPA recognized this when evaluating developments related to the NSPS review but chose to not require their use because they "do not continually keep leaks below 100 ppm."[199]

However, this conclusion fails to consider the benefits that these low-emitting valves and valve packings provide and puts too much weight on a leak definition of 100 ppm. A leak definition provides a threshold to determine which valves need to have repairs. It does not

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[193] *See* 88 Fed. Reg. at 25,113-14.

[194] 88 Fed. Reg. at 25,114; *see also* EtO Equipment Leaks Memo, *supra*, at 10, Tbl. 6-1, 12, Tbl. 6-3 (identifying model value of 1,924 connectors per HON process and estimating 37.11 tons per year baseline emissions of EtO from connectors).

[195] *See* FHR Port Arthur Consent Decree, *supra*, at 63-64.

[196] 88 Fed. Reg. at 25,114.

[197] *See* EtO Equipment Leaks Memo, *supra*, at 12, Tbl. 6-3.

[198] *Id.* at 10, Tbl. 6-1.

[199] 88 Fed. Reg. at 25,140.

prevent emissions from exceeding that threshold. In fact, EPA has data showing Method 21 readings for 577 valves where the minimum reading is 757 ppm, average reading is 28,353 ppm, and maximum reading is 189,900 ppm.[200] Large leaks will continue to happen, even at leak definitions as low as 100 ppm, and EPA must consider developments that allow for the prevention of these large leaks. EPA's failure to even consider these as options in its 7412(f)(2) review must be addressed. For these reasons, EPA must take into account developments that it did not consider among its options for valves: namely, the use of "leakless" or low-emitting valves.

As discussed above, such low-emitting valves are developments that several HON facilities have adopted pursuant to consent decrees. Specifically, consent decrees have required HON facilities to install low-emitting valves for all new and replacement valves and to replace existing valves with low-emitting valves or repack them with low-emitting packing if the valves surpass certain monitoring thresholds.[201]

EPA appears to be aware of the potential benefits of these developments, given that it has requested comment on "requiring use of 'leakless' (i.e., low-emitting) equipment for valves and pumps in EtO service" and considered such valves in proposing the SOCMI NSPS under Subpart VVb.[202] In fact, EPA specifically acknowledged that "in recent consent decrees, the EPA has required low-emitting gas and light liquid valves be used," that such valves can reduce emissions below 100 ppm, and "that low-emitting valves are comparable in cost to normal valves and are considered by at least one manufacturer to be the valve standard commonly used by their customers."[203]

For these reasons, EPA must account for this development and should adopt it for valves in EtO service in order to achieve EtO reductions to a greater extent than the currently estimated 70-74 percent reduction and to fulfill its duty to assure an "ample margin of safety to protect public health" under section 7412(f)(2).

2. EPA Must Ensure that the Equipment Leak Standards' EtO Reductions are Properly Estimated and Will Be Achieved in Practice.

In order to address "the high residual risk for some of the facilities from equipment leaks of EtO and the potential need for greater emission reduction to meet an acceptable level of risk for the SOCMI source category," EPA evaluated and ultimately proposed the adoption of "a more stringent option that combines several of the component options."[204] While Commenters believe that EPA should reduce EtO emissions from equipment leaks to a greater extent, as discussed above, Commenters support EPA's acknowledgement of this high risk and its decision to select a

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[200] *See,* Summary Tables of Industry OGI-M21 Comparison Data - for EPA – May 2019, attached to EPA-HQ-OAR-2021-0317-0041 (posted Nov. 15, 2021).

[201] *See* Alon Big Spring Consent Decree, *supra*, at 74; FHR Port Arthur Consent Decree, *supra*, at 58-59.

[202] *See* 88 Fed. Reg. at 25,196, 25,140.

[203] *Id.* at 25,140; *see also* OMB EPA Passback 1, *supra*, at 159.

[204] 88 Fed. Reg. at 25,114.

more stringent option to achieve greater reductions. However, given EPA's inability to use more traditional estimating methodologies for the combined option's reductions, Commenters question whether the reductions can be achieved in practice. If they cannot, Commenters urge EPA to adopt requirements—such as the developments discussed above—whose reductions can be readily estimated and are more certain to be achieved.

EPA estimates that the combined option will reduce EtO emissions from the baseline emissions of 60.42 tons per year to post-control emissions of 18.12 tons per year, or a reduction of 42.30 tons per year.[205] This is approximately six times as high (or 35.29 tons per year greater) as the sum of the corresponding options for each individual equipment type.[206] The only difference between adding the individual equipment-specific options and the combined option appears to be that the combined option includes an option 3 for connectors (100 ppm leak definition, monthly monitoring) that EPA did not analyze individually with the other itemized equipment-specific options. In other words, it appears that EPA is attributing a reduction of 35.29 tons per year to monitoring connectors with monthly frequency instead of annual. While there are a vast number of connectors at HON facilities, and they constitute the majority of EtO emissions from equipment leaks—as discussed above—it is concerning that EPA did not itemize this specific option in order to allow for more transparent analysis.

This reduction estimate is more concerning when compared to EPA's similar analysis of equipment leak control options for the 2020 MON rule. In the proposed MON rule, EPA considered two primary options for connectors:

- Option 1: 500 ppm leak definition with annual monitoring, and
- Option 2: 100 ppm leak definition with monthly monitoring.[207]

Even though these two options are even "further apart" than HON Option 2 (100 ppm/annual) and Option 3 (100 ppm/monthly), EPA found the difference in reductions between the two options to be vastly smaller. For two facilities, EPA found that MON Option 2 would only offer 50 percent greater reductions than MON Option 1 (0.66 tons per year versus 0.44 tons per year, respectively). For six other facilities, EPA estimated that that MON Option 2 would offer 13 percent greater reductions than MON Option 1 (0.66 tons per year versus 0.44 tons per year, respectively).[208]

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[205] *See* EtO Equipment Leaks Memo, *supra*, at 12, Tbl. 6-3, 16, Tbl. 6-5.

[206] *Id.* at 12, Tbl. 6-3 (adding valves option 2, pumps option 1, and connectors option 2).

[207] *See* Memorandum from Eastern Research Group, Inc., to Tegan Lavoie, EPA, Re: Clean Air Section 112(d)(6) Technology Review for Equipment Leaks Located in the Miscellaneous Organic Chemical Manufacturing Source Category, EPA-HQ-OAR-2018-0746-0004, at 13, 15, Tbl. 9 (March 2019) ("annual monitoring was used for connectors at a leak definition of 500 ppm, assuming no skip monitoring would be allowed, and monthly monitoring was used for connectors at a leak definition of 100 ppm, also assuming no skip monitoring.").

[208] *Id.* at 12, Tbl. 7.

Table 3: Summary of Emissions and Emission Reductions For Ethylene Oxide Processes at MON Facilities

Option	G/LL Valves at 100 ppm	LL Pumps at 1,000 ppm	LL Pumps at 100 ppm	Connector Monitoring at 500 ppm	Connector Monitoring at 100 ppm	Leakless Pumps	Leakless Valves
Calculation for Huntsman and Lanxess							
Baseline Emissions (tpy)	0.52	0.19	0.19	2.38	2.38	0.19	0.52
Controlled Emissions (tpy)	0.46	0.10	0.08	***1.94***	***1.72***	0.00	0.00
Emission Reductions (tpy)	0.06	0.08	0.11	***0.44***	***0.66***	0.19	0.52
Calculation for Other Six Facilities							
Baseline Emissions (tpy)	0.79	0.70	0.70	5.53	5.53	0.70	0.79
Controlled Emissions (tpy)	0.69	0.19	0.12	***2.92***	***2.57***	0.00	0.00
Emission Reductions (tpy)	0.09	0.50	0.58	***2.61***	***2.95***	0.70	0.79

It appears that part of the issue with EPA's estimates in the present rule is that, as EPA states, "we do not have emission factors to estimate reductions for increased monitoring frequencies for connectors."[209] For this reason, EPA "estimated emissions reductions based on the approach used in other rules, where detailed leak data was available or where a leak distribution could be assumed. The equipment leaks model uses a Monte Carlo analysis to estimate emissions from EtO facility equipment leaks."[210]

These questions are important because they ultimately have effects on the human health that EPA seeks to protect through these controls. EPA's estimated reductions in EtO emissions will determine if EPA has removed all "unacceptable risk" and has assured an "ample margin of safety to protect public health" under section 7412(f)(2). If the emissions reductions are on paper alone and do not actually align with real-world reductions, EPA will not have actually reduced risks and fulfilled its duties under section 7412(f)(2). More to the point, if EPA does not have valid emission factors to estimate emission reductions from a control option and instead must rely on a less-certain analysis that may not comport with actual reductions, EPA should either

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[209] *See* 88 Fed. Reg. at 25,514.

[210] *Id.*; *see also* EtO Equipment Leaks Memo, *supra*, at 11, App. C.

select a control option whose reductions can be estimated with certainty or account for its uncertainty by requiring additional controls.

As discussed above, there are several developments that EPA has reviewed in detail and can achieve clear reductions in equipment leaks. For example, "leakless"/low-emission components have emission reductions that EPA is able to estimate with certainty.[211] Similarly, EPA's Office of Research and Development was directly involved in the development and approval of Leak Detection Sensor Networks and analysis as compared to Method 21.[212] Finally, although EPA opted to propose fenceline monitoring requirements only under section 7412(d)(6) rather than also as part of its section 7412(f)(2) risk assessment, EPA should reconsider this in light of the need to ensure reductions and account for uncertainty.[213]

C. EPA Must Strengthen the Equipment Leak Standards that Apply to the Majority of Sources Pursuant to Its Section 7412(d)(6) Review.

While EPA has proposed to revise equipment leak controls to address unacceptable risk for equipment in EtO service pursuant to its risk assessment of the SOCMI source category, EPA has wholly declined to revise the equipment leak standards for the vast majority of sources covered by the NESHAP source categories—more than 200 sources—pursuant to its section 7412(d)(6) technology review. This is a serious mistake by EPA and perhaps the most significant shortcoming of this rulemaking, given the large proportion of HAP emissions from equipment leaks. Commenters urge EPA to correct this in two key ways.

First, EPA must account for developments other than the Method 21-based options it considered and dismissed in the proposed rule, including in particular the developments described in detail above.

Second, EPA cannot refuse to update the equipment leak standards on the basis of its cost-effectiveness analysis. Where developments exist—even if only the developments that EPA considered in the proposed rule—section 7412(d)(6) does not allow EPA to dismiss them and refuse to update standards on the basis of cost. Moreover, EPA's cost-effectiveness analysis is faulty on its own terms, as it relies on incorrect assumptions and is inconsistent with other cost-effectiveness analyses, including in this rule.

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[211] *See, e.g., id.* at 12 Tbl. 6-3 (estimating 100-percent emission reductions for leakless pumps).

[212] *See* EPA Progress on LDAR Innovation Report, *supra*, at 6.

[213] As OMB raised in comments on the proposed rule, "the fenceline monitoring provision seems to be another form of control option for fugitive emissions of ethylene oxide that could be proposed under [7412](f)(2) to address health risks as well as under [7412](d)." *See* OMB EPA Passback 1, *supra*, at 159; *see also id.* at 226 ("In view of the unacceptable health risks, it also seems appropriate to consider proposing clearly to require fenceline monitoring independently under [7412](f)(2). . . . Proposing this as an additional method to address the unacceptable risks and to assure an ample margin of safety to protect public health would be consistent with [7412](f)(2).").

1. EPA Must Account for Developments in Equipment Leak Controls.

One issue with EPA's section 7412(d)(6) technology review for equipment leaks is that EPA failed to take into account developments in practices, processes, and pollution control technologies, as required by the Clean Air Act.[214] Where such developments exist, EPA must update the standards, although many factors warrant revision.[215]

Under its technology review for equipment leaks of HAPs, EPA only identified three developments, all based in Method 21 monitoring:

- Lowering the leak definition for valves in light liquid service from 500 ppm to 100 ppm with monthly monitoring and skip periods;
- Lowering the leak definition for valves in gas and vapor service from 500 ppm to 100 ppm with monthly monitoring and skip periods; and
- Lowering the leak definition for pumps in light liquid service from 1,000 ppm to 500 ppm with monthly monitoring.[216]

"For all other component types, we did not identify developments in LDAR practices and processes in the chemical sector."[217] This review falls short in several ways.

First, EPA failed to identify any developments for connectors. As discussed in detail above with respect to EPA's proposed risk-based equipment leak standards for equipment in EtO service, connectors are the most numerous components in HON processes by a large margin—and likely to a similar extent in P&R I and P&R II facilities, especially given that most are co-located with HON sources.[218] Equipment leaks from connectors are also responsible for the majority of EtO emissions from HON equipment leaks.[219] It seems likely that the same is true for equipment leaks of all HAPs. In fact, because of the high residual risk driven in part by emissions from connectors, EPA decided to propose "a more stringent option" that included a 100 ppm leak definition for connectors and "increase[d] the monitoring frequency for connectors" to monthly with no reduced frequency.[220]

EPA should have accounted for a development with respect to improving equipment leak controls for connectors in its technology review. While the risk-based standards are controls that EPA selected rather than identified as developments, they are a significant improvement over the current standards and would reduce the large proportion of emissions attributable to connectors. Furthermore, there are several developments specific to connectors that EPA did not account for

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[214] 42 U.S.C. § 7412(d)(6).

[215] *Natural Res. Def. Council v. EPA*, 529 F.3d at 1084.

[216] *See* 88 Fed. Reg. at 25,138.

[217] *Id.*

[218] *See supra* Part II.B.1; 88 Fed. Reg. at 25,179; Lists of Facilities Subject to the HON, Group I and Group II Polymers and Resins NESHAPs , and NSPS Subparts VV, VVa, III, NNN, and RRR, EPA-HQ-OAR-2022-0730-0069 (Mar. 2023).

[219] *See* EtO Equipment Leaks Memo, *supra*, at 12, Tbl. 6-3.

[220] *See id.* at 8-9.

in its technology review. For example, the 2014 consent decree for the Flint Hills Resources Port Arthur facility required "best efforts to select a connector that is least likely to leak" during typical replacement and required removal and replacement of connectors that surpassed monitoring thresholds on several occasions.[221] And EPA's 2011 equipment leaks analysis—even though the agency should have updated it to account for developments that have come about since, as discussed above—noted the development of replacing connectors with welded connections.[222]

Second, EPA did not account for the developments discussed in greater detail above. These include in particular area monitoring, leak detection sensor networks, optical gas imaging, and the use of "leakless"/low-leak components.[223] In fact, EPA frankly acknowledged its decision not to account for leak detection sensor networks and optical gas imaging on the basis that the agency has "insufficient information on how use of such monitoring technology compares to current EPA Method 21 practices for chemical sector sources."[224]

Commenters support EPA's decision to invite comment on these developments and urge the agency to correct its failure to account for these developments—and the others discussed herein—in its promulgation of the final rule.

2. EPA Must Not Refuse to Update the Equipment Leak Standards on the Basis of Its Cost-Effectiveness Analysis.

The other key flaw with EPA's technology review for equipment leaks is the agency refused to revise the standards based on its cost-effectiveness analysis of the three options it considered: "we determined that none of them are cost effective. Therefore, we are not proposing to revise the HON, P&R I, and P&R II to reflect the requirements of these options pursuant to CAA section [7412](d)(6)."[225] This decision was improper both as a general matter on the basis of the requirements of the Clean Air Act and specifically due to flaws in EPA's cost-effectiveness analysis.

Section 7412(d)(6) does not allow EPA to dismiss developments and refuse to update standards on the basis of cost. Where "developments" have occurred, EPA must "account" for those. The D.C. Circuit has recognized that "developments" are a core requirement of this provision.[226] While the D.C. Circuit's holding on cost was wrongly decided,[227] EPA should

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[221] *See* FHR Port Arthur Consent Decree, *supra*, at 63-64.

[222] *See* 2011 Equipment Leaks Memo, *supra*, at 7 ("In cases where connectors are not required for safety, maintenance, process modification, or periodic equipment removal, emissions can be eliminated by welding the connectors together.").

[223] *See supra* Part II.A.

[224] 88 Fed. Reg. at 25,138-39 n.96.

[225] *Id.* at 25,139.

[226] *NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008).

[227] *See Ass'n of Battery Recyclers v. EPA*, 716 F.3d 667, 673 (D.C. Cir. 2013); Final Opening and Reply Briefs of Environmental Petitioners, *Nat'l Ass'n for Surface Finishing v. EPA*, 795 F.3d 1 (D.C. Cir. 2015) (No. 12-1459), Document 1514794, 1514797.

decide to follow the plain text of section 7412(d)(2)-(3) and applicable precedent requiring that EPA may not consider cost without explicit authorization. Commenters continue to advocate for the agency to follow both the letter and spirit of the law in setting revised standards.

In addition, EPA's cost-focused analysis ignores the statutory objective of assuring the "maximum" achievable degree of emission reduction provided in section 7412(d)(2) and implemented through the review required by section 7412(d)(6). It also ignores the statutory goal of protecting public health, which is the core purpose behind this provision and the stated purpose of section 7412(f)(2). EPA's proposed refusal to update the equipment leak standards is unlawful, arbitrary, and capricious because it ignores key statutory purposes that are required factors to consider.

Further, EPA's decision to make cost-per-ton the standard-setting criterion and to choose a number it deems unreasonable, without a rational explanation, is arbitrary and capricious. The cost-per-ton of reduction says nothing about whether a stronger standard is feasible. This analysis does not consider at all whether the industry could easily bear the costs of additional controls that would strengthen emission reduction and health protection. The analysis of economic impacts of the rule EPA has proposed shows that most of the firms with regulated facilities are well-prepared to take on some additional cost in order to reduce leaks. EPA does not claim, and could not plausibly claim, that this industry cannot afford to prevent, detect, or repair leaks to reduce the toxic air pollution nearby communities must breathe.

On its own, the cost per ton of HAP emissions reduced says nothing about health risk. A ton of hazardous air pollution is a very large amount. EPA's own risk assessment shows that the pollutants emitted by these source categories are known to be hazardous at an exposure level of micrograms or less.[228] The carcinogens emitted—*e.g.*, ethylene oxide, benzene, formaldehyde, naphthalene—have no safe level of exposure. No two HAPs create the same health risks, and reducing tons of one pollutant does not produce the same benefit as reducing tons of another.[229] Treating a ton of one hazardous air pollutant or combination of pollutants like a ton of any other hazardous air pollutant is not supported by the data showing how toxic the emitted pollutants at issue here are at low levels of exposure. The value of removing the HAPs emitted by these sources from the air cannot be expressed in dollars per ton or dollars per pound.

EPA should not base its final standards on cost-effectiveness at all. The agency's job is simply to determine the "maximum" degree of reduction that can be achieved considering cost, under section 7412(d)(2). But if EPA wishes to consider cost-effectiveness in any meaningful sense, it cannot rely on dollars per ton figures, which say virtually nothing about the true

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[228] Proposed SOCMI Residual Risk Assessment, *supra*, at 39-46 Tbl. 3.1-1; *see also* Cal. OEHHA, Consol. Table of OEHHA-ARB Approved Risk Assessment Health Values (last updated Sept 9, 2019), https://ww2.arb.ca.gov/sites/default/files/classic/toxics/healthval/contable05012023.pdf.

[229] *See, e.g.*, Cal. OEHHA, Consol. Table of OEHHA-ARB Approved Risk Assessment Health Values (last updated Sept. 19, 2019) (showing various values, and cancer potency factors for various pollutants).

effectiveness of reducing emissions of highly toxic pollutants emitted here, in terms of public health—which is a key factor missing from EPA's analysis.

As a further matter, EPA's consideration of costs in the context of these air toxics standards suffers from a fundamental imbalance. As discussed below in further detail with respect to EPA's consideration of benefits, EPA has long been unable or unwilling to estimate the benefits of reduced HAP emissions and reduced cancer cases.[230] As EPA freely admits in the fact sheet to the proposed rule, "EPA is not able to estimate the monetary value of reducing air toxics emissions, including EtO and chloroprene. This means that the Agency cannot estimate the full dollar value of the benefits the proposal would yield, including the benefits of reducing the risk of cancer from exposure to those chemicals."[231] And as EPA discusses in the proposed rule, "[d] Due to methodology and data limitations, we did not attempt to monetize the health benefits of reductions in HAP in this analysis," instead estimating benefits of reduced ozone emissions.[232] In a similar vein, EPA's analysis ignores the positive economic impact that rule improvements can have. For example, regarding the power plants air toxics rule, the Economic Policy Institute found a significant increase in job creation.[233]

Even if it were appropriate for EPA to use cost-effectiveness for the purpose of accounting for developments under section 7412(d)(6), EPA's present analysis is faulty on its own terms in several specific ways.

First, EPA continues to rely on the $900 per ton recovery credit for VOCs, which the agency developed in 2007 and has not updated since.[234] This is a particularly key figure, as it is the only monetary figure that EPA takes into account toward reducing costs in its cost-effectiveness analysis. In fact, as EPA admitted in its proposed rule for the similar MON source category, "[t]he $900 per ton recovery credit has historically been used by the EPA to represent the variety of chemicals that are used as reactants and produced at synthetic organic chemical manufacturing facilities, however, we recognize that this value is from a 2007 analysis and may be outdated."[235]

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[230] *See infra* Part IX (COST-BENEFIT CONSIDERATIONS).

[231] EPA, Fact Sheet, EPA's Proposal to Reduce Toxic Air Pollution from the Synthetic Organic Chemical Manufacturing Industry and the Polymers and Resins Industry: Overview 4 (April 2023), https://www.epa.gov/system/files/documents/2023-04/PROPOSED.%20HON.PR_OVERVIEW.Fact%20Sheet.FINAL_.4.6.23_0.pdf.

[232] 88 Fed. Reg. at 25,180-81.

[233] Josh Bivens, *A lifesaver, not a job killer; EPA's proposed "air toxics rule" is no threat to job growth,* Economic Policy Inst. Briefing Paper (June 24, 2011), http://www.epi.org/publication/a_life_saver_not_a_job_killer.

[234] *See* Equipment Leaks Technology Review Memo, *supra*, at 14 ("The $900 per ton recovery credit has historically been used by EPA to represent the variety of chemicals that are used as reactants and produced at synthetic organic chemical manufacturing (SOCMI) facilities (EPA, 2007).")

[235] *See* 84 Fed. Reg. at 69,221 (discussing VOC credit in MON proposed rule).

While there is likely a figure that better accounts for the specific changes in the synthetic organic chemical manufacturing industry since 2007, even inflation alone since 2007 would bring the $900 figure to roughly $1,300 per ton.[236] This would change EPA's cost-effectiveness analysis significantly:

Table 4: Comparison of HAP Cost-Effectiveness with Inflation-Adjusted VOC Recovery Credit

Control Option	HAP emission reduction (tpy)	Cost per ton of HAPs reduced ($900/ton VOC recovery credit included)	Cost per ton of HAPs reduced ($1300/ton VOC recovery credit included)
1	16	$25,000	$20,625
2	22	$31,000	$26,636
3	24	$46,000	$42,208

Table 5: Comparing VOC Cost-Effectiveness with Inflation-Adjusted VOC Recovery Credit Applied[237]

Control Option	VOC emission reduction (tpy)	Cost per ton of VOCs reduced ($900/ton VOC recovery credit included)	Cost per ton of VOCs reduced ($1300/ton VOC recovery credit included)
1	160	$2,500	$2,063
2	220	$3,100	$2,664
3	240	$4,600	$4,221

Second, the options that that EPA found not to be cost-effective are lower than other rules where EPA has determined the cost-per-ton to be appropriate and even lower than cost-effectiveness determinations within this rule. As summarized in the tables above, EPA found that Options 1, 2, and 3 would not be cost-effective on the basis of a range of $25,000 to $46,000/ton of HAPs or $2,500 to $4,600 per ton of VOCs.[238] The cost per ton numbers for the equipment leak control options for Groups I and II Polymers and Resins were nearly identical, and EPA similarly determined them not to be cost effective.[239]

However, in the proposed equipment leak standards for the SOCMI NSPS, EPA found higher costs per ton of VOCs reduced to be cost-effective. Under NSPS Option 2, which EPA determined to be cost-effective and ultimately has proposed as the new NSPS equipment leak

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[236] *See* U.S. Bureau of Labor Statistics, CPI Inflation Calculator, https://www.bls.gov/data/inflation_calculator.htm (last visited July 6, 2023).

[237] VOC reductions estimated using HAP to VOC ratio from EPA technology review memo. *See* Equipment Leaks Technology Review Memo, *supra*, at 12 ("A mass-weighted average HAP to VOC ratio of 10 percent has been used in other EPA regulatory reviews and was used for this analysis. Thus, to determine the HAP emissions reductions associated with the controls, we multiplied the VOC emissions reductions by 10 percent.").

[238] *See also* 88 Fed. Reg. at 25,139 Tbl. 21.

[239] *See id.* at 25,139 Tbl. 22, 25,140 Tbl. 23.

standard, EPA estimated that the cost per ton of VOCs reduced (including the $900/ton VOC recovery credit) would be $3,320 per ton of VOCs.[240] This is a higher cost than the cost per ton of either Option 1 ($2,500 per ton) or Option 2 ($3,100 per ton) under EPA's section 7412(d)(6) technology review, both of which EPA determined not to be cost-effective.[241] EPA does not explain why the $3,320 per ton of VOCs is cost-effective for the NSPS but not the NESHAP section 7412(d)(6) review. Converting the figures to cost-effectiveness based on tons of HAPs reduced does not help to explain the difference in reasoning, as NSPS Option 2 is still more costly ($33,200 per ton) than HON Option 1 ($25,000 per ton) or HON Option 2 ($31,000 per ton).[242]

Similarly, in previous rules, EPA has determined higher costs per ton of HAPs reduced to be cost-effective or appropriate. For example, in the secondary lead smelting rule, EPA determined that the following costs per tons of HAPs reduced cost-effective: $0.33 million per ton (for stack lead emission limit); $1 million per ton (for enclosure requirements); and $1.5 million per ton (for fugitive control work practices).[243] As EPA explained in the preamble to that final rule:

> The EPA notes that the cost effectiveness of the controls for stack emissions of metal HAP are within the range of values the agency has determined to be reasonable in other section [7412] rules. Indeed, EPA determined that a value of $175 per pound of metal HAP removed was reasonable when determining standards for the iron and steel foundry source category, an area source standard.[244]

And as discussed above with respect to EPA's review of leak technologies in the proposed NSPS for the oil and natural gas sector, EPA found revised equipment leak requirements to be cost-effective for use in natural gas processing plants at much higher costs: at $4,700/ton and $5,000/ton of VOCs, respectively.[245]

In short, EPA has failed to demonstrate a valid basis for refusing to adopt any of the three options—or any other development outside of those three options—in its section 7412(d)(6) technology review of the equipment leak standards. As discussed above, this refusal was inappropriate pursuant to EPA's duties under the Clean Air Act and due to flaws in EPA's cost-effectiveness analysis and arbitrariness in comparison to other decisions. In view of the fact that EPA has found higher cost-reduction ratios appropriate, it is especially arbitrary and capricious for EPA not to require greater reductions here, when they are clearly achievable and would provide more protection for public health, as statutorily provided.

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[240] *See id.* at 25,141, 25,142 Tbl. 25.

[241] *See id.* at 25,139.

[242] Commenters again rely on EPA's "HAP to VOC ratio of 10 percent." *See* Equipment Leaks Technology Review Memo, *supra*, at 12.

[243] National Emissions Standards for Hazardous Air Pollutants from Secondary Lead Smelting, 77 Fed. Reg. 556, 576 (Jan. 5, 2012).

[244] *Id.*

[245] *See* 86 Fed. Reg. at 63,232-33.

D. EPA Must Improve the Proposed NSPS Equipment Leak Standards.

In addition to EPA's review of equipment leak standards under sections 7412(d) and 7412(f)(2), as discussed above, the proposed rule includes EPA's review and proposed revisions of the SOCMI NSPS for equipment leaks. As with the NESHAP standards at issue in the proposed rule, review of the SOCMI NSPS for equipment leaks is long overdue, with the last revisions to Subpart VVa in 2007.[246]

Unlike EPA's failure to revise equipment leak standards for the vast majority of HON and P&R I sources under 7412(d)(6), EPA has proposed revised NSPS equipment leak standards under Subpart VVb.[247] Such revisions are important and long-needed, and Commenters support EPA finalizing revised equipment leak standards. However, there are certain key shortcomings of EPA's review and the new standards that the agency must address.

First, EPA's BSER analysis was insufficient, given the agency's failure to consider key equipment leak control technologies, such as OGI, LDSN, and even options that EPA previously considered in the last review. Second, while EPA has proposed connector monitoring under Subpart VVb, the agency inexplicably removed the stayed connector monitoring requirements from Subpart VVa. Third, EPA's proposed definitions for "capital expenditure" under Subparts VVa and VVb impermissibly narrow the reach of modification and would result in the exclusion of certain process units from applicability to either subpart through modification.

As Commenters discuss in further detail below, EPA must address these errors and finalize the strongest possible equipment leak standards for Subparts VVa and VVb.

1. EPA's BSER Analysis/Consideration of LDAR Technologies is Insufficient.

EPA's review of the LDAR requirements in NSPS VVa is inconsistent with other reviews of NSPS equipment leak standards. Further, EPA failed to use information in its review of NSPS VVa relevant to chemical plants that it referenced as part of these other reviews.

EPA identified and considered four options in its review of the LDAR standards in NSPS VVa:

- Leak definition of 500 ppm for connectors in gas/vapor service and light liquid service, annual monitoring;
- Lowering leak definition from 500 ppm to 100 ppm for valves in gas and vapor service or in light liquid service, monthly monitoring with no skip periods;
- Require leakless valves with annual monitoring to verify no leaks; and
- Require leakless pumps with annual monitoring to verify no leaks.

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[246] *See* Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry; Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries, 72 Fed. Reg. 64,860 (Nov. 16, 2007).

[247] *See* 88 Fed. Reg. at 25,140-41.

These options suffer from a similar failure to consider other developments that are discussed in our comments related to EPA's section 7412(f)(2) and (d)(6) reviews. EPA has not explained why it has not evaluated the use of OGI, an LDSN, or options that EPA considered in 2007 when developing NSPS VVa. Instead, EPA has narrowly focused on tightening its Method 21 program and opting for a one-size-fits-all approach to a work practice as opposed to considering combined approaches that could more significantly reduce leaks. EPA must consider these developments when evaluating and establishing the BSER for new, reconstructed, and modified SOCMI process units.

EPA conducted a review of the requirements in NSPS VVa as they apply to equipment leaks at onshore natural gas processing plants in its November 15, 2021, proposal for the Crude Oil and Natural Gas source category.[248] As part of that review, EPA evaluated several monitoring techniques, and combinations of techniques, to determine if the BSER should be revised. Specifically, EPA evaluated the following options:

- Maintaining the NSPS VVa requirements with no changes;
- Bimonthly OGI monitoring on all equipment with the potential for VOC and methane emissions (no "in VOC service" definition);
- Quarterly OGI monitoring of all equipment with an annual Method 21 survey at 10,000 ppm; and
- Bimonthly OGI monitoring of all equipment with an annual Method 21 survey at 10,000 ppm.

Further, in developing the analysis of these options, EPA utilized data from actual leak surveys to establish leak frequencies and create a leak distribution across a range of concentrations to better estimate potential emissions and subsequent emissions reduction.[249] EPA ultimately proposed that bimonthly OGI monitoring of all equipment with the potential for VOC and methane emissions was the BSER.

In its review of NSPS VVa for SOCMI, by contrast, EPA relied on its 2011 equipment leak study to establish leak frequencies,[250] even though EPA has more recent information on leak programs from the chemical industry, including Method 21 monitoring from Flint Hills Resources in support of its approved LDSN AMEL.[251] EPA provides no explanation for its use of the 2011 study over more recent leak monitoring datasets in providing a basis for any of the analyses conducted. EPA must consider all relevant information when establishing the BSER for equipment leaks at SOCMI.

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[248] *See* 86 Fed. Reg. at 63,231-33.

[249] *See* EPA, Oil and Natural Gas Sector, Emission Standards for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, Background Technical Support Document for the Proposed New Source Performance Standards (NSPS) and Emissions Guidelines (EG), EPA-HQ-OAR-2021-0317-0166 (Oct. 2021).

[250] *See* 2011 Equipment Leaks Memo, *supra*.

[251] *See* Meta Inspections 2013 thru 2019, EPA-HQ-OAR-2021-0299-0012 (posted Oct. 13, 2021).

Next, EPA's failure to consider OGI is also erroneous considering EPA has established an Alternative Work Practice at 40 CFR 60.18(g)-(i) that allows sources subject to NSPS VV and NSPS VVa to conduct bimonthly OGI monitoring with annual Method 21 surveys at 500 ppm as an alternative to conducting Method 21 monitoring at the leak definitions and frequencies in those subparts. At a minimum, EPA should evaluate whether this alternative work practice now represents the BSER for NSPS VVb.

Finally, EPA's focus on lowering the leak definition for valves from 500 ppm to 100 ppm is inconsistent with recent EPA focus on targeting large emissions sources. In its rulemaking for the oil and gas industry, EPA placed specific significance on advancing leak detection requirements to target large leaks faster. However, in its review of NSPS VVa, EPA seems focused on reducing a small population of small leaks by lowering the leak definition for valves from 500 ppm to 100 ppm. In fact, EPA's analysis demonstrates this proposed change only results in reducing 0.64 tpy of VOC emissions per affected facility beyond the baseline.[252] However, if EPA evaluated the facility-level leak inspection data it has available, it would show that leaks between 100 ppm and 500 ppm are not very common, and that average leak rates are generally much greater than 10,000 ppm. For this reason, in addition to strengthening the standards as it has proposed, EPA should evaluate the use of additional technology, such as low-emission valves and valve packing and connectors less likely to leak, in order to prevent the presence of these large emissions.

As discussed above in comments related to EPA's section 7412(f)(2) and 7412(d)(6) review, EPA has access to at least one data set containing leak inspection results for nearly 3,000 components at a chemical manufacturing facility.[253] Of these results, the average Method 21 reading is over 25,000 ppm, with the minimum reading for valves at 747 ppm and minimum reading for connectors at 1,000 ppm. This data underscores the importance of entirely preventing significant leaks (as well as quickly identifying and remediating others). Accordingly, EPA should fully evaluate the emission reductions that could be achieved through a requirement to use low-emission valves, valve packings, and connectors that are less likely to leak on all new installations and all repairs above a specified threshold. This evaluation would allow EPA to take action on preventing emissions from occurring at these high rates and potentially result in the determination that a combined program of low-emissions technology with regular Method 21 monitoring and leak repairs is the BSER for SOCMI equipment leaks.

For these reasons, EPA must re-evaluate the developments in equipment leak work practices and establish a BSER that reflects the best system.

2. EPA Must Propose Connector Monitoring Requirements in NSPS VVa.

In its reconsideration of the connector monitoring requirements at 40 CFR 60.482-11a, EPA has chosen to entirely remove connector monitoring from NSPS VVa and repropose connector monitoring in NSPS VVb. The only justification that EPA provides for this change is

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[252] *See* 88 Fed. Reg. at 25,141.

[253] *See* Summary Tables of Industry OGI-M21 Comparison Data – for EPA – May 2019, attached to EPA-HQ-OAR-2021-0317-0041 (posted Nov. 15, 2021).

an agreement with Petitioners that it had not included those requirements in the November 7, 2006, proposal. EPA cannot remove the monitoring requirements without justification, especially since those same requirements are then proposed in the new subpart NSPS VVb. Further, EPA must justify why it is not appropriate to lift the stay and require connector monitoring at sources subject to NSPS VVa from this point forward.

First, EPA must propose and provide opportunity for comment on requiring connector monitoring at sources subject to NSPS VVa. The basis of the reconsideration was a lack of notice and comment, and EPA is currently in the position to provide an opportunity for comment on those requirements yet fails to do so with no explanation.

Second, EPA found connector monitoring as the "best system of emission reduction" (called "best demonstrated technology" in the November 16, 2007, preamble), and EPA has not explained why that determination was inappropriate or no longer valid. In EPA's analysis supporting the final NSPS VVa, it found that the promulgated connector monitoring requirements were: (1) common practice at many chemical manufacturing facilities, including through regulations such as HON, MON, Ethylene MACT, and the Generic MACT (40 CFR part 63, subpart UU), (2) resulted in greater emission reductions (230 tons VOC per year) than the changes EPA implemented for pumps and valves (94 tons VOC per year) in NSPS VVa, and (3) were achieved at a cost $2,500 per ton of VOC reduced.[254] EPA must justify why those additional emissions reductions for source subject to NSPS VVa are no longer appropriate before simply removing the requirements in their entirety.

Third, EPA proposes to include the exact same connector monitoring requirements in NSPS VVb, and therefore continues to recognize that these represent the BSER for connector leaks. EPA must justify why the same requirements it is proposing to remove from NSPS VVa are only appropriate for NSPS VVb.

Fourth, sources will remain subject to NSPS VVa until such time as reconstruction or modification occurs. Therefore, maintaining environmental protection is critical within NSPS VVa, including requiring connector monitoring. It is true that EPA has not acted on the reconsideration of NSPS VVa since 2007, except to stay certain requirements, including connector monitoring. EPA can and must lift the stay as it relates to connector monitoring in 40 CFR 60.482-11a and require compliance with that section from that date forward. This would ensure the critical (and cost-effective) environmental protections are implemented, while avoiding concerns of retroactive application of standards. EPA could do this through providing language that the standards were stayed from June 2, 2008, until the date of the final rule, but are in effect moving forward.

For these reasons, EPA must lift the stay on connector monitoring in NSPS VVa and require compliance with those requirements from this point forward.

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[254] *See* 72 Fed. Reg. at 64,865.

3. The Proposed Definitions for Capital Expenditure Impermissibly Narrow the Reach of Modification Definition.

The EPA proposes a revised definition of capital expenditure for NSPS VVa and an entirely different definition for NSPS VVb. Both proposed definitions narrow the reach of modification and would result in the exclusion of certain process units from applicability to either subpart through modification, most notably with respect to the proposed NSPS VVb.

The term capital expenditure is defined in 40 CFR Part 60, Subpart A.[255] EPA included an alternative definition for capital expenditure as it relates to equipment leak standards in 1983 in response to comments that use of the subpart A definition would be difficult. The alternative definition uses replacement costs, rather than original costs and applies an inflation index to the replacement costs to approximate the original costs.[256] In determining the percent of replacement costs ("Y"), the equation defines a value for "X" as a set year minus the year of construction. EPA has proposed two definitions for "X" based on the construction date of the source in NSPS VVb. Both definitions are flawed.

For sources with a construction date after January 6, 1982, and before January 1, 2023, the EPA proposes a value for "X" of "2023 minus the year of construction". The main flaw with this definition is that the EPA has categorically exempted any process unit from ever becoming subject to NSPS VVb through modification if its date of construction is prior to January 6, 1982. Considering that EPA acknowledges that process units with construction dates in the 1940s are still in operation,[257] this error must be addressed in the final rule to not create a loophole exempting the oldest of these SOCMI process units from ever becoming subject to NSPS VVb through modification. As a simple matter, the EPA could revise the value for "X" to mean "2023 minus the year of construction" without the need to bookend this definition with specific dates, however, EPA should first evaluate more recent developments on the definition of "capital expenditure" inclusion in the final NSPS VVb.

The second proposed definition for "X" is presumably proposed to address the fact that, for sources constructed in the year 2023, "X" would provide a value of "zero", which results in an equation that cannot be solved. Notably, the EPA has addressed this same issue recently through specific changes to the definition of capital expenditure promulgated in the September 15, 2020, technical amendments to 40 CFR part 60, subpart OOOOa for equipment leaks at onshore natural gas processing plants. EPA must consider this definition in the context of the proposed NSPS VVb, as it provides a straight-forward calculation that does not result in calculation errors or impermissible exemptions.

In those amendments, the EPA revised the equation used to determine "Y" (the percent of replacement costs) to remove the variable "X" (and logarithmic function) and instead utilize a ratio based on the Consumer Price Indices (CPI) when discounting inflation. In that rule, the EPA

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[255] *See* 40 C.F.R. § 60.2.

[256] *See* Memorandum from Thomas W. Rhoads to Docket A-80-44, Re: Alternative Method for Determining Capital Expenditures, EPA-HQ-OAR-2017-0483-0028, (July 21, 1983).

[257] 88 Fed. Reg. at 25,141.

specifically defined "Y" as "the CPI of the date of construction divided by the most recently available CPI of the date of the project, or "CPI_N/CPI_{PD}.[258] At a minimum, the EPA must consider this calculation of "Y" when defining "capital expenditure" in NSPS VVb and discuss why the use of the CPI-based ratio is not appropriate for chemical manufacturing process units before finalizing the proposed definition with the appropriate revisions to close loopholes.

Similarly, the EPA proposes to revise the definition of capital expenditure in NSPS VVa to address two sets of sources: (1) sources that are new, reconstructed, or modified prior to November 16, 2007, and (2) sources that are new, reconstructed, or modified after November 16, 2007. EPA's revisions to the definition in NSPS VVa are in response to a petition for reconsideration. In both cases, the EPA has made significant errors in defining how sources would determine if modification has occurred and has gone beyond the issue with the definition that was raised for reconsideration.

When EPA promulgated NSPS VVa, it defined "X" as "2006 minus the year of construction."[259] Petitioners claimed applying this revision to physical or operational changes that occurred between November 7, 2006, and November 16, 2007, would retroactively trigger modification for those changes.[260] The Petitioners' concern was limited only to those physical and operational changes that occurred within the 12-month period of November 7, 2006, to November 16, 2007. Yet, the EPA's proposal would affect the determination of modifications for a much broader group of sources.

For sources constructed, reconstructed, or modified prior to November 16, 2007, the EPA proposes a value of "X" of "1982 minus the year of construction."[261] (We note the proposed regulatory text only defines "X" as a fixed value of "1982" for these same sources.)[262] For sources constructed, reconstructed, or modified after November 16, 2007, the EPA proposes a value for "X" of "2006 minus the year of construction". These two date classifications are inappropriate and not relevant to the issue raised by Petitioners for reconsideration.

As a general matter, it is inappropriate to include a definition for modification related to a date of construction, reconstruction, or modification that operates apart from the applicability of the individual subpart. For instance, a source that is constructed or reconstructed after the

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[258] 85 Fed. Reg. at 57,408.
[259] 72 Fed. Reg. at 64,884.
[260] American Chemistry Council, et al., *Petition for Reconsideration and Request for Stay of NSPS Subparts VV, VVa, GGG, GGGa*, EPA-HQ-OAR-2006-0699-0080 (Jan. 15, 2008); Rule on Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry; Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries, 72 Fed. Reg. 64,860 (Nov. 16, 2007).
[261] *See* 88 Fed. Reg. at 25,172.
[262] Memo from Eastern Research Group, Inc. (ERG) to EPA Re: Proposed Regulation Edits for 40 CFR Part 60 Subparts VV, VVa, and VVb: Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, EPA-HQ-OAR-2022-0730-0067 at 67 (March 2023).

applicability date of the subpart (November 7, 2006, for NSPS VVa) is automatically subject to the standards of that subpart and modification has no relevance unless a subpart with a later applicability date is promulgated. Next, a source is not defined as modified unless it undergoes a physical or operational change that results in an increase in emissions. For equipment leak standards, EPA further requires such a physical or operational change to result in a capital expenditure. A definition of capital expenditure that is reliant on the dates of "construction, reconstruction, or modification" is not relevant to and has no bearing on whether a source has been modified. Therefore, the EPA must redefine capital expenditure without specifying construction, reconstruction, or modification dates.

Instead, the EPA should seek to address the definition of capital expenditure as it applies to the subset of physical and operational changes that occurred specifically between November 7, 2006, and November 16, 2007. For those sources that would have utilized the capital expenditure equation in NSPS VV, it is appropriate to define the value of "X" as "1982 minus the year of construction" or simply cross-reference the capital expenditure definition at 40 CFR 60.481. The definition of capital expenditure as it relates to physical and operational changes that take place after November 16, 2007 (the promulgation date of NSPS VVa), was not under reconsideration and should remain as promulgated. Additionally, for purposes of clarity, the EPA should define "X" based on the dates of "physical or operational changes" regardless of the date of construction, reconstruction, or modification. Specifically, for physical or operational changes that take place after November 16, 2007, "X" should remain defined as "2006 minus the year of construction."

III. EPA MUST STRENGTHEN THE PROPOSED STANDARDS FOR FLARES

With respect to the many flares across the sources covered by the NESHAP and NSPS under the proposed rule, EPA has proposed certain long-needed improvements over existing standards. While Commenters support the improvement of existing standards as a general matter, there are a number of key revisions that EPA must make to the proposed standards—and standards that the agency opted not to update—in order to ensure that EPA is meeting its duties under sections 7412(d), 7412(f)(2), and 7411(b) of the Clean Air Act.

In making these comments with respect to the proposed flare standards, Commenters cite and incorporate by reference the more detailed comments that the Environmental Integrity Project (EIP) submitted on the proposed rule. Commenters summarize EIP's comments below.

A. EPA Must Revise the Standards for Flares in EtO Service to Protect Public Health, as Required by Section 7412(f)(2)

As provided below, EPA must update its proposed risk-based standards for HON flares in EtO service in several key ways to meet the agency's requirements under section 7412(f)(2). For further details on these comments, Commenters direct EPA to the comments submitted by EIP on the proposed rule's flare standards, which Commenters incorporate by reference.

1. EPA Arbitrarily and Unlawfully Assumes HON Sources Will Use Non-Flare Control Devices Instead of Flares to Reduce EtO from Process Vents and Tanks

Even though EPA proposes to allow HON sources to use either flares or non-flare control devices to control EtO from process vents and tanks, the agency arbitrarily and unlawfully—and with no substantial basis—assumes that HON sources will use non-flare control devices that reduce EtO by 99.9 percent instead of flares, which can only reduce EtO emissions by, at most, 98.6 percent.[263] EPA bases this assumption on a hypothesis that sources will use non-flare controls to comply with a proposed cap of 20 tpy EtO sent to flares. EPA reasons that "it is likely that given the flare cap, that [sic] HON facilities will not significantly use flares and likely they will be back-up control devices to thermal oxidizers to control ethylene oxide."[264] Similarly, EPA posits: "Although only a portion of the flare vent gas flow is needed to be diverted to a TO, it is more likely that the facility will divert all of the flow to a TO and use the flare as a back-up."[265]

EPA has no rational or substantial basis for this assumption. The agency's supposition that it is "likely" that sources will not use flares given the flare cap provides no rational or substantial basis for assuming 99.9 percent destruction of EtO from process vents and storage vessels.

Indeed, only two HON facilities are currently exceeding the agency's proposed 20 tpy EtO flare load limit,[266] but ten other HON facilities that are meeting the EtO flare cap would need to control EtO from process vents and tanks to reduce risk to acceptable levels.[267] Since these ten facilities are currently meeting the flare cap, they would—under EPA's proposal—be able to use flares to control some, or all, of the EtO from their process vents and tanks. Among these ten facilities that would be able to use flares to control EtO from process vents and tanks are two—Indorama's Port Neches plant and BASF's Geismar site—that are primarily driving the risk from process vents and tanks. EPA estimates that the process vents and storage vessels at the Port Neches plant emit 18 tpy of EtO and that these units at BASF's Geismar site emit 5 tpy of EtO.[268] On the other hand, Union Carbide's St. Charles and Seadrift facilities—the two facilities exceeding the proposed EtO flare cap—are the fourth and tenth highest HON emitters of EtO

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[263] *See* 88 Fed. Reg. at 25,119, Tbl. 4.

[264] Analysis of Control Options for Flares to Reduce Residual Risk of Ethylene Oxide in the SOCMI Source Category for Processes Subject to HON, EPA-HQ-OAR-2022-0730-0070 at 4 (March 2023).

[265] *Id.* at 5 n.1; *see also* 88 Fed. Reg. at 25,119 Tbl. 4 & n.1 ("Flares may also be used up to the flare load limit, though we do not expect this to occur given facilities would need to meet these more stringent control requirements after reaching the 20 tpy load limit.").

[266] *Id.* at 5.

[267] *See* Analysis of Control Options for Process Vents and Storage Vessels to Reduce Residual Risk of Ethylene Oxide in the SOCMI Source Category for Processes Subject to HON, EPA-HQ-OAR-2022-0730-0074 at 8, Table 2 (March 2023) [hereinafter HON Process Vent and Storage Vessel Risk Memo].

[268] *Id.* at 5, 8, Table 2.

from process vents and tanks (out of the 12 facilities that would need to control EtO from vents and tanks to reduce risk to acceptable levels), respectively emitting 1.46 and 0.41 tpy of EtO.[269]

As discussed above, EPA assumes that HON facilities will send all the EtO from their process vents and tanks to non-flare controls, such as thermal oxidizers, and only use flares as backup control devices. But a facility that already has flares installed—such as Indorama's Port Neches plant, which has four existing flares—may very well choose to use those existing flares to control part, or all, of the EtO from its vents and tanks.

EPA employs its assumption that HON sources will use non-flare controls to reduce EtO from vents and tanks by 99.9 percent in its conclusion that its proposed controls will reduce risk to acceptable levels.[270] But since this assumption is arbitrary and unsupported and sources could instead use flares that would reduce EtO by lower levels (resulting in higher EtO emissions than the agency assumes), EPA must require HON sources to use non-flare control devices that reduce EtO by 99.9 percent instead of flares, to reduce risk from process vents and tanks to an acceptable level—. If EPA were to allow sources to use flares to control EtO from these units, that would—in addition to being arbitrary and capricious—also violate section 7412(f) risk requirements, since it would mean that EPA is not reducing risk to an acceptable level and not providing an ample margin of safety to protect public health.

Requiring HON sources to use non-flare controls—and disallowing the use of flares—to control EtO from process vents and storage vessels would not result in additional costs beyond those that EPA has already predicted, since EPA's cost-effectiveness analysis assumed that all 12 HON facilities that need to control EtO from vents and tanks to reduce risk to acceptable levels would install thermal oxidizers.[271]

2. EPA Arbitrarily Proposes to Allow HON Sources, Unlike Neoprene Production Sources, to Use Flares to Reduce EtO from Process Vents and Tanks

As discussed above, EPA proposes to allow HON sources to use flares to control EtO from process vents and tanks. The agency assumes flares can reduce VOC HAPs by 98.6 (or 98) percent when complying with the NESHAP Subpart CC flare operating standards, which EPA proposes to require HON flares to comply with.

Unlike with its HON proposal, however, EPA (appropriately) proposes to require Neoprene Production sources to use non-flare controls that reduce the VOC HAP in question (chloroprene) by 99.9 percent.[272] If EPA were to finalize its proposal to allow HON sources to use flares to reduce EtO from process vents and storage vessels (and thus allow destruction efficiencies lower than 99.9 percent), this differing treatment of risk-driving HAPs from vents

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[269] *Id.* at 8, Table 2.

[270] *See* 88 Fed. Reg. at 25,119, Table 4.

[271] *See* HON Process Vent and Storage Vessel Risk Memo, *supra*, at 10 Tbl. 4.

[272] 88 Fed. Reg. at 25,118.

and tanks in HON and P&R I would render the agency's final rule arbitrary and capricious.[273] Thus, for this additional reason, EPA must require HON sources to use non-flare control devices that reduce EtO by 99.9 percent instead of flares.

3. EPA Must Strengthen its Proposed Requirements Regarding EtO from HON Flares

To achieve an acceptable level of risk from HON sources, EPA proposes to cap the amount of EtO that sources can send to all their flares combined at 20 tons in any consecutive 12-month period.[274] To ensure acceptable levels of risk and to ensure the levels of HAP destruction that EPA assumed when first promulgating NESHAP (as discussed below), Commenters urge EPA—instead of allowing the use of flares—to require all HON sources to use non-flare control devices to reduce EtO by 99.9 percent. If EPA were to allow the use of flares at HON sources, however, EPA must strengthen its proposed requirements regarding flares in EtO service—and in particular the monitoring requirements for compliance with the 20 tpy cap on EtO that a HON facility may send to its flares.

EPA proposes to require sources only to "keep monthly records of the quantity in tons of ethylene oxide sent to each flare . . . and include a description of the method used to estimate this quantity."[275] Leaving it completely up to HON sources to determine how to calculate the amount of EtO sent to their flares cannot ensure compliance with the flare EtO cap—and thus cannot ensure that risk is reduced to an acceptable level or that the standards provide an ample margin of safety to protect public health. Thus, EPA's proposed monitoring for the amount of EtO sent to flares is arbitrary and capricious and contrary to the Clean Air Act's section 7412(f) risk requirements. This proposed monitoring is also contrary to section 7414(a)(3), which provides: "The Administrator shall in the case of any…owner or operator of a major stationary source…require enhanced monitoring…"[276]

To ensure that risk from HON flares is reduced to an acceptable level and comply with the statute, EPA should require sources to calculate the amount of EtO sent to their flares through
(i) continuously measuring the flow rate of the waste gas to the flare using CEMS;
(ii) continuously measuring the EtO concentration in the waste gas, also by CEMS; and
(iii) using the data from (i) and (ii) to calculate the actual EtO mass that is sent to the flare over a given time period. This calculation can be done every minute if needed or on an hourly average basis, to provide an accurate mass estimate of the flared EtO.

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[273] *See Transactive Corp. v. United States*, 91 F.3d 232, 237 (D.C. Cir. 1996) ("A long line of precedent has established that an agency action is arbitrary when the agency offered insufficient reasons for treating similar situations differently.").
[274] 88 Fed. Reg. at 25,116.
[275] EPA, Proposed Regulation Edits for 40 CFR Part 63 Subparts F, G, H, and I: National Emission Standards for Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry, EPA-HQ-OAR-2022-0730-0068, Subpart F at 120-121 (Mar. 2023) (Proposed 40 C.F.R. § 63.108(p))[hereinafter Proposed Subpart F].
[276] 42 U.S.C. § 7414(a)(3).

4. EPA Must Require CEMS for Non-Flare Control Devices Used to Reduce EtO from HON Process Vents and Tanks and Used to Reduce Chloroprene from P&R I Process Vents, Tanks, and Wastewater

For non-flare control devices used to reduce EtO from HON process vents and tanks and used to reduce chloroprene from P&R I process vents, tanks, and wastewater, EPA allows a variety of parametric monitoring that cannot ensure that these devices are destroying the requisite 99.9 percent of EtO and chloroprene. Except for those sources that choose to use FTIR CEMS to determine compliance with the proposed 1 ppmv EtO and chloroprene concentration limits, EPA proposes that sources conduct a performance test every five years and, in the interim, comply with operating parameter limits established during the most recent test.[277]

Instead of allowing use of its proposed parametric monitoring, EPA must require CEMS to ensure 99.9 percent destruction of EtO and chloroprene. CEMS would far better ensure that HON and P&R I sources are destroying 99.9 percent of these HAPs. The use of CEMS would also supply data that would allow sources to more directly and promptly detect—and correct—problems with pollution controls. CEMS are both cost-reasonable and readily available and common, as EPA recognizes by proposing to allow HON and P&R I sources to use FTIR CEMS for their control devices.

If EPA did not require CEMS, this would mean that HON sources would not reduce EtO from process vents and tanks—and P&R I sources would not reduce chloroprene from process vents, tanks, and wastewater—by the 99.9 percent that EPA assumes in its risk analysis. Thus, contrary to section 7412(f)'s risk requirements, risk would remain at unacceptable levels (at least above EPA's presumptive limit on MIR of 100 in 1 million) and the standards would not provide an ample margin of safety to protect public health after implementation of EPA's proposed controls. Further, EPA's failure to consider the above-discussed problems renders its proposed monitoring and testing provisions—and its proposed risk analysis—arbitrary and capricious.

In addition to requiring the use of CEMS, EPA should require the collected data to be promptly posted on the internet and used for automatic reporting of violations, including automatic posting of the violation on EPA's website. This would provide public transparency around sources' emissions of dangerous pollutants while also encouraging sources to swiftly fix any issue with their emission control equipment. Transparency and accountability are best accomplished through prompt public posting of data and automatic reporting and public notice of violations.

At the very least EPA should think through the types of control devices that could be used and require certain minimums for parametric monitoring—including specific parameters to be monitored depending on the device, at least hourly parametric operating limits, and a

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[277] *Id.* at 149 (Proposed 40 C.F.R. § 63.124(b)); EPA, Proposed Regulation Edits for 40 CFR Part 63 Subpart U: National Emission Standards for Hazardous Air Pollutant Emissions: Group I Polymers and Resins, EPA-HQ-OAR-2022-0730-0066 at 302 (Mar. 2023) (Proposed 40 C.F.R. § 63.510(b)) [hereinafter Proposed Subpart U].

requirement to obtain approval for the parametric monitoring from both the relevant state and EPA before that monitoring can be used.

B. EPA Correctly Proposes to Strengthen Flare Standards for HON and P&R I Sources, But Improperly Fails to Strengthen Flare Standards for P&R II Sources, Proposed NSPS Subpart VVb, and Existing NSPS Subparts

The currently applicable NESHAP and NSPS only require flares at HON, SOCMI, and P&R I facilities to meet the inadequate, decades-old flare requirements from the 40 C.F.R. Part 60 and Part 63 general provisions. EPA recognizes this for HON and P&R I facilities, as well as for SOCMI facilities subject to NSPS Subparts III, NNN, and RRR.[278] When EPA first promulgated the NESHAP for HON and P&R I facilities and the SOCMI NSPS, the general provisions themselves required the agency to establish monitoring for all the flare operating limits from the general provisions.[279] EPA, however, failed to do so for the general provisions' operating limits for net heating value and flare tip velocity.

As discussed above, instead of allowing the use of flares, EPA must instead require sources to use non-flare control devices, such as thermal oxidizers, that can more consistently and reliably destroy VOC HAPs. But if EPA were to allow the use of flares, the agency properly proposes to require HON and P&R I flares—as well as flares that will be subject to new SOCMI NSPS Subparts IIIa, NNNa, and RRRa—to meet the detailed and more modern flare monitoring and operational requirements applicable to petroleum refineries under NESHAP Subpart CC, which are a vast improvement over the general flare provisions.[280] EPA, however, has unlawfully and arbitrarily failed to require sources that will be subject to new NSPS Subpart VVb, as well as sources subject to the existing SOCMI NSPS, to comply with these updated flare standards.

Several sections of the Clean Air Act —sections 7411(a)(1), 7411(b)(1)(B), 7412(d)(2)-(3), and 7412(d)(6)—compel EPA to strengthen the flare standards here, including the standards for flares that will be subject to NSPS Subpart VVb and flares subject to the previously-promulgated SOCMI NSPS. The NESHAP and NSPS general provisions additionally require EPA to correct its previous failure to establish monitoring for the general provisions' net heating value and flare tip velocity operating limits. Instead of trying to bolster the general provisions, however, including the specific flare monitoring requirements from Subpart CC is the only lawful and rational choice.

First, section 7412(d)(2)-(3) compels EPA to update the NESHAP for HON and P&R I flares to ensure that these facilities destroy at least 98 percent of HAPs in keeping with section 7412's stringency requirements, sections 7411(a)(1) and 7411(b)—and also section 7411(h)(1)—compel EPA to update the NSPS applicable to SOCMI facilities to ensure that flares achieve the emissions reductions required by section 7411 of the Act.

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[278] 88 Fed. Reg. at 25,133, 25,147.

[279] *See* 40 C.F.R. §§ 60.18(d), 63.11(b)(1) (requiring each applicable subpart to "provide provisions stating how owners or operators using flares shall monitor these control devices").

[280] *See* 88 Fed. Reg. at 25,148.

As shown by the numerous studies that EPA relies on, the general NSPS flare standards from 40 C.F.R. section 60.18(b)-(f) cannot ensure the "degree of emission limitation achievable through the application of the best system of emission reduction which . . . the Administrator determine[d] has been adequately demonstrated," as they must under sections 7411(a)(1) and 7411(b), because they cannot ensure the destruction of at least 98 percent of VOCs. Likewise, the operating requirements from section 60.18 do not "reflect[] the best technological system of continuous emission reduction which . . . the Administrator determine[d] has been adequately demonstrated" under section 7411(h)(1) for the same reason. Thus, sections 7411(a)(1) and 7411(b)—as well as section 7411(h)(1)—mandate that EPA update its NSPS for SOCMI facilities to require flares to at least meet the detailed flare monitoring and operational requirements from NESHAP Subpart CC—so that flares achieve the 98 percent destruction efficiencies that EPA previously determined were BSER.

EPA, however, unlawfully and arbitrarily fails to update—or even consider updating—the flare standards for SOCMI sources that will be subject to the new NSPS Subpart VVb or sources subject to the existing SOCMI NSPS (Subparts VV, VVa, III, NNN, and RRR), instead proposing that flares from these subparts will only need to comply with the general standards from 40 C.F.R. section 60.18.[281] Just as Clean Air Act sections 7411(a)(1) and 7411(b)—and section 7411(h)(1)—mandate that EPA update the flare standards for new Subparts IIIa, NNNa, and RRRa to achieve 98 percent destruction efficiencies, which EPA previously determined was BSER, these statutory provisions also require EPA to update the flare standards to ensure 98 percent destruction for new Subpart VVb and existing Subparts VV, VVa, III, NNN, and RRR. Further, EPA's differing treatment of flares from these subparts and failure to even consider requiring updated flare standards for Subparts VV, VVa, VVb, III, NNN, and RRR render its proposal arbitrary and capricious.

Second, although EPA does not propose to rely on section 7412(d)(6) in updating the HON and P&R I flare standards—relying instead on section 7412(d)(2)-(3)—it is also "necessary" to ensure that flares will achieve 98 percent destruction. The statute plainly states that EPA "shall . . . revise" previously-promulgated standards when "necessary."[282] Where the current flare standards cannot ensure that sources are achieving HAP reductions to the levels required by section 7412(d)(2)-(3), EPA must update the flare NESHAP to conform them to section 7412's basic requirements.

For similar reasons, it is also "appropriate" under section 7411(b)(1)(B) to strengthen the NSPS for flares at SOCMI facilities, including Subparts VV, VVa, VVb, III, NNN, and RRR. Section 7411 does not limit EPA's NSPS eight-year review obligations to only promulgating new subparts for sources that will trigger NSPS applicability after the publication of a proposed or final rule from EPA—and does not allow EPA to avoid revising previously promulgated NSPS. This is especially true in situations where, as here, the existing NSPS obviously cannot ensure

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[281] *See, e.g.*, Proposed Regulation Edits for 40 CFR Part 60 Subparts VV, VVa, and VVb: Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, EPA-HQ-OAR-2022-0730-0067, Subpart VVb at 27 (Mar. 2023) (Proposed 40 C.F.R. § 60.482-10b(d)).

[282] 42 U.S.C § 7412(d)(6); *see also LEAN*, 955 F.3d at 1098.

the levels of pollution reduction that EPA previously determined—when promulgating the existing NSPS—were needed to comply with section 7411's stringency requirements.

Third, the general standards themselves require EPA to make these updates. Specifically, the NESHAP and NSPS general flare provisions include four performance requirements that were originally established with the intent of ensuring that flares operate at 98 percent destruction efficiency.[283] But, when read together with the general provisions, the current monitoring requirements for HON, SOCMI, and P&R I sources only account for two of these performance requirements: the presence of a pilot flame and prohibition on visible emissions.[284] The general standards contain no monitoring requirements for net heating value or flare tip velocity. This failure violates the requirements from the NESHAP and NSPS general provisions that each applicable subpart "provide provisions stating how owners or operators using flares shall monitor these control devices."[285]

By contrast, the improved flare standards from NESHAP Subpart CC not only update each of the operational standards in accordance with EPA's recent studies of the issues, but they also include monitoring requirements for all of them.[286] 40 C.F.R. sections 60.18(d) and 63.11(b)(1) require EPA to strengthen the current flare standards here to address their lack of monitoring requirements. Adopting at least the operational and monitoring requirements from Subpart CC is the only lawful and rational way to comply with this mandate.

C. EPA Must Not Allow Visible Emissions from Flares beyond Five Minutes Every Two Hours

EPA solicits comment on the proposed allowable period for visible emissions from flares: i.e., 5 minutes every 2 hours.[287] While EPA is correct that "smoking flares can contribute significantly to emissions of [$PM_{2.5}$]," the agency is incorrect in its apparent assumption that there is just one incipient smoke point that also results in good combustion.

In addition to the detailed reasoning provided in EIP's comments, increasing the visible emissions limit would be contrary to the statute. EPA long ago determined that 5 minutes of visible emissions every 2 hours reflects MACT and BSER under Clean Air Act sections 7412 and 7411. These sections of the Act require EPA to establish and, every eight years, revise technology-based standards, and it would flout the purpose of these sections to now increase the visible emissions limit. The purpose of eight-year reviews under section 7412(d)(6) is to revise NESHAP to conform them to the Act's requirements and to make them more stringent if sources are achieving lower emissions. Allowing more than 5 minutes of visible emissions every 2 hours would contravene these stringency requirements, since flares can clearly comply—as they have been for decades—with the current limit on visible emissions.

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[283] *See* 40 C.F.R. §§ 60.18(c)(1)-(4), 63.11(b)(4)-(7).

[284] *See* 40 C.F.R. §§ 60.18(f)(1)-(2), 60.485a(g), 60.664(d), 63.11(b)(4), 63.116(a), 63.504(c).

[285] *See id* §§ 60.18(d), 63.11(b)(1).

[286] As discussed below, Subpart CC's use of Method 22 cannot ensure compliance with that subpart's visible emissions limit for flares.

[287] 88 Fed. Reg. at 25,149.

D. EPA Must Revise the Proposed Monitoring and Testing Provisions to Ensure that Flares are Meeting Necessary Destruction Efficiencies.

EPA's proposed rule contains several monitoring and/or testing provisions that are arbitrary and capricious and contrary to the Clean Air Act. None of these provisions can ensure that flares and non-flare controls are destroying air toxics and other VOCs to the requisite level on a continuous basis. As provided in further detail in EIP's comments, EPA must take action to address these provisions.

First, EPA proposes to allow flares here to, like at refineries, avoid continuous direct compositional or net heating value monitoring—used to calculate the net heating value of combustion zone gas—if facilities demonstrate that their gas streams have "consistent composition (or a fixed minimum net heating value)."[288] EPA must not allow HON, SOCMI, and P&R facilities to use a constant net heating value established under 40 C.F.R. section 63.670(j)(6). Instead, to capture the variability of vapor streams' net heating values, EPA must require direct compositional or net heating value monitoring at these facilities in keeping with the methods from section 63.670(j)(1)-(4). Unlike EPA's proposal here, section 63.670(j)(1)-(4) requires continuous (*i.e.*, at least every 15 minutes) measurement of component concentration, continuous monitoring of net heating value of gas streams, or collecting grab samples for compositional analysis at least once every eight hours.

Second, EPA must contemplate unconventional flares in establishing operating limits and monitoring for HON and P&R I sources. EPA's proposed rule does not recognize the many variants of flares that can be present at HON, SOCMI, and P&R facilities. In addition to open-flame stack flares and pressure-assisted multi-point flares, which EPA proposes operating limits and monitoring for, these facilities can have other types of flare designs, including so-called enclosed flares, which provide some degree of shielding from weather but have complex burner arrangements, and vertically stacked burner arrays inside an enclosure. The combustion dynamics of these specialized designs are even more complex than open-flame stack flares, and extending EPA's proposed operating requirements for open-flame stack flares (or pressure-

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[288] Proposed Regulation Edits for 40 CFR Part 60 Subparts III and IIIa: Standards of Performance for Volatile Organic Compound Emissions From the Synthetic Organic Chemical Manufacturing Industry Air Oxidation Unit Processes, EPA-HQ-OAR-2022-0730-0064, Subpart IIIa at 29 (Mar. 2023) (Proposed 40 C.F.R. §§ 60.619a(a) (requiring flares to meet requirements from 40 C.F.R. §§ 63.670-71 other than certain limited exceptions); Proposed Regulation Edits for 40 CFR Part 60 Subparts NNN and NNNa: Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry Distillation Operations, EPA HQ-OAR-2022-0730-0065, Subpart NNNa at 37, (Mar. 2023) (Proposed 40 CFR § 60.669a(a) (same)); Proposed Regulation Edits for 40 CFR Part 60 Subparts RRR and RRRa: Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry Reactor Processes, EPA-HQ-OAR-2022-0730-0063, Subpart RRRa at 39 (Mar. 2023) (Proposed 40 CFR § 60.709a(a) (same));, Proposed Subpart F, *supra*, at 107-108 (Proposed 40 CFR § 63.108(a) (same));, Proposed Subpart U, *supra,* at 292 (Proposed 40 CFR § 63.508(a) (same)); 88 Fed. Reg. at 25,152 (referring to § 63.670(j)(6) for proposed requirements for flares "in dedicated service").

assisted multi-point flares) to these other complex flare geometries and operating conditions could be problematic. The presumed destruction efficiencies from such designs are not readily verifiable without considerable numerical modeling and can rarely be tested under conditions of actual use. Thus, EPA must contemplate and establish operating limits and monitoring for these unconventional flares to ensure the 98 percent destruction efficiency that the agency long ago established as MACT for flares.

Finally, EPA must strengthen the monitoring requirements for visible emissions. EPA's proposed monitoring cannot ensure compliance with the continuously applicable visible emissions limit for flares. As noted above, EPA proposes to generally require HON, SOCMI, and P&R flares to comply with the refinery flare requirements from 40 C.F.R. Part 63, Subpart CC. The problem is that Subpart CC offers several options for monitoring, but only one of these—video surveillance—can ensure continuous compliance with the visible emissions limit, which applies at all times. To remedy this, EPA should require video surveillance of all flares, with infrared (or some other means) to detect visible emissions after dark and in adverse weather conditions.

E. EPA Must Revise the Proposed Monitoring and Testing Provisions to Ensure that Flares are Meeting Necessary Destruction Efficiencies.

EPA's proposed rule contains several monitoring and/or testing provisions that are arbitrary and capricious and contrary to the Clean Air Act. None of these provisions can ensure that flares and non-flare controls are destroying air toxics and other VOCs to the requisite level on a continuous basis. As provided in further detail in EIP's comments, EPA must take action to address these provisions.

First, EPA proposes to allow flares here to, like at refineries, avoid continuous direct compositional or net heating value monitoring—used to calculate the net heating value of combustion zone gas—if facilities demonstrate that their gas streams have "consistent composition (or a fixed minimum net heating value)."[289] EPA must not allow HON, SOCMI, and

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[289] Proposed Regulation Edits for 40 CFR Part 60 Subparts III and IIIa: Standards of Performance for Volatile Organic Compound Emissions From the Synthetic Organic Chemical Manufacturing Industry Air Oxidation Unit Processes, EPA-HQ-OAR-2022-0730-0064, Subpart IIIa at 29 (Mar. 2023) (Proposed 40 C.F.R. § 60.619a(a) (requiring flares to meet requirements from 40 C.F.R. §§ 63.670-71 other than certain limited exceptions); Proposed Regulation Edits for 40 CFR Part 60 Subparts NNN and NNNa: Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry Distillation Operations, EPA HQ-OAR-2022-0730-0065, Subpart NNNa at 37 (Mar. 2023) (Proposed 40 CFR § 60.669a(a) (same)); Proposed Regulation Edits for 40 CFR Part 60 Subparts RRR and RRRa: Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry Reactor Processes, EPA-HQ-OAR-2022-0730-0063, Subpart RRRa at 39 (Mar. 2023) (Proposed 40 CFR § 60.709a(a) (same)); Proposed Subpart F, *supra*, at 107-108 (Proposed 40 CFR § 63.108(a) (same)); Proposed Subpart U, *supra,* at 292 (Proposed 40 CFR § 63.508(a) (same)); 88 Fed. Reg. at 25,152 (referring to § 63.670(j)(6) for proposed requirements for flares "in dedicated service").

P&R facilities to use a constant net heating value established under 40 C.F.R. section 63.670(j)(6). Instead, to capture the variability of vapor streams' net heating values, EPA must require direct compositional or net heating value monitoring at these facilities in keeping with the methods from section 63.670(j)(1)-(4). Unlike EPA's proposal here, section 63.670(j)(1)-(4) requires continuous (*i.e.*, at least every 15 minutes) measurement of component concentration, continuous monitoring of net heating value of gas streams, or collecting grab samples for compositional analysis at least once every eight hours.

Second, EPA must contemplate unconventional flares in establishing operating limits and monitoring for HON and P&R I sources. The proposed rule does not recognize the many variants of flares that can be present at HON, SOCMI, and P&R facilities. In addition to open-flame stack flares and pressure-assisted multi-point flares, for which EPA proposes operating limits and monitoring, HON and P&R I sources can have other types of flare designs, including so-called enclosed flares, which provide some degree of shielding from weather but have complex burner arrangements, and vertically stacked burner arrays inside an enclosure. The combustion dynamics of these specialized designs are even more complex than open-flame stack flares, and extending EPA's proposed operating requirements to these other complex flare geometries and operating conditions could be problematic. The presumed destruction efficiencies from such designs are not readily verifiable without considerable numerical modeling and can rarely be tested under conditions of actual use. Thus, EPA must contemplate and establish operating limits and monitoring for these unconventional flares to ensure the 98-percent destruction efficiency that the agency long ago established as MACT for flares.

Finally, EPA must strengthen the monitoring requirements for visible emissions. EPA's proposed monitoring cannot ensure compliance with the continuously applicable visible emissions limit for flares. As noted above, EPA proposes to generally require HON, SOCMI, and P&R flares to comply with the refinery flare requirements from 40 C.F.R. Part 63, Subpart CC. The problem is that Subpart CC offers several options for monitoring, but only one of these—video surveillance—can ensure continuous compliance with the visible emissions limit, which applies at all times. To remedy this, EPA should require video surveillance of all flares, with infrared (or some other means) to detect visible emissions after dark and in adverse weather conditions.

F. EPA Must Take into Account Non-Flare Control Devices.

It is "necessary" under section 7412(d)(6) for EPA to require HON and P&R sources to replace flares with thermal oxidizers or other enclosed control devices that can achieve 99.9 percent destruction of HAPs—or, at the least, require HON and P&R sources to reduce flaring through use of storage or other means. As discussed above, EPA finds that flares can destroy 98.6 percent of organic HAPs, but the agency also recognizes that HON and P&R I sources use other control devices, such as thermal oxidizers, that better destroy organic HAPs—at destruction efficiencies of 99.9 percent or greater.[290]

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[290] *See, e.g.*, 88 Fed. Reg. at 25,119, Tbl. 4, 25,120, Tbl. 6 (proposed risk-based controls for process vents and tanks).

HON and P&R I sources' use of these non-flare control devices that destroy more organic HAPs is a "development" in "practices, processes, and control technologies" under section 7412(d)(6) that make it necessary to require sources to use these non-flare devices instead of flares. EPA's failure to even consider these developments and consider requiring sources to replace, or reduce their use of, flares renders the agency's proposal unlawful under section 7412(d)(6), as well as rendering the proposal arbitrary and capricious.

Similarly, there have been developments in storage practices and processes that make it necessary under section 7412(d)(6) to require HON and P&R I sources to reduce flaring. In particular, EPA should require increased use of flare gas recovery and the storage of waste gases so that the recycling of the waste gas via recovery is maximized and flaring minimized. The storage of waste gases to reduce flaring is technically feasible: the South Coast Air Quality Management District is ("SCAQMD") considering revising its requirements for refinery flares to require vapor storage or other options to reduce flaring.[291] At least 20 stand-alone vapor storage tanks already operate in the SCAQMD.[292]

For the reasons provided here and in further detail in EIP's comments, Commenters urge EPA to make these important revisions to the proposed flare standards.

IV. EPA MUST REMOVE ALL MALFUNCTION LOOPHOLES FROM THE PROPOSED RULE

Commenters strongly support EPA's proposal to remove the SSM exemption from the HON and P&R II standards and the malfunction affirmative defense provisions from the P&R I standards.[293] These removals are "necessary" revisions pursuant to section 7412(d)(6) and required to protect public health with an ample margin of safety under section 7412(f)(2). The SSM exemption and malfunction affirmative defense are also unlawful, as the D.C. Circuit has found in 2008 and 2014, and which EPA has recognized in other rulemakings.[294]

For the same reasons, EPA must not finalize the work practice standards it has proposed for HON and P&R I that would allow one or two uncontrolled releases every three years from PRDs and from smoking flares during periods of malfunction.[295] In spite of EPA's admission that PRD releases are responsible for a large amount of risk from EtO and chloroprene emissions and accordingly opted not to allow the loopholes in its risk-based standards, EPA erroneously concludes that the these new malfunction loopholes are reasonable for the majority of HON and P&R I sources. Commenters urge EPA to remove these loopholes in the final rule.

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[291] *See* SCAQMD Proposed Amended Rule 1118, Working Group Meeting #2 Presentation at 7, 11-22 (Oct. 26, 2022), http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1118.

[292] *Id.* at 18.

[293] *See* 88 Fed. Reg. at 25,167-68, 25,170.

[294] *See Sierra Club*, 551 F.3d at 1028; *Natural Res. Def. Council v. EPA*, 749 F.3d 1055, 1063 (D.C. Cir. 2014).

[295] *See* 88 Fed. Reg. at 25,155-58, 25,150.

A. EPA Appropriately Proposes to Remove the SSM Exemption and Affirmative Defense

The Clean Air Act directs EPA to set emission standards for all HAPs emitted by a source category, and such emission standards must apply continuously.[296] The existing emission standards allow a general exemption for emissions during periods of startup, shutdown, and malfunction ("SSM"). During such periods, EPA only required reporting and minimization measures. [297] EPA did not set any emission standards limiting or requiring controls on such emissions. This general exemption is inconsistent with the Act's mandate that standards apply continuously, and as such, the D.C. Circuit struck it down in 2008, in *Sierra Club*.[298]

This court similarly held that civil penalties for violations must also apply at all times under the Act. The statute prohibits EPA from removing the potential for civil penalties from an emission release that would otherwise warrant such penalties as a violation of an emission standard.[299] The D.C. Circuit so held in striking down as unlawful the "affirmative defense" to civil penalties that EPA had put into the cement kilns rule.[300]

In the boilers rule, EPA appropriately denied industry's request for a malfunction exemption.[301] When industry challenged this decision, the D.C. Circuit recognized that EPA had appropriately refused to set a malfunction exemption, and instead upheld EPA's determination that "case-by-case" enforcement discretion is the only appropriate way to handle truly unavoidable malfunctions.[302] As the court explained, "exempt[ing] periods of malfunction entirely from the application of the emissions standards . . . is [not] consistent with the Agency's enabling statutes."[303] Furthermore, the Act requires "that there must be continuous section 7412-compliant standards"; "EPA has no power under the CAA to create a defense to civil liability"; and the law directs that "deciding whether penalties are 'appropriate' in a given private civil suit is a job for the courts, not for EPA."[304]

The court affirmed that malfunction exemptions are not allowed or appropriate under the Act for boilers or commercial incinerators (CISWI), finding that "EPA had no option to exclude

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[296] 42 U.S.C. §§ 7412(d), (f), 7602(k); *Nat'l Lime Ass'n v. EPA*, 233 F.3d at 641-42; *Sierra Club* at 1028.

[297] *See* 88 Fed. Reg. at 25,167-68, 25,170.

[298] *Sierra Club*, 551 F.3d at 1028.

[299] *See* 42 U.S.C. §§ 7604(a), 7413(e).

[300] *Nat. Res. Def. Council v. EPA*, 749 F.3d 1055 (D.C. Cir. 2014).

[301] National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, Final Rule, 76 Fed. Reg. 15,608, 15,611, 15,613 (Mar. 2011).

[302] *U.S. Sugar Corp. v. EPA*, 830 F.3d at 579, 598-99 (D.C. Cir. 2016).

[303] *Id.* at 607.

[304] *Id.* at 599, 607-08 (quoting *Sierra Club*, 551 F.3d at 1027; *NRDC*, 749 F.3d at 1063; *City of Arlington v. FCC*, 133 S. Ct. 1863, 1871 (2013)).

these . . . periods" from the standards under the language of section 7412(d)(2)-(3).[305] This is because the "'best controlled similar source' . . . is unlikely to be a malfunctioning source, and the EPA is bound to enact a standard in keeping with emission limits achieved by that 'best controlled similar source.'"[306] The court further rejected industry's request for a different standard, in the form of a work practice standard, for malfunction periods due in part to the difficulty of creating a standard "that could apply equally to the wide range of possible . . . malfunctions, ranging from an explosion to minor mechanical defects. Any possible standard is likely to be hopelessly generic to govern such a wide array of circumstances."[307]

Since the 2008 D.C. Circuit decision, EPA itself has repeatedly acknowledged that a malfunction exemption is unlawful and inappropriate. For example, in recent years, the agency has repeatedly recognized that it must set continuous section 7412-compliant standards, remove SSMSSM exemptions, and, after the D.C. Circuit also struck down this new regulatory attempt, it has recognized that it must remove and not establish an affirmative defense to civil penalty liability.[308] EPA also has acknowledged that an affirmative defense is unlawful because it is up to the courts, not EPA, to determine whether an uncontrolled emission release warrants a penalty.[309] In the rulemaking records accompanying these actions, EPA has elaborated a clear policy that makes no room for malfunction exemptions.

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[305] "If anything, then, the statutory language on its face prevents the EPA from taking into account the effect of potential malfunctions when setting MACT emission standards. At the very least, the language permits the EPA to ignore malfunctions in its standard-setting and account for them instead through its regulatory discretion. Our *Sierra Club III* decision confirms this." *U.S. Sugar*, 830 F.3d at 608 (citing *Sierra Club*, 551 F.3d at 1027-28).

[306] *Id.* (citing 42 U.S.C. § 7412(d)(3)).

[307] *Id.*

[308] *See, e.g.*, Removal of Title V Emergency Affirmative Defense Provisions From State Operating Permit Programs and Federal Operating Permit Program, Proposed Rule, 81 Fed. Reg. 38,645 (June 14, 2016), EPA-HQ-OAR-2016-0186-0001; Final SSM SIP Call Rule, 80 Fed. Reg. 33,840 (June 12, 2015); Proposed Rule, 79 Fed. Reg. at 36,912, 36,942 (June 30, 2014) (citing *Sierra Club*, 551 F.3d 1019); Final Rule, 80 Fed. Reg. 75,178, 75,184 (Dec. 1, 2015); Letter from EPA OAR Ass't Adm'r Janet McCabe to Earthjustice (Nov. 19, 2014) (granting 2014 petition and supplement seeking removal of "affirmative defense" from multiple rules and stating that EPA would "continue the ongoing process of removing affirmative defenses from the remaining rules . . . as expeditiously as practicable"); Aerospace Final Rule, 80 Fed. Reg. 76,152, 76,157 (Dec. 7, 2015) ("We are finalizing, as proposed, changes to the Aerospace NESHAP to eliminate the SSM exemption. Consistent with *Sierra Club v. EPA* 551 F. 3d 1019 (D.C. Cir. 2008), the EPA has established standards in this rule that apply at all times."); Mineral Wool and Wool Fiberglass Final Rule, 80 Fed. Reg. 45,280, 45,286, 45,292 (July 29, 2015) ("We are finalizing, as proposed, amendments to the Mineral Wool Production NESHAP to eliminate the SSM exemption.").

[309] *See, e.g.*, EPA's Response to Comments, EPA-HQ-OAR-2010-0682-0802 at 320, (citing *Natural Res. Def. Council v. EPA*, 749 F.3d at 1063).

EPA's recognition of this policy in the boilers rule is one important example. There, EPA refused to create either an SSM exemption or a malfunction "standard," and this decision was affirmed by the D.C. Circuit.

In its brief explaining why it removed the SSM exemption from the boilers rule, and rejected industry's request for special malfunction "standards," EPA stated that:

> Virtually no malfunction is foreseeable in terms of its nature, timing or effect on emission levels and no operator knows when or if a malfunction could recur. Moreover, it is difficult to apply the concept of a best performing source to sources that are malfunctioning, since the best performing sources are likely to operate in a manner that avoids malfunctions . . . . EPA can use its enforcement discretion to address exceedances of emission limits that may be caused by such uncertain, unpredictable events, on a case-by-case basis.[310]

A case-by-case approach also better serves congressional intent, for it will provide more health benefit through preventing as much uncontrolled pollution as possible, which is the core of the Act's objective.[311] It also best serves the Congressional objective of limiting EPA's discretion to assure ongoing emission reductions, and leaving penalty decisions to a court reviewing an enforcement matter rather than allowing EPA to waive emission standards up front in inappropriate circumstances.[312]

In this proposed rule, EPA appropriately proposes to revise the emission standards to remove the unlawful general exemption, consistent with the Act and with *Sierra Club*, and to remove the malfunction affirmative defense consistent with the D.C. Circuit's 2014 holding in *Natural Resources Defense Council v. EPA.* [313] Commenters agree that EPA must finalize these revisions. EPA must also remove these unlawful loopholes to satisfy section 7412(d)(6), because these revisions are "necessary" to assure compliance with the Act.

In addition and independently, EPA must also remove this unlawful exemption under section 7412(f)(2), which requires EPA to reduce and eliminate unacceptable health risks, and provide an ample margin of safety to protect public health. As EPA explained in the proposed MON rule, "emissions during a malfunction event can be significantly higher than emissions at any other time."[314] As one example EPA gave, if an air pollution control device with 99-percent removal malfunctions (for example, if the bags in a baghouse catch on fire "as might happen"), then "the source would go from 99-percent control to *zero control* until the control device was

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[310] EPA Resp. Br. at 38; *U.S. Sugar* Corp. v. EPA, No. 11-1108 (D.C. Cir. Feb. 11, 2015), Document #1537028 (citing 76 Fed. Reg. 15,608, 15,613, 15,642).

[311] 42 U.S.C. § 7401(a).

[312] *See, e.g.*, *South Coast Air Quality Management District v. EPA*, 472 F.3d 882, 895 (D.C. Cir. 2006), *amended in unrelated part* 489 F.3d 1245 (D.C. Cir. 2007) ("We further hold that EPA's interpretation of the Act in a manner to maximize its own discretion is unreasonable because the clear intent of Congress in enacting the 1990 Amendments was to the contrary.").

[313] *See* 88 Fed. Reg. at 25,167-68, 25,170.

[314] *See* 84 Fed. Reg. at 69,225.

repaired."[315] Similarly, as discussed below, analysis by EDF found that emissions from malfunction events at HON, P&R I, and P&R II facilities are often of the same magnitude as those facilities' routine emissions.

While EPA has concluded that the proposed rule's HON and P&R I risk-based standards eliminate unacceptable risk, Commenters have raised serious questions regarding the accuracy of the modeling underlying EPA's risk assessment and the estimated emission reductions that EPA has attributed to certain controls, such as the equipment leaks "combined option" and the facility-wide chloroprene cap discussed below.[316] In order to address these uncertainties and to ensure the removal of unacceptable risk and assurance of an ample margin of safety, EPA must require further reductions to satisfy section 7412(f)(2).

One important and necessary way to reduce the ethylene oxide and other emissions from the HON sources is for EPA to remove the exemption and control emissions during periods of startup, shutdown, and malfunction to reduce unacceptable health risks from HON sources. Another important way to do so will be for EPA not to finalize the proposed unlawful malfunction exemption, as discussed below.

Lastly, Commenters support EPA's proposal, consistent with the Clean Air Act and applicable case law cited above, that for closed-vent systems containing bypass lines, an owner or operator may not bypass the pollution control device at any time. If a bypass is used, then EPA correctly proposes that owners or operators estimate and report the quantity of organic HAP released.[317] Releases from systems containing bypass lines are not allowed. EPA must make this change to remove all unlawful SSM exemptions from the existing emission standards, as discussed above, under both section 7412(d)(6) and (f)(2). Commenters urge EPA to consider additional measures to prevent a bypass and ensure it applies the strongest prevention measures available.

B. Analysis of Emissions Data from SSM Events Demonstrates the Necessity of Removing the Malfunction Loopholes

Recent analyses by EDF underscore the necessity of EPA's proposed removal of the SSM exemption and malfunction affirmative defense—and of not finalizing the proposed loopholes for PRDs and flares discussed below—by demonstrating the large amount of HAP emissions that result from startup, shutdown, and malfunction events. Specifically, according to facilities' self-reported data, SSM emissions are often of the same magnitude as the facilities' reported routine emissions. Additionally, SSM emissions tend to spike during severe weather events.

In Texas, facilities are required to report reportable quantities of emissions resulting from unplanned emissions events and planned startup, shut-down, and maintenance activities via the State of Texas Environmental Electronic Reporting System (STEERS). These emission reports

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[315] *Id.* (emphasis added).

[316] *See infra* Parts II.B.2, VI.

[317] *See* 88 Fed. Reg. at 25,085, 25,133-34, 25,147.

are publicly accessible through Texas's air emission event report database.[318] EDF compared SSM emissions data reported to STEERS and routine stack and fugitive emissions reported to EPA's Toxics Release Inventory (Figure 1) and found that total reported SSM emissions of the six chemicals subject to EPA's proposed fenceline monitoring requirements are often of a similar magnitude as reported routine emissions. For example, from 2016 to 2021, the Indorama Facility in Port Neches, Texas, reported over 132,000 lbs. of SSM-related EtO emissions, compared with approximately 130,000 lbs. of stack ethylene oxide emissions and approximately 47,000 lbs. of fugitive ethylene oxide emissions.[319] EDF compared SSM emissions data reported to STEERS and routine stack and fugitive emissions reported to EPA's Toxic Release Inventory (Figure 1) and found that total reported SSM emissions of the six chemicals subject to EPA's proposed fenceline monitoring requirements are often of a similar magnitude as reported routine emissions. For example, from 2016 to 2021, the Indorama Facility in Port Neches, Texas, reported over 132,000 lbs. of SSM-related EtO emissions, compared with approximately 130,000 lbs. of stack ethylene oxide emissions and approximately 47,000 lbs. of fugitive ethylene oxide emissions.

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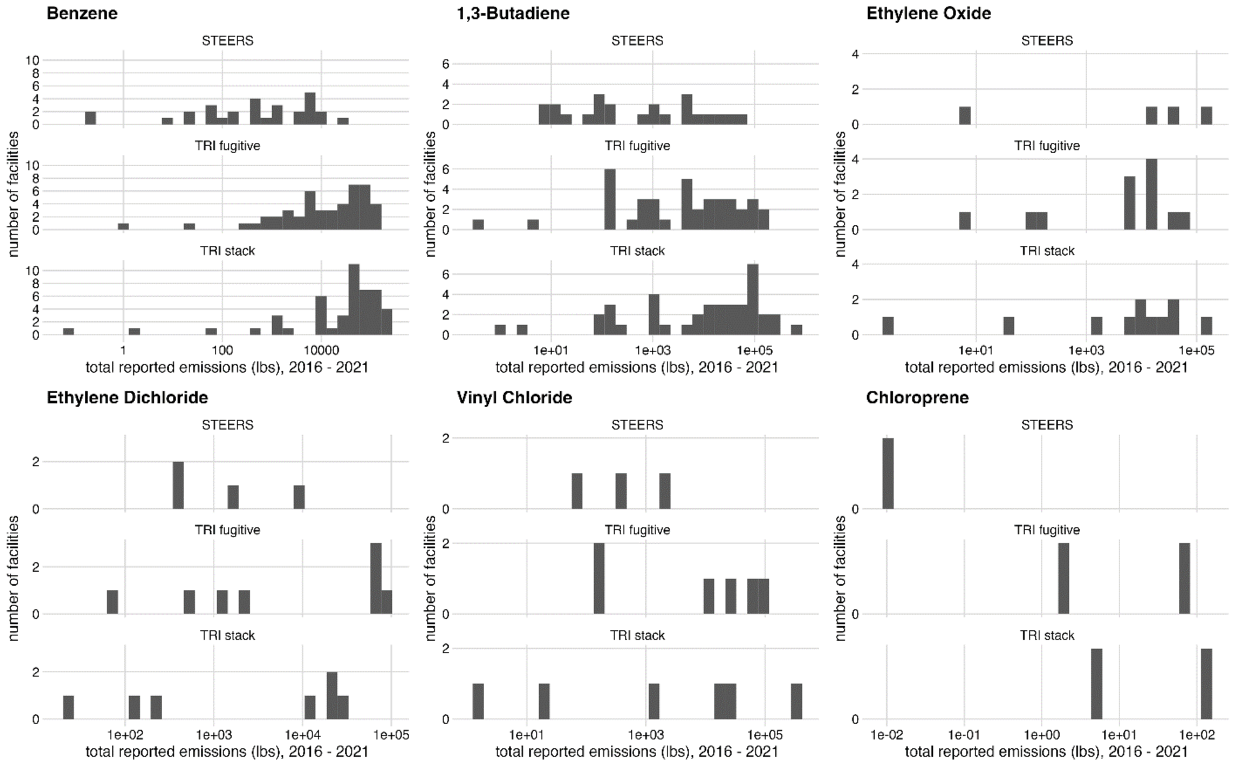
[318] *See* Texas Commission on Environmental Quality, Emission Events, https://www.tceq.texas.gov/airquality/emission-events (last visited July 6, 2023).

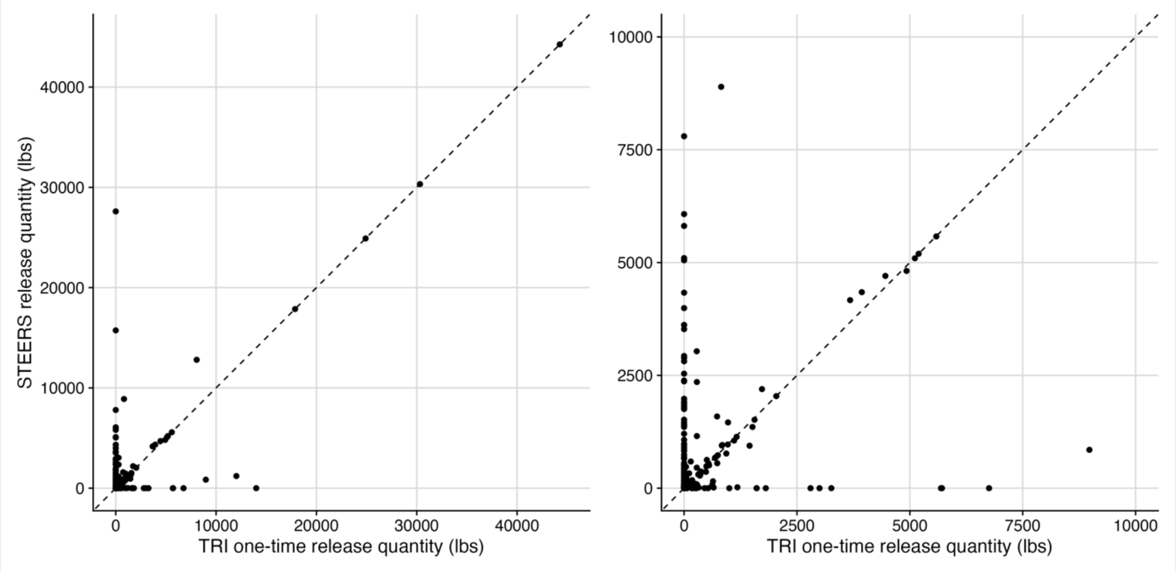
[319] Texas Commission on Environmental Quality, Emission Event Report Database, https://www2.tceq.texas.gov/oce/eer/ (last visited July 6, 2023).

Figure 1: Distributions of total SSM emissions reported to the STEERS and total routine emissions (i.e., stack and fugitive air emissions) reported to the TRI by HON, P&RI, and/or P&RII facilities in Texas from 2016-2021. Emissions distributions are shown for each chemical (plot panels) and each reporting category (rows within panels).



EDF also compared STEERS-reported SSM emissions to EPA's TRI one-time emissions, which in theory should contain the same upset event information aggregated to an annual amount. However, reporting of SSM emissions is inconsistent in these two data sources and likely underestimated in both of them, meaning that SSM emissions may be an even more significant contributor to total facility emissions than indicated by these estimates.

Figure 2: Annual emissions of 1,3-butadiene, benzene, chloroprene, ethylene oxide, ethylene dichloride, or vinyl chloride reported to the STEERS vs. annual emissions reported to the TRI as one-time releases. Each point represents a single reporting year, chemical, and facility located in Texas and in the HON, P&RI, and/or P&RII source category. The right panel provides a closer look at the data in the left panel by including only year, chemical, and facility combinations where emissions reported to both STEERS and TRI were less than 10,000 lbs. In most cases, points fall far from the one-to-one line (dotted line), demonstrating large discrepancies between emissions reported to the STEERS and to the TRI one-time release category.



In a second analysis, EDF found that SSM emissions tend to spike during extreme weather events. According to EDF analysis, total SSM emissions reported to the STEERS database at HON, P&RI, and P&RII facilities in Texas remained relatively constant between 2010 and 2022 with no signs of decline.[320] These facilities reported an average of over 361,000 lbs. of emissions *each month* during these years. Even during months of relatively low reported SSM emissions, total SSM emissions never fell below 9,000 lbs.

Extreme weather events such as hurricanes are associated with spikes in these already-high SSM emission levels. For example, in August 2017—when Hurricane Harvey struck Texas—HON, P&R I, and P&R II facilities reported **over 4.8 million lbs.** of total SSM

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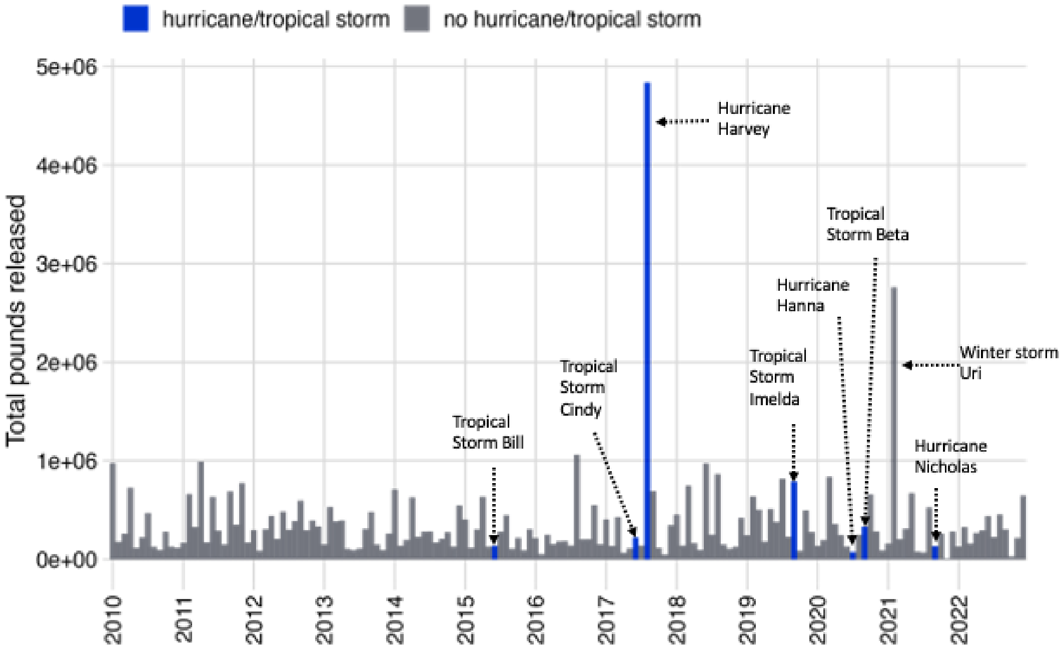
[320] Total SSM Emissions include criteria pollutants (including nitrogen dioxide, sulfur dioxide, particulate matter, and carbon monoxide), speciated VOCs (including ethylene oxide, 1,3-butadiene, chloroprene, ethylene dichloride, vinyl chloride, benzene, formaldehyde and its precursors and hundreds of other pollutants), as well as general unspeciated VOCs. Emissions of carbon dioxide, water, and oxygen are excluded.

emissions. (Figure 3). Notably, many facilities revised their reported SSM emissions figures downwards in their final reports.[321]

Figure 3: Total monthly SSM emissions reported to the STEERS by HON, P&RI, and P&RII facilities in Texas. Blue bars indicate months with a hurricane or tropical storm whose track fell within 25 miles of the Texas border.



In addition to tropical storms and hurricanes, winter storms and freezing temperatures are also cited by operators as causes of SSM emissions. More routine operations and non-weather-related power outages are frequently reported emission event causes as well. With the properly installed and executed emission control systems, fail safes, backup power, maintenance procedures and risk management plans, emissions associated with both extreme weather and

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[321] *See* EIP, Preparing for the Next Storm: Learning from the Man-Made Environmental Disasters that Followed Hurricane Harvey 21 (Aug. 16, 2018), https://www.environmentalintegrity.org/wp-content/uploads/2018/08/Hurricane-Harvey-Report-Final.pdf. EDF analyzed data from the State of Texas Environmental Electronic Reporting System (STEERS) for all excess air emissions during and after Hurricane Harvey, between August 23, 2017, and October 25, 2017. Researchers compared STEERS reports covering this same time span at two points in time: October of 2017 and June of 2018. The two reports were compared to quantify changes in reporting over the nine month period. The comparison revealed significant differences in the reporting of the amounts of pollution released. In the October 2017 reports of emissions during industrial startup, shutdown, and malfunction events, approximately 3 million pounds of pollution were reported. A review of the June 2018 reports covering the same emissions showed approximately two million pounds of pollution were reported—an overall reduction of one million pounds of pollution (33%).

routine operations are preventable and should not be exempted from legally permitted emission limits.

C. EPA Must Not Finalize Its Proposed Malfunction Loopholes for Pressure Relief Devices and Smoking Flares

Commenters strongly support EPA's proposal to remove the SSM exemption from the HON and P&R II standards and the malfunction affirmative defense provisions from the P&R I standards.[322] For the same reasons, EPA must also not finalize the work practice standards it has proposed for HON and P&R I that would allow one or two uncontrolled releases every three years from PRDs and from smoking flares during periods of malfunction.[323] EPA erroneously concludes that the these malfunction loopholes are reasonable.

As Commenters have stated in comments on proposed rules for related sources categories and in comments on EPA's recent "crosscutting" proposed rule for refineries and petrochemical source categories, "no control" is not a standard—it is an exemption.[324] But these loopholes are not just an issue of EPA failing to comply with the Clean Air Act. They will have real-world, harmful effects on the health of communities surrounding these facilities. As EPA readily admits, "[p]ressure relief events from PRDs that vent to the atmosphere have the potential to emit large quantities of HAPs."[325] Specifically, EPA noted that facility with the maximum individual lifetime cancer risk (MIR) in the SOCMI source category is the Indorama Port Neches Plant, which has an excess cancer risk of 2,000-in-1 million.[326] By large margin, the majority of this excess cancer risk is "driven by EtO emissions from PRDs (74 percent)."[327] Similarly, EPA found a "high potential risk posed by chloroprene from PRD releases," and on these bases prohibited PRD releases in EtO service and in chloroprene service.[328]

While EPA does not, and perhaps cannot, quantify HAP emissions from uncontrolled PRDs and smoking flares outside of EtO and chloroprene service, it seems likely that they similarly drive a very large proportion. EPA must not finalize these unlawful exemptions for PRDs and smoking flares.[329]

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[322] *See* 88 Fed. Reg. at 25,167-68, 25,170.

[323] *See id.* at 25,155-58, 25,150.

[324] *See, e.g.*, Mon 2020 Comments at 100; Comments on Proposed Cross-cutting Rule of Air Alliance Houston, California Communities Against Toxics, Clean Air Council, Coalition for a Safe Environment, Del Amo Action Committee, Environmental Integrity Project, Environmental Justice Health Alliance for Chemical Policy Reform, Louisiana Bucket Brigade, Sierra Club, and Utah Physicians for a Healthy Environment, EPA-HQ-OAR-2022-0787-0001 at 3-9 (June 12, 2023).

[325] 88 Fed. Reg. at 25,158.

[326] *See* Proposed SOCMI Risk Assessment, *supra*, at 7.

[327] 88 Fed. Reg. at 25,106, 25,116.

[328] *Id.* at 25,118, 25,116.

[329] In addition to the comments provided below, Commenters incorporate by reference and direct EPA to the comments that organizations provided on the nearly identical—minus the *force*

1. The PRD and Flare Loopholes are Unlawful Exemptions from Sections 7602(k) and 7412(d).

The Clean Air Act directs EPA to set emission standards for all HAPs emitted by a source category, and such emission standards must apply continuously to satisfy section 7412(d) and (f)(2).[330]

As discussed above, EPA has properly followed these requirements in its proposal to remove the SSM exemption and malfunction affirmative defense. However, in place of these loopholes, EPA now proposes new loopholes for HON and P&R I—in the guise of work practice standards—for uncontrolled releases from PRDs and smoking flares during periods of malfunction.[331] For each PRD in HON and P&R I, this loophole would allow up to two uncontrolled emissions every three years.[332] For each flare in HON and P&R I, the loophole would allow up to two exceedances of a flare's smokeless capacity (i.e., smoking flare events) every three years.[333]

First, the PRD and smoking flare loopholes are just another variation on the original malfunction exemption and the affirmative defense to civil penalties, each of which the D.C. Circuit has found unlawful under sections 7602(k), 7604, 7413, 7412(d), and 7412(f).[334] The Clean Air Act requires that emission standards apply continuously, and EPA thus lacks authority to create any exemption from continuous compliance with emission standards. The loopholes lift key limits on smoking flares and allow uncontrolled releases from PRDs during these periods of malfunction. This violates the Act's requirement that standards apply continuously.[335] Again, "no control" is not a standard.[336]

Second, EPA's creation of these exemptions also runs directly contrary to its own recognition in prior administrative practice. As EPA explained in its brief defending the boiler rule, which did not include a malfunction exemption:

> Hurricanes, strikes, and malfeasance can also occur at well-maintained and well-managed sources, but this does not warrant factoring such unpredictable events into emission standards. And again, even if malfunctions were inevitable for all sources,

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majeure provision—loophole for PRDs and flares that EPA proposed in the MON rule. (In fact, EPA adopts much of the analysis in the present proposed rule from the MON rule wholesale.) For example, in addition to the points made here, the MON comments discuss EPA's failure to evaluate the performance of PRDs, the unlawfulness of EPA's subcategorization of PRDs, and an analysis of PRD releases reported by refineries. *See* MON 2020 comments, *supra*, at 116-27.

[330] 42 U.S.C. §§ 7412(d), (f), 7602(k); *Nat'l Lime Ass'n*, 233 F.3d at 641-42; *Sierra Club*, 551 F.3d at 1028.

[331] *See* 88 Fed. Reg. at 25,155-58, 25,150.

[332] *See id.* at 25,155-58.

[333] *See id.* at 25,150.

[334] *Sierra Club*, 551 F.3d at 1028; *NRDC v. EPA*, 749 F.3d at 1062.

[335] *See* 42 U.S.C. §§ 7412(d), 7602(k).

[336] *See id.*; *Nat'l Lime Ass'n*, 233 F.3d at 633-34.

> including the best-performing sources, that does not make it possible to take them into account when establishing MACT emission standards, because they are still unknown in frequency, length, magnitude and, most importantly, effect on emission levels.[337]

As EPA explained further:

> It is just as difficult to establish a work practice standard for malfunctions that can approximate the level of emission reduction achieved by the best-performing sources during malfunctions as it would be to factor emission levels that occur during malfunctions into the numeric standards, as discussed supra. EPA would have to design a single work practice standard that applies equally to a Boiler explosion as it does to a pilot light being extinguished for an hour or innumerable types of operator error, computer glitches or a myriad of other unknown events, or alternatively create innumerable work practice standards.[338]

Finally, the fact that EPA has included certain requirements within the exemptions cannot save their unlawfulness. Even though EPA included reporting and root cause analysis requirements, the work practice standards still constitute a total exemption from the core requirements for PRDs and flares during malfunctions of unlimited HAP release in amount and duration. Specifically, a facility may have one or two uncontrolled PRD releases every three years without having this qualify as a deviation of the pressure release management work practice standards. Similarly, for flares, a HON or P&R I source may, once or twice every three years, exceed and ignore the flare tip velocity and no-visible emissions requirements, such that a flare can smoke without repercussions and without limits. In neither instance will this be a violation or deviation of the standard. There is no limit on the amount of HAPs emitted that applies during those releases. No matter how much health or environmental harm occurs as a result, there is no deviation or violation, no penalty, and no enforcement may occur. When a facility knows that it has one or two free passes for each flare and each PRD, there is no incentive for a facility to do anything to prevent or reduce emissions.

In fact, EPA attempted to justify its original SSM exemption on similar grounds—stating that reporting and other requirements still applied—but that argument failed.[339] It similarly attempted to contend that the affirmative defense provision was lawful because it only removed civil penalties.[340] The court rejected each argument.

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[337] Brief for Respondent EPA at 43, *U.S. Sugar* Co. v. EPA, 830 F.3d 579 (D.C. Cir. 2016) (No. 11-1108) Document #1537028.

[338] *Id.* at 49.

[339] *Sierra Club*, 551 F.3d at 1028.

[340] *Natural Res. Def. Council v. EPA*, 749 F.3d at 1064.

2. The PRD and Flare Loopholes are Not Lawful Work Practice Standards under Section 7412(h).

EPA attempts to characterize the PRD and smoking flare loopholes as "work practice standards" under section 7412(h).[341] Even if EPA could set work practice standards, this provision does not allow EPA to avoid its obligation to enact standards that restrict emissions of HAPs at all times.

Work practice standards are only allowed in lieu of numerical emission standards under narrow circumstances. In enacting the 1990 Amendments, Congress reiterated its "strong preference for numerical emission limitations," permitting the use of work-practice standards "in a very few limited cases."[342] Specifically, EPA may not set work practice standards unless it is "not feasible to prescribe or enforce an emission standard."[343] This means that EPA may not set such a standard unless EPA determines that the pollutant cannot be emitted "through a conveyance designed and constructed to emit or capture such pollutant," or that "application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations."[344] In fact, even when EPA sets a work practice standard, such a standard must require the "maximum" degree of emission reduction "achievable," and still be consistent with section 7412(d)(2)-(3)—that is, apply continuously.

First, the malfunction exemptions are not "work practice standards" because they do not apply continuously and are thus inconsistent with section 7412(d)(2) and (3). Because the proposed rule contains no limits on emissions from periodic malfunction and force majeure events, such emissions are *uncontrolled*. That is, there is no control that applies *continuously*. Post-hoc measures to understand why a release happened are not controls or limits on the pollution that was released. Just as the SSM reporting and minimization measures that accompanied the original SSM exemption did not make it lawful, the same is true here. [345]

Second, work practice standards are not allowed because traditional emission restrictions are feasible to restrict the excess emissions. Section 7412(h) requires EPA to make a very specific finding that numeric emissions are infeasible.[346] EPA has not satisfied that requirement here. For PRDs in particular, EPA's assertion that "the application of a measurement methodology for PRDs that vent to atmosphere is not practicable" is contradicted by its requirement that sources calculate their emissions during any PRD release to the atmosphere. EPA's reporting and recordkeeping requirements mandate facilities report "an

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[341] *See*, *e.g.*, 88 Fed. Reg. at 25,149-50, 25,156.

[342] S. Rep. No. 95–127, p. 44 (1977).

[343] 42 U.S.C. § 7412(h)(1), (2).

[344] 42 U.S.C. § 7412(h)(2)(A)-(B); *see also Chesapeake Climate Action Network v. EPA,* 952 F.3d 310 (D.C. Cir. 2020).

[345] *See, e.g.*, *Sierra Club*, 551 F.3d at 1028.

[346] *See* 42 U.S.C. § 7412(h)(2)(A)-(B).

estimate of the mass quantity in pounds of each organic HAP released, as well as any data, assumptions, and calculations used to estimate of the mass quantity of each organic HAP released during the event."[347]

Further, standards for equipment connected to PRDs have been on the books for years without any unlawful, back-door exemptions through PRDs demonstrating that it is "feasible to prescribe and enforce an emission standard."[348] As EPA proposed in the refineries rule, "emissions of HAP may not be discharged to the atmosphere from relief valves in organic HAP service." [349] Or, as EPA has proposed for PRDs equipment in EtO service here—and finalized in the MON rule in 2020—"any release event from a PRD in EtO service is a violation of the standard to ensure that these process vent emissions are controlled and do not bypass controls."[350] Similarly, EPA has proposed the same prohibition for uncontrolled releases from PRDs in chloroprene service in the Neoprene Production source category.[351]

EPA should adopt such a clear prohibition for all PRDs and flares under HON and P&R I. EPA cannot use section 7412(h) to circumvent the emission standards of equipment connected to PRDs and smoking flares through uncontrolled releases from these devices.

A recent D.C. Circuit decision underscores the fact that work practices are inappropriate for a period of malfunction because "[a]ny possible standard is likely to be hopelessly generic to govern such a wide array of circumstances."[352] Exemptions "cannot be framed in simple numerical terms, as, say, an allowance of four excessive discharges per year," as doing so would give emitters "a license to dump wastes at will on several occasions annually."[353] Again, "no control" is not a standard—it is an exemption. Such malfunctions are appropriately dealt with through "the administrative exercise of case-by-case enforcement discretion, not for specification in advance by regulation."[354]

Further, a number of sources covered by the NESHAP at issue here have multiple pressure release devices and more than one flare.[355] Finalizing these unlawful exemptions would

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[347] *See* 88 Fed. Reg. at 25,156, 25,158.
[348] *See* 42 U.S.C. § 7412(h).
[349] 79 Fed. Reg. at 36,912.
[350] 88 Fed. Reg. at 25,116; *see also* 85 Fed. Reg. 49,089.
[351] *See* 88 Fed. Reg. at 25,118.
[352] *U.S. Sugar Corp.*, 830 F.3d at 608.
[353] *Weyerhaeuser Co. v. Costle*, 590 F.2d at 1011, 1057 (D.C. Cir. 1978) (citing *Am. Petrol. Inst. v. EPA*, 540 F.2d 1023, 1036 (10th Cir. 1976) (denying excursions)).
[354] *Id.* at 1058.
[355] For example, EPA estimated that each HON process has an average of 14 uncontrolled PRDs that release to the atmosphere, for a total of 8,876 atmospheric PRDs under HON. Similarly, EPA estimated that there is an average of 14 atmospheric PRDs per P&R I process, for a total of 266 atmospheric PRDs under P&R I. *See* Memorandum from Eastern Research Group, Inc., to Andrew Bouchard, EPA, Re: Review of Regulatory Alternatives for Certain Vent Streams in the SOCMI Source Category that are Associated with Processes Subject to HON and Processes

incentivize facilities to install redundant pressure release devices or flares. Operators could cycle through pressure release devices, sealing off each one after a release event to avoid repeated violations of the underlying equipment's emission standards. In the same way, emissions could be routed away from controlling flares to an endless number of cycling pressure release devices resulting in unlimited emissions with no technical violation. Instead, treating releases from PRDs and smoking flares as violations would incentivize operators to eliminate the root causes of these releases.

Even if EPA could set work practice standards for PRDs and flares rather than prohibiting facilities from routine, uncontrolled releases, the malfunction exemptions do not reflect the "maximum" degree of emission reduction "achievable." As Commenters have previously noted in comments on the proposed MON rule, the best-performing PRDs emit nothing, and the best-performing flares do not smoke.[356]

3. EPA Must Remove the Loopholes and Require Continuous Control, as EPA Has Done Before and Has Proposed for PRDs in Ethylene Oxide Service and in the Neoprene Production Source Category.

EPA must remove the exemptions for PRDs and flares and require that operators control emissions continuously, as it has proposed for PRDs and flares in EtO service and chloroprene service in the Neoprene Production source category and as it has done in prior rulemakings.

In the present rulemaking, EPA has proposed that "any release event from a PRD in EtO service is a violation of the standard" and that "any release event from PRDs in the Neoprene Production source category facilities is a violation of the standard."[357] As discussed above, EPA justified these requirements for PRDs in ethylene oxide service on the basis that ethylene oxide emissions from PRDs comprised so much of the human health risk from the SOCMI source category. Specifically, the maximum individual lifetime cancer risk (MIR) "posed by the [SOCMI] source category is 2,000-in-1 million, driven by EtO emissions from PRDs (74 percent)."[358] EPA justified its prohibition on PRD releases from the Neoprene Production source category (i.e., the source category involving chloroprene emissions) on similar grounds: "given the high potential risk posed by chloroprene from PRD releases" and that "we are concerned that allowing them could compound already unacceptable risk."[359]

While EPA has unfortunately proposed the same "three strikes" exemption for the majority of PRDs in the SOCMI source category and the Groups I and II Polymers and Resins Industries (i.e., all PRDs not in ethylene oxide service and not in the Neoprene Production source category), the agency admitted the vast scope of the problem and the potential scale of emissions

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Subject to Group I and Group II Polymers and Resins NESHAP, EPA-HQ-OAR-2022-0730-0010 at 12 (March 2023).

[356] *See, e.g.*, MON 2020 Comments, *supra*, at 116-27, 128-37.

[357] *See* 88 Fed. Reg. at 25,116, 25,118.

[358] *Id.* at 25,106, 25,116.

[359] *Id.* at 25,118.

that would be allowed by the "three strikes" exemption: specifically, "[p]ressure relief events from PRDs that vent to the atmosphere have the potential to emit large quantities of HAPs."[360]

For example, in the 2020 final rule for the Organic Liquids Distribution NESHAP (OLD), EPA "remove[d] the allowance for [pressure relief] devices," stating that "[t]he final rule requires that opening of pressure relief devices in OLD transfer operations is a deviation," because "[i]t is our intent that owner/operator would report a deviation upon opening of a safety device and releasing unregulated emissions or emissions in excess of a limit."[361] In the Final Rule for MON, EPA specified that "any release event" from a PRD in ethylene oxide service, "is a deviation of the standard."[362] The fact that EPA has required and recognized the necessity of such controls for some PRDs but has not applied equal controls to other PRDs or to flares underscores the unlawfulness of the exemptions. Treating these releases so differently is arbitrary and capricious.

In fact, in the present rule, EPA does not propose a similar PRD loophole for HAP emissions from P&R II because "P&R II does not exclude PRD releases from its production-based emission rate MACT standard" and "any release of HAP to the atmosphere from a P&R II PRD should already be accounted for when determining compliance."[363] While EPA uses P&R II's lack of an exclusion as reason not to apply the loophole, it does not explain why HON and P&R I must be allowed to exclude these emissions. Again, this differing treatment of PRDs in similar source categories—especially since three of the five P&R II sources are co-located with HON source—is arbitrary and capricious.

Similarly, in the recent proposed NESHAP rule for the Synthetic Organic Chemical Manufacturing Industry (SOCMI) and the Groups I and II Polymers and Resins Industries, EPA has proposed "the same provision that we finalized in the MON for PRDs in EtO service": that "any release event from a PRD in EtO service is a violation of the standard" and that "any release event from PRDs in the Neoprene Production source category facilities is a violation of the standard."[364] EPA justified these requirements for PRDs in ethylene oxide service on the basis that ethylene oxide emissions from PRDs comprised so much of the human health risk from the SOCMI source category. Specifically, the maximum individual lifetime cancer risk (MIR) "posed by the [SOCMI] source category is 2,000-in-1 million, driven by EtO emissions from PRDs (74 percent)."[365] EPA justified its prohibition on PRD releases from the Neoprene Production source category (i.e., the source category involving chloroprene emissions) on similar grounds: "given the high potential risk posed by chloroprene from PRD releases" and that "we are concerned that allowing them could compound already unacceptable risk."[366]

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[360] *Id.* at 25,158.
[361] EPA, Organic Liquids Distribution Response to Comments, EPA-HQ-OAR-2018-0074-0075 at 83, 85, 88; National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline) Residual Risk and Technology Review, 85 Fed. Reg. 40,740, 40,763 (July 7, 2020) (removing prior malfunction allowance for opening a PRD or "safety device").
[362] *See* 85 Fed. Reg. at 49,089; *see also id.* at 49,104 (40 C.F.R. § 63.2493(d)(4)), 49,149.
[363] 88 Fed. Reg. at 25,155, 25,156 n.131.
[364] *See* 88 Fed. Reg. at 25,116, 25,118.
[365] *Id.* at 25,106, 25,116.
[366] *Id.* at 25,118.

While EPA has unfortunately proposed the same "three strikes" exemption for the majority of PRDs in the SOCMI source category and the Groups I and II Polymers and Resins Industries (i.e., all PRDs not in ethylene oxide service and not in the Neoprene Production source category), the agency admitted the vast scope of the problem and the potential scale of emissions that would be allowed by the "three strikes" exemption: specifically, "[p]ressure relief events from PRDs that vent to the atmosphere have the potential to emit large quantities of HAPs."[367]

Given that EPA has demonstrated the need and capability of prohibiting PRD releases for PRDs in EtO service and in the Neoprene Production source category, EPA should do the same for all PRDs in the source categories under reconsideration here.

V. EPA MUST ENSURE ALL SOURCES HAVE STRONG FENCELINE MONITORING REQUIREMENTS TO REDUCE FUGITIVE EMISSIONS AND PROTECT HEALTH

Commenters strongly support EPA's proposal to account for fenceline monitoring as a development and to require its application to the HON, P&R I, and P&R II source categories. In a number of other rulemakings, permits, and other actions by EPA and state and local agencies over the past several decades, Commenters have repeatedly advocated for the application of fenceline monitoring to industrial sources that drive health risks for surrounding communities. In no case should EPA finalize this rule without a fenceline monitoring requirement.

Commenters raise several issues with EPA's proposed fenceline monitoring requirements and strongly encourage the agency to address these in the final rule:

- EPA must apply fenceline monitoring requirements to *all* HON, P&R I, and P&R II sources. As it currently stands, EPA estimates that the requirements would only apply to roughly 60 percent of the 218 sources, due to EPA using fenceline monitoring constituents for the purposes of applicability. EPA could correct this in several ways, as Commenters have proposed, including the requirement that every source adopts a fenceline monitoring plan tailored to the individual source's emissions, risk, and processes.
- EPA must account for fenceline monitoring developments other than the Method 325A/B sorbent tube monitoring and Method 327 canister monitoring the agency has proposed. These developments include several forms of real-time, continuous monitoring, such as open-path monitoring and other technologies.
- EPA has improperly set action levels for ethylene oxide and chloroprene that exceed unacceptable risk concentrations. EPA can achieve this by considering additional technologies and by opting not to use its proposed calculation of multiplying the reference detection limit by three.
- EPA has also improperly set action levels for the other four constituents far too high, based on the fenceline concentrations of the highest-emitting sources, as EPA did in the refinery rule. EPA must correct this error by tailoring action levels to the individual

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[367] *Id.* at 25,158.

facilities' emissions and risk, but in no case higher than levels that are safe for human health.

- EPA should also set shorter-term action levels to address dangerous spikes of pollutants.
- EPA must improve its proposal to require only eight canister monitoring locations per facility under proposed Method 327, no matter the actual size of the facility. EPA instead should follow its own example from Method 325 A/B and account for fenceline size, in order not to miss certain emissions and to prevent the ability to "game" fenceline monitoring.
- EPA must also improve the "24 hours every five days" sampling frequency requirements under Method 327, in order to avoid missed and underestimated emissions.
- EPA must set shorter timelines and more robust requirements for corrective action. Additionally, EPA must require specific correction actions, including curtailment, and must tie action level exceedances to violations of emission standards.
- EPA must improve the requirements for the public availability of fenceline monitoring data.

Finally, environmental justice considerations demonstrate the need for strong fenceline monitoring requirements and each of these improvements that Commenters urge EPA to make in the final rule.

In particular, Commenters again note the additional significance that EPA has recently assigned to this rule in its decision to close the Title VI complaints against the Louisiana Department of Environmental Quality for civil rights violations in its administration of its air quality program with respect to HON and P&R I sources, including in particular Denka Performance Elastomer in LaPlace, Louisiana. Referencing the complaints' allegations with respect to Denka's chloroprene emissions and the increased lifetime cancer risks they drive, EPA stated that it "has taken a series of significant actions directed at or otherwise resulting in reducing the impacts of chloroprene emissions from the Denka facility," including the present rulemaking.[368] It is therefore of the utmost importance that EPA finalize a rule that actually accomplishes these ends, including strong and effective fenceline monitoring.

A. EPA Must Apply Fenceline Monitoring to All Sources within the Covered Source Categories.

As discussed above, Commenters strongly support EPA's proposal to account for fenceline monitoring as a development and to require its application to the HON, P&R I, and P&R II source categories. Fenceline monitoring is a key practice in detection and reduction of fugitive emissions and more broadly in reducing risks to communities from air toxics.

One key shortcoming in EPA's fenceline monitoring requirement that the agency must correct as a priority is that it *does not apply to all sources covered by the rule*. By EPA's estimate, the fenceline requirements will only apply to 128 of the 218 HON, P&R I, and P&R II sources,

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[368] *See* EPA Title VI Closure Letter to LDEQ, *supra*, at 4.

or just under 60 percent.[369] In EPA's own words, the fenceline monitoring requirements will not apply to *any* of the P&R II sources, unless they are co-located with a HON source.[370]

This is a critical error that undercuts EPA's reasoning for requiring fenceline monitoring as a technology for managing fugitive emissions in these NESHAP. In EPA's characterization, there are several key benefits to fenceline monitoring:

- **Verifying estimates with monitoring**: Fenceline monitoring is used "to ground-truth emission estimates" and specific to allow facilities to detect "underreported and unknown emission sources";

- **Finding sources of emissions**: Given fenceline monitoring's "complete spatial coverage" of facilities, it can "provide[] **information on the location** of emissions sources"; and

- **Reducing emissions**: "fenceline monitoring can be effective in reducing emissions and reducing uncertainty associated with emissions estimation and characterization."[371]

Each of these is a reason to apply fenceline monitoring as a practice across all facilities in these source categories, and none of these reasons provide basis for excluding nearly half of the sources. As EPA provides, "[t]he majority of emissions from sources covered by the HON and P&R I are fugitive in nature and are often difficult to characterize and quantify."[372] Fenceline monitoring would clearly serve this end.

The reason for the under-application of this key requirement is that EPA made the error of creating an artificial applicability requirement that excluded sources. Recognizing that fenceline monitoring requires constituents, EPA "identified six specific HAP that we determined were the most appropriate, useful, and suitable for inclusion."[373] But then EPA used these constituents for the opposite purposes by setting them as the threshold for fenceline monitoring applicability: "We are proposing to require fenceline monitoring at facilities in the SOCMI and P&R I source categories that use, produce, store, or emit benzene, 1,3-butadiene, chloroprene, EtO, ethylene dichloride, or vinyl chloride."[374] As a result, EPA "estimate[d] 126 of the 207 HON

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[369] *See* Fenceline Monitoring Technology Review Memo, *supra*, at 23.

[370] *See* 88 Fed. Reg. at 25,142. Technically, two P&R II sources will be included in the fenceline monitoring requirements due to the fact that HON sources co-located in the same facilities will be covered: Olin Blue Cube Operations, LLC (Freeport, Texas), and Hexion Deer Park / Shell Deer Park Refinery (Deer Park, Texas). If not for their co-location with covered HON sources, these two would not otherwise have been covered, and the other three P&R II-only sources will not be covered at all. *See* Fenceline Monitoring Technology Review Memo, *supra*, App. C.

[371] 88 Fed. Reg. at 25,142

[372] *Id.*

[373] *Id.*

[374] *Id.* at 25,143.

facilities and 12 of the 19 P&R I facilities"—for a combined total of 128 facilities, considering co-located sources— "would be required to conduct fenceline monitoring as they emit at least one of the six HAP of interest."[375]

There is no reason or need for EPA to have selected just these six constituents and used them as basis to omit facilities. In fact, the opposite is true. EPA's technology review duty under section 7412(d)(6) includes making any changes that are "necessary" to bring standards into full compliance with the Clean Air Act, such as setting limits on uncontrolled and inadequately controlled emissions.[376] Given that the purpose of fenceline monitoring is to detect and better control fugitive emissions, including specifically "underreported and unknown emission sources," EPA cannot arbitrarily exclude almost half the sources from the requirement.

Furthermore, EPA has accounted for fenceline monitoring as a development in this rulemaking based in part on its application to refineries under the 2015 refinery rule.[377] In that rule, EPA set fenceline monitoring requirements that applied to all sources and did not omit sources based on the selected constituents to be monitored.[378] It does not make sense for EPA to discuss how refinery rule's fenceline monitoring "results illustrate that fenceline monitoring is an effective tool in reducing emissions and preserving emission reductions on an ongoing basis for these sources" and then arbitrarily "only focus[] on HON and P&R I facilities that use, produce, store, or emit benzene, 1,3-butadiene, chloroprene, ethylene dichloride, EtO, or vinyl chloride."[379]

EPA cannot argue that it was required to select these six constituents based on the highest risk values (rather than inclusion of all facilities), as it does not appear that the agency used any one rationale for selecting these constituents. For example, EPA states that it selected "six specific HAP that we determined were the most appropriate, useful, and suitable for inclusion."[380] While EPA states that these six constituents "were identified as cancer risk drivers in the prior RTRs for the HON and P&R I conducted in 2006 (HON) and 2008 and 2011 (P&R I) or identified as cancer risk drivers in the residual risk reviews proposed in this action," EPA does not state that the agency used this as the basis, let alone the sole or primary basis, for their selection.[381]

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[375] *See id.* at 25,146; Fenceline Monitoring Technology Review Memo, *supra*, App. C.

[376] *LEAN*, 955 F.3d at 1096.

[377] *See* 88 Fed. Reg. at 25,142 ("Fenceline monitoring has been successfully applied to the petroleum refineries source category as a technique to manage and reduce benzene emissions from fugitive emissions sources such as storage vessels, wastewater treatment systems, and leaking equipment.").

[378] *See* National Emission Standards for Hazardous Air Pollutants and New Source Performance Standards: Petroleum Refinery Sector Amendments, 83 Fed. Reg. 60,696 (Nov. 26, 2018).

[379] *See* 88 Fed. Reg. at 25,142.

[380] *Id.*

[381] *Id.*

Reference to the SOCMI risk review in this rulemaking demonstrates that there are many other HAPs emitted by HON facilities with higher Unit Risk Estimates for Cancer.[382] There are also HAPs emitted by more facilities than the six that EPA selected.[383] For this reason, it does not appear that EPA selected the highest risk drivers or the most-emitted HAPs, but rather used a combination of factors. This is not a problem in itself or an arbitrary means for selecting constituents to be monitored at the fenceline, but it is not a valid basis for excluding nearly half of the sources covered by the rule.

One example that illustrates the issue with using these constituents for the purposes of applicability is the total exclusion of P&R II sources. As the technical memorandum supporting the fenceline monitoring technology review states, "[n]ote that P&R II processes do not emit one of the relevant six HAP included in these proposed fenceline monitoring provisions, and therefore, the proposed fenceline monitoring program does not apply to the P&R II NESHAP."[384] But this is not because of some inherent issue with P&R II sources. Rather, the issue is with how EPA selected the six constituents. EPA cites two sources of information in its discussion of the six constituents: (1) "the prior RTRs for the HON and P&R I conducted in 2006 (HON) and 2008 and 2011 (P&R I)" and risk reviews for HON and Neoprene Production in this rule; and (2) the information collection request for this rulemaking, which collected information from HON sources and one P&R I source.385 In other words, it is no surprise that information gathered from only HON and P&R I sources resulted in constituents most representative of those sources and not representative of P&R II sources. Had EPA included P&R II data in the information it gathered for the purpose of fenceline monitoring constituents, EPA would have found that all five P&R II sources emit epichlorohydrin and that several of them emit the non-benzene BTEX constituents, as discussed in Part V.A.1 below.[386]

For these reasons, EPA must correct its proposed fenceline monitoring requirements so that they apply to *all sources* covered by this NESHAP rulemaking, including the 218 sources identified by EPA. While there are many ways to correct this and ensure full coverage, Commenters propose three potential solutions and encourage EPA to adopt some or all of them as appropriate.

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[382] Proposed SOCMI Risk Review, *supra*, at 42, Tbl. 3.1-1.

[383] *Id.* (noting methanol, toluene, formaldehyde, and naphthalene, among others).

[384] *See* Fenceline Monitoring Technology Review Memo, *supra*, at 2; *see also* 88 Fed. Reg. at 25,142 n.103 ("P&R II sources do not emit any of these six pollutants.").

[385] *See* 88 Fed. Reg. at 25,142.

[386] Commenters reviewed TRI data for the five P&R II sources provided in EPA's list of facilities subject to the proposed rule: Vantico, Inc. (McIntosh, Alabama), Georgia Pacific Chemicals (Crossett, Arkansas), Georgia Pacific Chemicals Eugene (Eugene, Oregon), Olin Blue Cube Operations, LLC (Freeport, Texas), and Hexion Deer Park / Shell Deer Park Refinery (Deer Park, Texas). *See* Fenceline Monitoring Technology Review Memo, *supra*, App. C.

1. EPA Should Add More HAPs to its Six Fenceline Monitoring Constituents.

Under the current proposal, EPA improperly uses its six constituents for the purposes of applicability. While Commenters assert that it is inappropriate to use the fenceline monitoring constituents in this manner, as discussed above, at least one partial solution to the issue would be to add further constituents to achieve full coverage.

First, as an initial matter, EPA should identify facilities subject to the fenceline monitoring requirements using multiple years (e.g., the most recent 5 years) of facility-wide emissions data from multiple sources, such as the National Emissions Inventory, Toxics Release Inventory, and state-level upset emissions reporting (e.g., TX STEERS). In Appendix C of the technical memorandum supporting its fenceline monitoring requirements, EPA identifies 128 facilities that it anticipates will be subject to the proposed fenceline monitoring requirements.[387] But in reviewing TRI data from reporting years 2016 to 2020, Commenters have identified an additional 28 HON or P&R I facilities that reported emissions of benzene, 1,3-butadiene, chloroprene, EtO, ethylene dichloride, or vinyl chloride in one or more of those reporting years. EPA should include the same review multiple sources of emissions data and reporting years in estimating the rule's applicability and in applying the requirements to facilities.

Second, Commenters propose that formaldehyde would be a good constituent both from the perspectives of covering a greater proportion of currently excluded facilities and to protect human health. Of the facilities not included in EPA's Appendix C list of 128 facilities expected to be impacted by the fenceline monitoring work practice standards, at least 48 facilities either emit formaldehyde directly or emit ethylene or propylene (i.e., formaldehyde precursors, which rapidly oxidize into formaldehyde).[388] As the more robust inclusion of TRI-reporting facilities already included 20 of these facilities driving primary and secondary formaldehyde emissions, the inclusion of formaldehyde and precursors would add 28 facilities, for a running total of 184 facilities.[389] Notably, emissions of formaldehyde, ethylene, and propylene also account for a substantial quantity of the SSM emissions reported to the Texas STEERS database by HON, P&R I, and P&R II facilities.[390]

Third, another widely-emitted HAP is methanol. Of the 192 HON, P&R I, and P&R II facilities that reported any emissions to TRI from 2016 to 2020, Commenters identified 140 facilities that reported emissions of methanol. In the SOCMI residual risk assessment, EPA has estimated that 148 HON facilities emit methanol, based on an enhanced version of 2017 National

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[387] *See id.*

[388] *See* Lei Zhu *et al.*, *Formaldehyde (HCHO) As a Hazardous Air Pollutant: Mapping Surface Air Concentrations from Satellite and Inferring Cancer Risks in the United States*, Environ. Sci. Technol at 5650-57 (2017), *available at* https://pubs.acs.org/doi/10.1021/acs.est.7b01356; David Parrish *et al.*, *Primary and secondary sources of formaldehyde in urban atmospheres: Houston Texas region*, Atmos. Chem. Phys., at 3273-3288 (2012), *available at* https://acp.copernicus.org/articles/12/3273/2012/.

[389] *See* Table 6, *infra*.

[390] *See* Table 7, *infra*.

Emissions Inventory.[391] Of these facilities, 59 are not on EPA's Appendix C list of the 128 facilities anticipated to be subject to the fenceline monitoring requirements. Subtracting the facilities that would be included based on the more robust TRI data and the addition of formaldehyde and precursors, the inclusion of methanol would add another 13 facilities, for a total of 197 facilities.

Finally, the BTEX constituents (i.e., benzene, toluene, ethylbenzene, and xylenes) and n-hexane are widely emitted and have varying cancer and non-cancer risks. Additionally, existing fenceline monitoring programs that include benzene often include one or more BTEX constituents as well.[392] Of the 192 HON, P&R I, and P&R II facilities that reported any emissions to TRI from 2016 to 2020, Commenters identified 127 facilities that reported BTEX (excluding benzene) or n-hexane. Of these, 41 facilities are missing from EPA's Appendix C list of facilities expected to be subject to the fenceline monitoring work practice standards. Subtracting the facilities that would be included based on the more robust TRI data, the addition of formaldehyde and precursors, and methanol, the inclusion of the BTEX/n-hexane facilities would add three more facilities for a total of 200 facilities.

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[391] *See* Proposed SOCMI Risk Assessment, *supra*, at 42 Tbl. 3.1-1.

[392] *See* Consent Decree, *United States v. BP Products North America, Inc.*, No. 2:23-cv-00166, App. C, at 1 (N.D. Ind. May 17, 2023) (adding toluene and benzene as fenceline monitoring constituents alongside existing benzene monitoring as part of "Expanded MACT CC Monitoring"), *available at* https://www.epa.gov/system/files/documents/2023-05/bpwhiting23-cd.pdf; *see* Settlement Agreement between Shell Chemical Appalachia LLC and Clean Air Council and Environmental Integrity Project, App. A, at 1 (Aug. 2017) (attached as Exhibit 11) [hereinafter Shell Chemical Appalachia Settlement].

Table 6: Number of facilities not anticipated to be impacted by the fenceline monitoring work practice standard in the proposed rule, but which would be impacted should EPA require monitoring for any facility that reports emissions of various analytes to TRI.

Constituents	**Additional facilities covered (as compared to Appendix C)**	**Cumulative additional facilities covered**	**Total facilities covered**
EPA proposed constituents (1,3-butadiene, benzene, chloroprene, 1,2-dichloroethane, ethylene oxide, vinyl chloride)	N/A	N/A	128
Proposed constituents, per robust TRI review	28	28	156
Formaldehyde (including ethylene and propylene precursors)	48	56	184
Methanol	59	69	197
Toluene, Ethylbenzene, Xylenes, n-Hexane	41	72	200

In addition to these proposed constituents, Commenters reviewed a variety of other options that may be useful for EPA's review. For example, Commenters reviewed constituents most concerning from the perspective of cancer risk, such as chromium, asbestos, and cobalt,[393] (Table 7), and constituents most concerning for non-cancer risk, such as sulfuric acid and diisocyanates.[394] In particular, Commenters reviewed the potential coverage benefits by adding chromium and cobalt, but found that all but one of the additional facilities would be covered by the addition of the more robust TRI data and formaldehyde (and precursors).

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[393] *See* Table 7, *infra*.

[394] *See* Table 8, *infra*.

Table 7: Top 20 most-concerning chemicals for cancer risk emitted by facilities not anticipated to be impacted by the fenceline monitoring work practice standards.

Chemical	Cancer Toxicity Weight	Non-Cancer Toxicity Weight	Cancer Toxicity Source	Non-Cancer Toxicity Source	Total Hazard (cancer)	Total Hazard (Non-Cancer)	Number of Facilities with Emissions from 2016-2020
Chromium compounds	43000000	35000	IRIS	IRIS	1158295153800	942798381	9
Asbestos (friable)	170000000	NA	IRIS	NA	280500000000	NA	2
Cobalt compounds	17000000	35000	interim derived	ATSDR	128464109100	264484931	13
1,3-Butadiene	110000	1800	IRIS	IRIS	118122424200	1932912396	22
Acrylonitrile	240000	1800	IRIS	IRIS	66920952000	501907140	10
Ethylene oxide	11000000	120	IRIS	CalEPA	57211000000	624120	1
Formaldehyde	46000	360	IRIS	ATSDR	39938720640	312563901	26
Benzene	28000	120	IRIS	IRIS	26672241960	114309608.4	15
Nickel compounds	930000	39000	CalEPA	ATSDR	25344556974	1062836260	21
Acrylamide	360000	580	IRIS	IRIS	20041984800	32289864	7
Hydrazine	18000000	18000	IRIS	CalEPA	10440000000	10440000	1
Polycyclic aromatic compounds	390000	NA	IRIS	NA	9382045140	NA	13
Chromium	43000000	35000	IRIS	IRIS	3612000000	2940000	3
2-Nitropropane	20000	180	OAQPS	IRIS	3077160000	27694440	1
Benzyl chloride	180000	NA	CalEPA	NA	2096010000	NA	2
Acetaldehyde	7900	390	IRIS	IRIS	2021566266	99798841	21
Propylene oxide	13000	120	IRIS	IRIS	1496950000	13818000	5
Naphthalene	12000	1200	CalEPA	IRIS	1173942960	117394296	12
Chloroform	82000	36	IRIS	ATSDR	766372000	336456	3

Table 8: Top 20 most-concerning chemicals for non-cancer risk emitted by facilities not anticipated to be impacted by the fenceline monitoring work practice standards.

Chemical	Cancer Toxicity Weight	Non-Cancer Toxicity Weight	Cancer Toxicity Source	Non-Cancer Toxicity Source	Total Hazard (cancer)	Total Hazard (Non-Cancer)	Number of Facilities with Emissions from 2016-2020
Sulfuric acid	NA	3500	NA	CalEPA	NA	5275733120	13
Chlorine	NA	23000	NA	ATSDR	NA	5146695970	22
Diisocyanates	NA	350000	NA	IRIS	NA	2223217500	5
Acrolein	NA	180000	NA	IRIS	NA	2206260000	6
1,3-Butadiene	110000	1800	IRIS	IRIS	118122424200	1932912396	22
Hydrogen cyanide	NA	4400	NA	IRIS	NA	1926992747	10
Acrylic acid	NA	3500	NA	IRIS	NA	1682056250	14
Butyl acrylate	NA	3500	NA	interim derived	NA	1319171700	7
Nickel compounds	930000	39000	CalEPA	ATSDR	25344556974	1062836260	21
Chromium compounds	43000000	35000	IRIS	IRIS	1158295153800	942798381	9
Hydrogen sulfide	NA	1800	NA	IRIS	NA	746340372	10
Acrylonitrile	240000	1800	IRIS	IRIS	66920952000	501907140	10
Lead compounds	NA	23000	NA	OAQPS	NA	344985280	10
Formaldehyde	46000	360	IRIS	ATSDR	39938720640	312563901	26
Maleic anhydride	NA	5000	NA	CalEPA	NA	290549000	6
Cobalt compounds	17000000	35000	interim derived	ATSDR	128464109100	264484931	13
Ammonia	NA	7	NA	IRIS	NA	231621192	52
Hydrochloric acid	NA	180	NA	IRIS	NA	214829897	14
Molybdenum trioxide	NA	15000	NA	interim derived	NA	169643250	12
Naphthalene	12000	1200	CalEPA	IRIS	1173942960	117394296	12

While in no case should EPA set constituents in a way that would not exclude any of the 218 facilities from coverage, Commenters propose that the addition of constituents is one partial option that EPA should consider in securing full coverage of this important requirement.

2. EPA Should Require Continuous Total VOC Monitoring at All Sources.

Another option to ensure full coverage of fenceline monitoring, which EPA could use in combination with one of more of these options, is to require that every facility conduct Total VOC (tVOC) monitoring. This would also have the benefit of providing continuous monitoring, which communities have sought for health protections from short-term emission spikes and better transparency and compliance. Additionally, tVOC monitoring could provide an avenue for requiring monitoring and reducing fugitive emissions while seeking to determine speciated fenceline monitoring constituents appropriate for individual facilities.

While tVOC samplers may be used as an additional screening technology, EPA should not view them as a replacement for other fenceline monitoring technologies. tVOC samplers are also sensitive to other environmental variables like temperature, pressure, and relative humidity, which can cause false positives or "phantom events," so they do not replace the need for more accurate speciated measurements.

Commenters propose that a good use case is to require all facilities to run real-time tVOC samplers as relative indicators of emission events. When the tVOC samplers exceed a threshold, they could then trigger an active canister sample that can be taken to a lab and will give a more accurate reading of the concentration of individual HAPs. Certain chemical plants already have requirements such as this in place, in which active, non-speciated monitors will deploy canister sampling upon triggering a VOC-based action level.[395] These speciated samples could also be used to determine appropriate and representative constituents for the facility's tailored fenceline monitoring programs, as discussed below. tVOC samplers would also be useful for more rapid corrective actions and emissions reductions, allowing operators to inspect equipment mid-event (rather than weeks later) and potentially stop an issue early and while waiting for lab results.

To protect against power outages or tampering, Commenters propose that best practices should include enclosing tVOC sensors in a weatherproof box on direct power, with a backup power source capable of operating the sensors for a week or more.[396]

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[395] *See* Shell Chemical Appalachia Settlement, *supra*, App. A, at 1 ("The PID Analyzers shall collect data continuously and reduce and record data in 5-minute averages. When the Action Level is reached, a solenoid valve will be actuated that will fill a six (6) liter evacuated Summa canister for 30 minutes and send a signal to a Shell representative.").

[396] For example, this backup power could include a solar panel charging a battery. This backup power should be capable providing power for a week and the ability to deploy the canister.

3. EPA Should Require Fenceline Monitoring Tailored to Each Source's Emissions and Risk.

A final option that Commenters propose to ensure full coverage of the fenceline monitoring requirements—and perhaps an overarching option—is that EPA should require facilities to develop tailored fenceline monitoring plans that are specific to each facility's emissions and risk drivers. That is, rather than seeking to set a subset of fenceline monitoring constituents that are meant to apply to—and improperly exclude—a wide variety of chemical facilities, EPA would set the framework and minimum requirements, while requiring each facility to select the constituents to be monitored.

For example, EPA could require each facility to select six constituents on the basis of its highest risk drivers and then to select the fenceline monitoring technology—with certain minimum requirements—appropriate to monitor those constituents. After developing the plan, the facility would submit it to EPA or a state agency for approval. The South Coast Air Quality Management District (SCAQMD) has a similar requirement in place—Rule 1180—under which petroleum refineries develop fenceline monitoring plans for certain HAPs and criteria pollutants pursuant to certain minimum requirements and guidelines set by SCAQMD.[397] Rule 1180 further requires that refineries submit their draft fenceline monitoring plans for review and approval by SCAQMD, including a public comment period.[398]

To that end, while facilities could develop action levels based on concentrations representative of their processes and "normal operations," Commenters propose that EPA should set certain maximum action levels as backstops, based on the unacceptable risk benchmark for individual HAPs. For example, as discussed below, the appropriate risk-based action level for chloroprene should be no higher than 0.2 $\mu g/m^3$.

Commenters propose that such a framework would be appropriate here, both in ensuring that all facilities are covered and that constituents are properly representative of the individual facilities and their risks to the surrounding communities.

B. EPA Must Account for Fenceline Monitoring Developments.

As described above, section 7412(d)(6) requires EPA to review the existing standards and determine whether revision is "necessary," including by "taking into account developments in practices, processes, and control technologies." EPA may determine that it is "necessary" to update the standards based on any relevant factors, but when such "developments" exist, EPA must update the standards, as developments are the "core requirement" of section 7412(d)(6).[399]

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[397] *See* SCAQMD, Rule 1180 - Refinery Community and Fenceline Air Monitoring, http://www.aqmd.gov/home/rules-compliance/rules/support-documents/rule-1180-refinery-fenceline-monitoring-plans (last visited June 28, 2023).

[398] *Id.*

[399] *Natural Res. Def. Council v. EPA,* 529 F.3d at 1084.

In the proposal, EPA appropriately recognizes fenceline monitoring, coupled with root cause analysis and corrective action, is a development under section 7412(d)(6) for managing fugitive emissions.[400] However, EPA unlawfully and arbitrarily limited its consideration of fenceline monitoring developments in two primary ways.

First, as discussed in detail in Part V.A, *supra*, EPA effectively has only considered fenceline monitoring as a development for the subset of HON/SOCMI and P&R I facilities that use, produce, store, or emit benzene, 1,3-butadiene, chloroprene, ethylene dichloride, ethylene oxide, or vinyl chloride and not for any P&R II sources.[401] The record shows that fenceline monitoring is a development that EPA must assess and "take into account" in setting the standards for *all* HON, P&R I, and P&R II sources. EPA has previously recognized fenceline monitoring is a development in the petroleum refinery rulemaking, the organic liquids distribution rulemaking, and the ethylene production rulemaking.[402] Accordingly, EPA must revise the standards and require fenceline monitoring at all HON/SOCMI and P&R facilities.

Second, there are other major developments in real-time fenceline monitoring that EPA must take into account. For years communities exposed to chemical and petrochemical plants have called on EPA to require real-time fenceline monitoring that can provide immediate information to communities to protect their health and safety. Since the Refinery Rule there have been major developments in real-time monitoring technology and governmental jurisdictions in California have required such monitoring. EPA must for example consider requiring real-time monitoring for toxic air pollutants at sources emitting EtO, chloroprene, and other highly toxic HAPs, such as that required by the South Coast Air Quality Management District (SCAQMD).[403]

EPA has also negotiated and courts have required fenceline monitoring requirements in consent decrees with chemical plants and petroleum refineries, including the BP Whiting refinery.[404] The agency stated in the record for the MON rule that it has reviewed "several

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[400] 88 Fed. Reg. at 25,142.

[401] *Id.*

[402] *See* 79 Fed. Reg. at 36,920; Memorandum from Eastern Research Group, Inc., to Art Diem, EPA, Re: Clean Air Act Section 112(d)(6) Technology Review for Equipment Leaks Located in the Organic Liquids Distribution Source Category, EPA-HQ-OAR-2018-0074-0015 at 5 (Apr. 28, 2019); Summary of Public Comments and Responses for the Risk and Technology Review for Ethylene Production, EPA-HQ-OAR-2017-0357-0074, at 192 (Mar. 2020) ("evaluated fenceline monitoring as a development").

[403] SCAQMD Rule 1180 & Rule 1180 Guidelines for Fenceline Monitoring at Refineries, http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1180.pdf; http://www.aqmd.gov/docs/default-source/rule-book/support-documents/1180/rule-1180-guidelines.pdf.

[404] *See* Consent Decree, *United States v. Shell Oil Company*, No. 13-cv-2009, App. 2.9 (S.D. Tex. Jul. 10, 2013) [hereinafter Shell Deer Park Consent Decree], *available at* https://www.epa.gov/sites/default/files/2014-07/documents/sdp-cd.pdf; Consent Decree, *United States of America et al. v. BP Products North America Inc.*, No. 12-cv-0207 (N.D. Ind. May 23, 2012) [hereinafter 2013 BP Whiting Consent Decree], *available at* https://www.epa.gov/sites/default/files/documents/whiting-cd.pdf.

consent decrees to which the agency is a party,"[405] indicating that EPA recognizes fenceline monitoring technologies and methods under such consent decrees as a section 7412(d)(6) development.

As Commenter EIP testified at the public hearing on the Ethylene Production NESHAP proposed rule, EIP and Clean Air Council entered into a settlement agreement with an Ethylene Production source, Shell Chemical Appalachia in Beaver County, Pennsylvania, that includes fenceline monitoring requirements including both passive monitoring with sorbent tubes, continuous monitoring with photoionization detectors, and deployable Summa canisters upon a continuous monitor exceeding an action level.[406] Other facilities are also implementing real-time fenceline monitoring for various HAPs, including Denka in St. John the Baptist Parish, Louisiana and a chemical facility in Norco, Louisiana.[407] EPA has also employed fenceline monitoring for ethylene oxide in Illinois, demonstrating that it can and should apply this for all HON sources.[408]

EPA should consult with its enforcement team to look at every chemical plant enforcement decree or settlement where fenceline monitoring has been required or the enforcement staff are investigating this. EPA must ensure the national emission standards reflect these "developments" to satisfy section 7412(d)(6) and provide an ample margin of safety to protect public health under section 7412(f)(2). Communities around all HON/SOCMI and P&R plants need fenceline monitoring, especially in the areas like the Houston Ship Channel and Louisiana's cancer alley, and near massive sources like Sasol, where communities have called for this protection immediately.

EPA must also require real-time monitoring that reflects developments using open-path monitoring technology. EPA has required the use of UV-DOAS, an open path technology at the Shell Deer Park refinery.[409] Under prior consent decrees, EPA has required refineries and chemical plants to use gas chromatographs, which, while not open-path, are multi-pollutant detectors that provide highly time-resolved data.[410] The BAAQMD is working to require all facilities within its jurisdiction to implement an open-path monitoring program for all BTEX

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[405] 84 Fed. Reg. at 69,205.

[406] Benjamin Kunstman, EIP, Testimony Before EPA, Proposed Ethylene Production Rule (Nov. 6, 2019); Shell Chemical Appalachia Settlement Agreement, *supra*, App. A, at 1.

[407] *See, e.g.*, Denka Facility in St. John the Baptist Parish, Louisiana, https://www.epa.gov/la/laplace-louisiana-air-monitoring, https://www.epa.gov/sites/production/files/2019-12/documents/r6_summary_through_november_25_2019.pdf; Norco Chemical facility in Norco, Louisiana, https://www.epa.gov/newsreleases/shell-chemical-lp-install-10-million-pollution-monitoring-and-control-equipment-norco; Shell Deer Park in Deer Park, Texas, https://www.epa.gov/enforcement/shell-deer-park-settlement.

[408] EPA, Sterigenics Willowbrook Facility: What We Know, https://www.epa.gov/il/sterigenics-willowbrook-facility-what-we-know (last visited July 7, 2023).

[409] *See* Shell Deer Park Consent Decree, *supra*, App. 2.9.

[410] *See* 2013 BP Whiting Consent Decree, *supra*, App. E, at 2 (requiring "continuous measurement of benzene, toluene, pentane, and hexane . . . using an SRI Model 8610 auto-GC or equivalent" with "calibration range of 1.0 to 500 ppbV for all gases.").

pollutants.[411] Similarly, SCAQMD is effectively implementing fenceline monitoring, concluding that "[o]pen-path technology is a well-established method to measure path-integrated trace gas absorptions and concentrations in the open atmosphere making it ideal for long-term fenceline monitoring of pollutant concentration levels emitted from refineries or other large area sources."[412] Such technology is also in place at other refineries, including Chevron Richmond. Open-path monitoring is also required to provide an ample margin of safety and comply with EPA's state policy to mandate enhanced monitoring.

As a further matter, new real-time monitoring technologies with new monitoring detection limits have emerged, such as Cavity Ring-Down Spectrometer (CRDS) for direct real-time measurement of ethylene oxide for fenceline or community monitoring. In April 2020, a company launched the following new technologies, as described on its website:

- The G2910 Stack and Indoor Air Quality Analyzer introduces technical services companies to the most sensitive (<250 ppt LOD), interference free, real-time measurement of ethylene oxide concentrations, enabling new measurement opportunities and more efficient deployments.
- The G2920 Fugitive Analyzer introduces the measurement community to a platform that supports long-term monitoring of emissions at the fenceline. Performance standards set by expensive, difficult to use, research-grade instruments (e.g. PTR-MS) are overshadowed by this easy-to-deploy technology with best-in-class LOD (<100 ppt).
- The G2930 Ambient Analyzer represents the greatest improvement in ethylene oxide detection (<25 ppt LOD) and meets an ambitious goal of protecting communities from long-term exposure to ethylene oxide. Continuous monitoring removes unknowns that arise from data gaps, and lack of flask sampling and analysis.[413]

This technology has been "validated" by an independent company, which stated that "the CRDS technology provided reliable and rapid ethylene oxide measurements down to extremely low

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[411] BAAQMD, Regulation 12, Rule 15-207 (April 20, 2016).

[412] SCAQMD, Rule 1180; Refinery Fenceline Air Monitoring Plan Guidelines at 12 (Dec. 2017), http://www.aqmd.gov/docs/default-source/rule-book/support-documents/1180/rule- 1180-guidelines.pdf.

[413] *See, e.g.*, Picarro, *Picarro Announces Family of Products for Measuring Ethylene Oxide Technology leap in Measurement and Monitoring to Support Accurate Exposure Data* (Apr. 28, 2020), https://www.picarro.com/company/press-releases/2020/picarro_announces_family_of_products_for_measuring_ethylene_oxide; Gasworld, *Picarro launches ethylene oxide analysers* (May 4. 2020), https://www.gasworld.com/picarro-launches-ethylene-oxide-analysers/2019014.article; Lucic *et al.*, *Novel real-time measurements of ethylene oxide using a Cavity Ring-Down Spectrometer (CRDS)* (Dec. 2019), https://ui.adsabs.harvard.edu/abs/2019AGUFM.A11I2681L/abstract.

levels."[414] As well, EPA has recently approved CRDS technology as an accepted method of measuring ethylene oxide designating an Other Test Method-47.[415]

Moreover, one mechanism used to improve the sensitivity of laser absorption spectroscopy is to increase the path length through a group of techniques known as cavity-enhanced absorption spectroscopy (CEAS). Whereas the multi-pass cells typically can provide an enhanced interaction length of up to ~2 orders of magnitude, resonant cavities can provide a much larger path length enhancement, up to ~104 to 105 with high reflecting mirrors with reflectivities of ~99.99–99.999%. In CRDS the absorbance is assessed by comparing the cavity decay times of a short light pulse as it "leaks out" of the cavity on and off-resonance, respectively. Other variations of CEAS include off-axis integrated cavity output spectroscopy (OA-ICOS), continuous wave cavity enhanced absorption spectrometry (cw-CRDS), and optical feedback cavity enhanced absorption spectroscopy (OF-CEAS). One of the more well-known CRDS technologies is the Picarro, often used to survey for natural gas leaks using their mobile car-mounted "Surveyor" monitoring platform. Another example is the Entanglement Technologies AROMA analyzer, a mobile approach to real-time monitoring of VOCs that are hazardous air pollutants, such as benzene and trichloroethylene. The fast-response, high selectivity, and low detection limits of CRDS technologies make it very well suited to mobile approaches looking for detailed spatial resolution.

The Aroma analyzer manufactured by Entanglement Technologies is a mobile high-accuracy instrument with low detection limits. After Hurricane Harvey hit the Houston, Texas area in late August, 2017, a community near a Valero Energy refinery complained of strong odors. Entanglement Technologies thereafter conducted monitoring in the community adjacent to the refinery using the AROMA Analyzer and found, in some locations, instantaneous benzene levels as high as 77 ppb and 90 ppb.[416] An Aroma sensor could be brought in if an emission event or leak is suspected, perhaps after identification by VOC screening.

And there are yet other types of fenceline monitoring EPA should consider as a development, open-path monitoring, proton-transfer-reaction mass spectrometry, and sorbent tubes capable of measuring EtO (e.g., Markes). These methods of fenceline monitoring could address the shortcomings with respect to (1) full coverage of sources, (2) appropriately lower action levels for EtO and chloroprene, and (3) monitoring frequency.

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[414] V. Schmid, CleanAir Engineering validates Picarro's Ethylene Oxide analyzer for stack, fenceline, and LDAR measurements (Aug. 20, 2020), https://www.cleanair.com/cleanair-validates-picarros-ethylene-oxide-analyzer/. Other Test Method 47-Measurement of Ethylene Oxide from Stationary Sources by Cavity Ring Down Spectroscopy (Mar. 23, 2023), *available at* https://www.epa.gov/system/files/documents/2023-03/Other%20Test%20Method%2047_R0.pdf.

[415] Other Test Method 47-Measurement of Ethylene Oxide from Stationary Sources by Cavity Ring Down Spectroscopy (Mar. 23, 2023), *available at* https://www.epa.gov/system/files/documents/2023-03/Other%20Test%20Method%2047_R0.pdf.

[416] *See* Texas Tribune, *EPA won't release benzene levels collected post-Harvey; private tests show elevated levels*, Sep. 14, 2017, *available at* https://www.texastribune.org/2017/09/14/epa-wont-release-benzene-levels-collected-after-harvey-private-monitor/.

While any fenceline monitoring program should ideally be tailored to individual facilities' emissions, risk, and processes/equipment, as discussed in Part V.A.3, *supra*, EPA should require real-time, open-path fenceline monitoring here, in addition to passive sampling, to satisfy the following criteria:

- Time Resolution – Ability to measure multiple pollutants and report data to the public in real-time or near real-time, at least every 5-20 minutes.
- Multi-Pollutant Monitoring – Measure multiple HAPs accurately at low concentrations.
- Geographic Coverage – Cover a significant portion of the fenceline to assure measurement of pollution regardless of wind direction.
- Assure Compliance and Incentivize Emission Reductions – Establish enforceable corrective action levels that create an incentive to identify fugitive and undercounted sources of toxic pollution.

On each of these criteria, open-path monitoring is the method EPA should require. Passive sampling is necessary but insufficient alone to satisfy these criteria or achieve EPA's ultimate goal of fully monitoring and reducing fugitive emissions from HON/SOCMI and P&R facilities.

C. EPA Must Set Action Levels for Chloroprene and Ethylene Oxide That are Protective of Human Health.

Commenters support requiring fenceline monitoring and corrective action for chloroprene and ethylene oxide; however, the action levels and method for choosing those levels are unlawful, arbitrary, and capricious. First, action levels for chloroprene and ethylene oxide must be reduced to well below the threshold at which each HAP causes unacceptable cancer risk or other significant harm to human health.[417] The proposed action levels for chloroprene and ethylene oxide are above those thresholds and therefore fail to provide an "ample margin of safety," in violation of section 7412(f)(2).[418] Second, EPA's method for setting action levels—choosing the lowest representative detection limit (RDL) and multiplying it by a factor of three—is improper here.[419] EPA must select technologies with lower RDLs and multiply those by a factor that is lower than 3 and that considers the time frame of the sampling. *See* Section V.B. (on developments).

1. Proposed corrective action levels for chloroprene and ethylene oxide are unlawful, arbitrary, and capricious.

To provide an "ample margin of safety," EPA must require action levels for chloroprene and ethylene oxide below those pollutants' IRIS values and that account for unacceptable cancer risk, non-cancer risk, and cumulative impacts from other pollutants.[420] EPA proposed action levels for chloroprene and ethylene oxide above those pollutants' IRIS value. For chloroprene,

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[417] 42 U.S.C. § 7412(f)(2).
[418] *Id.*
[419] 88 Fed. Reg. at 25,145.
[420] 42 U.S.C. § 7412(f)(2).

EPA proposed an action level of 0.3 μg/m^3 when the IRIS value is 0.2 μg/m^3.[421] For ethylene oxide, EPA proposed an action level of 0.2 μg/m^3 when the IRIS value is 0.003 μg/m^3.[422]

Section 7412(f)(2) requires EPA to promulgate residual risk standards if required "to provide an ample margin of safety to protect public health . . . or to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect."[423] EPA has stated that its goal in providing an ample margin of safety is "to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately 1-in-1 million; and (2) limiting to no higher than approximately 1-in-10 thousand [i.e., 100-in-1 million] the estimated risk that a person living near a facility would have if he or she were exposed to the maximum pollutant concentrations for 70 years."[424] EPA also looks to "health measures and factors taken [which] together may provide a more realistic description of the magnitude of risk in the exposed population than that provided by maximum individual lifetime cancer risk alone."[425] Such factors include "the overall incidence of cancer or other serious health effects within the exposed population" and "the effects due to co-location of facilities, and co-emission of pollutants."[426]

Chloroprene and ethylene oxide emissions from facilities regulated under the proposed rule have caused among the highest cancer risks, including the highest, from toxic air pollution in the United States. For example, Denka is located in St. John the Baptist Parish, Louisiana, which includes a census tract that faced a cancer risk as high as 1,505-in-1 million—the highest cancer risk in the nation from air pollution.[427] EPA attributed 85% (1,279-in-1 million) of the cancer risk from air pollution in census tract 708 in St. John to chloroprene emissions from Denka, 12% (187-in-1 million) to ethylene oxide emissions, and 3% (38-in-1 million) to all other pollutants.[428] The cancer risk in St. John is so severe that EPA has invoked its rarely used authority under section 303 of the Clean Air Act.[429] Ethylene oxide and chloroprene also cause other serious health effects. *See infra* Section I.D. (on health impacts of ethylene oxide and chloroprene). Since 2016, EPA has acknowledged that the "preferred level" of chloroprene in the air is 0.002 or less.[430]

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[421] 88 Fed. Reg. at 25,145.
[422] *Id.*
[423] 42 U.S.C. § 7412(f)(2).
[424] NESHAP for Benzene, 54 Fed. Reg. 38,044-45 (Sept. 14, 1989); 42 U.S.C. § 7412(f)(2)(B) (incorporating Benzene NESHAP).
[425] 54 Fed. Reg. at 38,045.
[426] *Id.*
[427] EPA, 2014 National Air Toxics Assessment (Aug. 22, 2018), https://gispub.epa.gov/NATA/.
[428] *Id.*
[429] *U.S. v. Denka, et al.*, E.D. La. (No. 23-cv-00735).
[430] Memo from Kelly Rimer, Leader, Air Toxics Assessment Group, Health & Env't Impacts Div., OAQPS, to Frances Verhalen, P.E., Chief, Air Monitoring/Grants Section, EPA Region 6, Re: Preliminary Risk-Based Concentration Value for Chloroprene in Ambient Air (May 5, 2016), https://www.epa.gov/sites/default/files/2016-06/documents/memo-prelim-risk-based-concentrations050516.pdf.

The action level for ethylene oxide and chloroprene should be lower than the pollutants' IRIS values because fenceline communities face the cumulative impacts of multiple HAPs from multiple facilities.[431] For example, residents of St. John the Baptist, Louisiana are surrounded by petrochemical plants and oil refineries, including Denka, Evonik Materials' plant, Union Carbide Corporation's Taft/Star operation, and Marathon Petroleum's oil refinery. Due to these facilities' emissions alone, fenceline communities inhale chloroprene, ethylene oxide, lead, toluene, 1-3 butadiene, benzene, and dozens of other HAPs.[432]

Fenceline communities also face the cumulative impacts of decades of uncontrolled or undercontrolled ethylene oxide and chloroprene emissions; as a result, many fenceline residents have already amassed far more than an acceptable cancer risk. EPA has concluded that both ethylene oxide and chloroprene are far more carcinogenic than the agency previously thought. EPA's 2016 IRIS assessment of ethylene oxide concluded that the HAP's cancer risk value is thirty times more potent than previously known and elevated ethylene oxide from a probable carcinogen to a known carcinogen. EPA's 2010 IRIS assessment of chloroprene concluded that the chemical was likely carcinogenic, after the agency had assumed a cancer risk value of zero. Because cancer risk is cumulative and these emissions have been undercontrolled or uncontrolled for decades in many cases, many fenceline residents have amassed an unacceptable cancer risk already. For example, Denka has been emitting chloroprene since it opened in St. John the Baptist Parish in 1969. Even after chloroprene emission reductions at Denka, St. John residents still amass an unacceptable cancer risk alarmingly quickly: Infants born near Denka "will suffer double their lifetime acceptable excess cancer risk from chloroprene exposure by their second birthday – 68 years sooner than they should amass half as much."[433]

2. EPA's method for setting chloroprene and ethylene oxide action levels is arbitrary and capricious.

EPA set the action levels for these two HAPs using a method—3xRDL—created for a different HAP in a different context. The justifications for that method do not apply here. Instead of using an arbitrary method, EPA should require use of technology with the lowest detection limit and use the method detection limit (MDL).

EPA developed the 3xRDL method in the context of the NESHAP for Coal- and Oil-Fired Electric Utility Steam Generating Units and NSPS for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial Institutional, and Small Industrial Commercial-Institutional Steam

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[431] *See* 54 Fed. Reg. at 38,045 (interpreting "ample margin of safety" as including consideration of "the effects due to co-location of facilities, and co-emission of pollutants").

[432] *See, e.g.*, EPA, Detailed Facility Report: Marathon Petroleum Company LP, https://echo.epa.gov/detailed-facility-report?fid=110041135580&ej_type=sup&ej_compare=US.

[433] Pl.'s Mem. In Supp. of Mot. for Prelim. Inj., Doc. 9-2 at 25, United States v. *Denka Performance Elastomer, LLC*, No. 2:23-cv-735 (E.D. La. Mar. 30, 2023) (citing Ex. D ¶¶s 64–66, Attach. 10 & 11 and Ex. E.), *available at* https://www.epa.gov/la/laplace-st-john-baptist-parish-louisiana.

Generating Units.[434] EPA developed the method "assuming short sampling periods," specifically a 30-minute sampling period, "so that compliance monitoring methods could provide timely data for operation of mercury control systems."[435] Here, however EPA proposes the same method for passive tubes for chloroprene, which have a sampling period 2-week period, and canisters for ethylene oxide, which have a 24-hour sampling period.[436] To the extent there was a reason for the 3xRDL in the context of using sorbent trap technologies for mercury with a 30-minute sampling period, that rationale does not apply here. Longer sampling periods allow for lower detection limits; as such, EPA cannot logically apply the same method. Here, EPA should use the MDL rather than RDL.

D. EPA Must Set Stronger Corrective Action Levels for Benzene, 1,3-Butadiene, Ethylene Dichloride, and Vinyl Chloride.

For benzene, 1,3-butadiene, ethylene dichloride, and vinyl chloride, EPA has proposed to set action levels based on the "maximum annual average . . . modeled at any facility for that HAP."[437] In other words, EPA has set the level for corrective action based on the highest emitters and worst actors for the source categories. But this is a misapprehension of the purpose of fenceline monitoring and EPA's duties under the Clean Air Act, as well as a repeat of the error EPA made under the 2015 refinery rule. EPA must correct this error in the final rule and set action levels no higher than the level that is harmful to human health.

In the proposed rule, EPA has selected the following as the action levels for benzene, 1,3-butadiene, ethylene dichloride, and vinyl chloride:

- Benzene: 9 $\mu g/m^3$,
- 1,3-Butadiene: 3 $\mu g/m^3$,
- Ethylene Dichloride: 4 $\mu g/m^3$,
- Vinyl Chloride: 3 $\mu g/m^3$.[438]

As EPA did in the 2015 refinery rule, these action levels are based on what EPA modeled as the highest fenceline concentration expected at the highest of the "top ten maximum chronic concentrations at the fenceline."[439] Using these, effectively the worst of the worst actors, to establish the level at which facilities take corrective action—the actual compliance mechanism of

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[434] *See* Reconsideration of Certain New Source Issues: National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 78 Fed. Reg. 24,073, 24,077 (April 24, 2013).

[435] Memo from Robin Segall to Toxics Rule Docket, Re Determination of Representative Detection Level (RDL) and 3 X RDL Values for Mercury Measured Using Sorbent Trap Technologies, EPA-HQ-OAR-2009-0234-20357 (Nov. 16, 2012).

[436] 88 Fed. Reg. at 25,144.

[437] *See* Fenceline Monitoring Technology Review Memo, *supra*, at 23.

[438] *Id.* at 24.

[439] *Id.* at 22.

fenceline monitoring—makes little sense. It is arbitrary and capricious to expect that these high proposed corrective action levels will help identify and lead to reductions in uncontrolled or inadequately controlled sources of fugitive emissions.

EPA appears to acknowledge this, noting that by selecting the maximum annual average, "all facilities should be able to meet the fenceline concentration action levels."[440] But this misapprehends the purpose of fenceline monitoring: to protect human health and better reduce fugitive emissions by monitoring emissions at the fenceline. Such high action levels would also be inconsistent with the statutory text and objectives of sections 7412(d) and 7412(f). Section 7412(d) directs EPA to focus on the best-performing, lowest-emitting sources, in order to require the "maximum achievable" emission reductions.[441] Section 7412(d)(6) requires EPA to review and update section 7412(d)(2)-(3) standards. As EPA has recognized that its action under section 7412(d)(6) is a "continuation of the technology-based section 7412(d) standard-setting process," it must serve the same goals of section 7412(d) overall to assure emission reductions.[442] Section 7412(f)(2) requires EPA to focus on the health of the "individual most exposed" to a source category's toxic emissions, in order to ensure the most health-protective standards that satisfy the requirement for an "ample margin of safety to protect public health" under section 7412(f)(2).

Comparing EPA's proposed action levels against the fenceline concentrations of the ten facilities it modeled—bearing in mind that these are the "top ten maximum chronic concentrations at the fenceline" in a source category of over 200 facilities—further underscores the point.

Table 9: Comparison of Action Levels to Tenth-Highest Concentration at Fenceline[443]

Constituent	**Proposed Action Level**	**Tenth-Highest Concentration**	**Ratio of Action Level to Tenth-Highest Concentration**
Benzene	9 $\mu g/m^3$	0.80 $\mu g/m^3$	11.25
1,3-Butadiene	3 $\mu g/m^3$	0.57 $\mu g/m^3$	5.26
Ethylene Dichloride	4 $\mu g/m^3$	0.32 $\mu g/m^3$	12.5
Vinyl Chloride	3 $\mu g/m^3$	0.11 $\mu g/m^3$	27.27

Each of these action levels is many times greater than the tenth-highest concentration at the fenceline and undoubtedly would be much greater than the average fenceline concentration of the entire source category of 200-plus facilities. It is difficult to see how these action levels would ever trigger corrective action to find and address the source of fugitive emissions.

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[440] *Id.*

[441] 42 U.S.C. § 7412(d)(2)-(3).

[442] *See, e.g.*, Subpart N: Summary of Public Comments on Chromium Electroplating and Steel Pickling Risk and Technology Review (RTR), EPA-HQ-OAR-2010-0600-0691 at 3.

[443] *See* Fenceline Monitoring Technology Review Memo, *supra*, at 29-31.

EPA's basis for setting the benzene action level is even less defensible. While EPA set the benzene action level in the refinery rule based on one maximum annual average concentration it actually modeled, there was no such figure here.[444] The maximum benzene fenceline concentration that EPA modeled here was only 3.39 µg/m^3.[445] Rather than use the concentration that EPA actually modeled from HON sources—which, again, is inappropriate for the reasons stated above—EPA opted to use the 9 µg/m^3 action level from the refinery rule "since the refinery who set the action level in 2015 for that source category is also a HON facility."[446] EPA has provided no other reason for diverging from its methodology based on recent emissions modeling and instead relying on a figure set almost a decade ago based on emissions from another source category.

EPA's decision to use the refinery rule action level is all the more arbitrary and capricious in consideration of two additional facts. First, even at the time that EPA selected the refinery action level, 9 µg/m^3 was vastly above the other refineries in the list of facilities' post-control fenceline concentrations, nearly double the next-highest on the list and more than ten times higher than the majority of facilities on the list.[447] Second, as EPA found in this rulemaking, more than four years of fenceline monitoring data from refineries "show that petroleum refinery fenceline concentrations have dropped by an average of 30 percent since the inception of the monitoring program requirements."[448] If the 9 µg/m^3 action level was representative of refineries at the time that EPA proposed the refinery rule, it certainly is not any longer.

EPA must correct these errors by ensuring that each of the action levels is below the level at which harm to human health occurs. To take benzene as one example, the 9 µg/m^3 action level that EPA originally selected in the refinery rule and has carried over to this rulemaking is higher than the threshold at which harm is known to occur. For example, in 2014, California updated its 8-hour and chronic reference exposure level for benzene to be 3.0 µg/m^3, which is equivalent to 1 ppb, three times lower than EPA's concentration action level in the Refinery Rule.[449] EPA has frequently recognized and used the California EPA numbers, including in risk assessments for many other chemicals, such as arsenic, dioxins, and hydrofluoric acid.[450] EPA has specifically noted the quality of the California EPA OEHHA assessment values because "[t]he process for developing these assessments is similar to that used by EPA to develop IRIS values and

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[444] *See* 83 Fed. Reg. 60,696 (Nov. 26, 2018).

[445] *See* Fenceline Monitoring Technology Review Memo, *supra*, at 29, Tbl. 8.

[446] *See* 88 Fed. Reg. at 25,145 n.115; *see also* Fenceline Monitoring Technology Review Memo, *supra*, at 24, n.12.

[447] *See* Memorandum from Ted Palma & Darcie Smith to Brenda Shine Re: Fenceline Ambient Benzene Concentrations surrounding Petroleum Refineries, EPA-HQ-OAR-2010-0682-0208 (Jan. 7, 2014).

[448] *See* 88 Fed. Reg. at 25,142.

[449] Cal. EPA, OEHHA, June 27 2014 Final Benzene REL: http://www.oehha.ca.gov/air/chronic_rels/BenzeneJune2014.html; *see also* Cal. EPA, OEHHA, Benzene, https://oehha.ca.gov/air/chemicals/benzene (last visited July 7, 2023).

[450] *See* Draft Residual Risk Assessment for the Petroleum Refining Source Sector, EPA-HQ-OAR-2010-0682-0225, at 22-25 Tbl. 2.6-2 (June 30, 2014).

incorporates significant external scientific peer review."[451] As further evidence that the benzene action level is too high from a health perspective, the European Union recognizes the need to prevent ambient benzene concentration levels from surpassing an annual level of 5.0 $\mu g/m^3$—which is also well below the action level of 9 that EPA has proposed here.[452]

In the present rule, EPA should set the benzene concentration action level no higher than 3.0 $\mu g/m^3$ and should assure that the action levels 1,3-butadiene, ethylene dichloride, and vinyl chloride—as well as the action levels for ethylene oxide and chloroprene, for the reasons discussed above—are also below the level at which harm to human health occurs.

E. EPA Must Also Set Short-Term Stronger Corrective Action Levels to Protect Communities from Emission Spikes.

EPA must also set short-term corrective action levels to protect communities, including the most-exposed person under section 7412(f)(2), from large emission "spikes" during events such as malfunctions. EPA's civil enforcement division has continually recognized that short-term corrective action thresholds are essential requirements for fenceline monitoring programs.

For example, a 2013 consent decree that EPA reached with Shell for its Deer Park facility requires corrective action based on both a five-minute standard and an hourly standard. Any five-minute period where the fence-line monitor picks up benzene concentrations above 50 ppb triggers a corrective action requirement.[453] Additionally, corrective action is required if the benzene level exceeds 15 ppb for three five-minute periods during a single hour.[454] Similarly, the 2014 consent decree for the Flint Hills Resources Port Arthur facility has corrective action requirements for fenceline readings of 1,3-butadiene or benzene that average above 25 ppb for an hour, as well as a "15-Minute Action Level" for benzene above 25 ppb.[455]

To be consistent with the expertise of EPA's enforcement division and to properly account for these developments, EPA should revise its proposed fenceline monitoring standards to include short-term corrective action levels that would help identify and reduce the significant health risks created by refinery malfunctions.

F. EPA Must Improve Canister Monitoring Location Requirements under Proposed Method 327.

Commenters strongly urge EPA to revise its proposed requirements under Method 327 to require only eight canister monitoring locations around a facility, no matter the size of the

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[451] *Id.* at 15 (explaining why EPA often considers the Cal. EPA Office of Environmental Health Hazard Assessment numbers).

[452] European Commission, Environment: Air, http://ec.europa.eu/environment/air/quality/standards.htm (EU benzene standard set January 2010) (last visited July 6, 2023).

[453] *See* Shell Deer Park Consent Decree, *supra*, App. 2.9, at 2.

[454] *Id.*

[455] *See* FHR Port Arthur Consent Decree, *supra*, App. 5.2, at 1-2.

facility's fenceline. As EPA admits, "the spatial coverage provided by this arrangement is less than that provided under EPA Method 325A."[456] While EPA's solution to this less-than-complete coverage is to require facilities to "move the canister sampling locations with alternating sampling periods in order to ensure complete spatial coverage of the facility,"[457] this also opens up the possibility of bad actors using the opportunity to avoid detection by placing the canisters further away from processes that are known to be higher emitters. Commenters urge EPA to require full coverage from the outset that would not require workarounds such as these.

As provided in the attached analysis by EDF, EPA's proposed canister coverage would result in facilities missing emission spikes, underreporting concentrations, and not conducting needed corrective actions.[458] EDF conducted this analysis by reviewing fenceline measurements from more than 100 refineries using modeling to demonstrate the effect of reducing the number of monitors on the metrics EPA uses to determine mitigation actions. For example, looking at one refinery in particular, EDF found that, regardless of which monitoring locations are selected, reducing the number of fenceline monitors from 24 to 8 has the result of reducing the average sampling period benzene concentration difference (ΔC) and not triggering the action level on occasions when the action level had been reached.[459]

Applying this same analysis to 118 refineries nationwide, EDF found that reducing the refineries' monitors to just 8 resulted in an average reduction in benzene concentrations of 33 percent, with a range between 2 and 75 percent.[460] In other words, fewer monitors meant less accurate detection of actual benzene emissions. These results suggest that having sufficient monitoring coverage around the entire facility is essential to capturing the true pollution difference and thus effectively detecting and addressing fugitive emissions. More critically, the number of monitors can be the difference between whether a facility triggers the corrective action level or not.

Based on these results, Commenters urge EPA to amend the proposed Method 327 in two ways. First, the number of monitors should be based on the size of the facility perimeter. Oddly, EPA requires this size-based monitoring for facility "secondary areas"—"with the with the number of canisters on the secondary area dictated by the size of the area"—but not for a facility's main fenceline.[461] Second, if EPA is limiting the number of monitors based on canister cost—to which Commenters object as a general matter—EPA should require that facilities use at least two methods of fenceline monitoring to mitigate this lack of coverage and ensure proper detection. Specifically, there should be no "Canisters only" facilities.[462]

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[456] *See* 88 Fed. Reg. at 25,144.
[457] *Id.*
[458] *See* EDF, Technical Appendix at 9-15 (July 7, 2023) (attached as Exhibit 12).
[459] *Id.* at 9-10.
[460] *Id.* at 11-15.
[461] *See* 88 Fed. Reg. at 25,144.
[462] *See* Fenceline Monitoring Technology Review Memo, *supra*, App. C. It appears that there would only be 10 "canisters only" facilities, so this should be a relatively easy fix.

With these changes, Commenters propose that the fenceline monitoring requirements would be far more accurate and capable of achieving reductions in fugitive emissions and protections of community health.

G. EPA Must Improve Sampling Frequency Requirements under Proposed Method 327 and Other Methods.

Commenters urge EPA to improve the sampling frequency it has proposed for Method 327, in order to avoid missed and underestimated emissions. As currently proposed, canister sampling pursuant to Method 327 would occur in 24-hour sampling periods once every five days.[463] But according to the attached analysis conducted by EDF, this "one in five day" sampling is subject to variation in the annual mean (±8-10 percent) and underestimation of maximum concentrations (as high as 30 percent at one facility and 60 percent at another), depending on the exact sampling schedule.[464]

Because of this potential for loss in accuracy under the proposed sampling frequency, EPA should revise the method so as not to allow the four-day "skip" in between sampling periods. This could be achieved by requiring daily canisters back-to-back with no skips, requiring sorbent tubes or another continuous sampling method in addition to canisters (as discussed above with respect to monitoring locations), or requiring only sorbent tubes. Continuous sampling without skipping days additionally has the benefit of preventing facilities from inappropriately timing releases during periods when no measurements are being taken.

A related issue is the appropriate sampling frequency—under canisters, sorbent tubes, or otherwise—for the detection of chronic and acute exposures. For pollutants that pose chronic risk, such as EtO or chloroprene, longer-duration sampling periods are sufficient to estimate this chronic risk. As EDF's analysis demonstrates, hourly, daily, one-week, and two-week continuous sampling all yielded consistent annual mean values, indicating that longer-duration samples are sufficient to estimate chronic exposures.[465]

For pollutants that have acute effects, however, longer-duration samples—such as the two-week sampling provided by Methods 325A/B—fail to capture the magnitude of acute pollution events. At the two sites that EDF's analysis examined, for example, hourly maximum benzene measurements were as high as 20 times the maximum two-week average.[466]

Based on this analysis, the best balance between measuring accurate annual estimates and capturing short-term concentrations in order to allow for quick corrective action would be one-week sampling frequency (with active sampling for greater precision). This balance could also be achieved by requiring a combination of several different monitoring technologies: for example, tVOC and sorbent tubes.

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[463] *See* 88 Fed. Reg. at 25,143.

[464] *See* EDF, Technical Appendix, *supra*, at 16-17.

[465] *Id.*

[466] *Id.* at 1-2.

Another benefit of applying this longer sampling frequency in lieu of Method 327's proposed 24-hour every five days is that longer sampling periods can allow for detection at lower concentrations. This is directly relevant to comments regarding action levels above, and especially for EtO, which currently has a proposed action level ten times higher than the unacceptable risk concentration.[467] Given that the primary risk concern is with regard to EtO's chronic cancer risk rather than acute effects, a longer sampling frequency with a lower detection limit would far better serve the specific EtO risks faced by fenceline communities.

H. EPA Must Set Stronger Corrective Action Requirements.

EPA must require shorter timelines and more robust requirements for corrective action. Timely corrective action is essential to assure communities living in the shadow of facilities regulated under this rule are not exposed to excess toxic pollution and unacceptable cancer and non-cancer risks. Additionally, EPA must require specific correction actions, including curtailment. Finally, action level exceedances must be considered violations of emission standards. Anything less is a malfunction exemption, and thus is unlawful under the Act and D.C. Circuit precedent.[468]

EPA should require the following:

Corrective action analysis within 5 days of initiating the root cause analysis.

Initial corrective action within 5 days of completing the corrective action analysis. Without a concrete deadline, a problem could linger indefinitely and become catastrophic. Furthermore, facilities could delay completing the initial corrective action and might never trigger the second corrective action requirement of submitting a plan to EPA.

Further corrective action plan within 14 days of exceedance of an action level. EPA should propose to review and decide whether to approve corrective action plans within 14 days of submission. EPA should <u>not</u> deem plans approved if it has not acted within 90 days. If it takes EPA longer than that to review and make a decision, the facility should be required to implement the plan. Otherwise, leaks can go on for months after repeated exceedances before a facility takes any corrective action. Additionally, if within 14 days of an exceedance a facility cannot determine the root cause, it must be required to use real-time monitoring. The 30-day timeline in the proposed rule is too long.

Specific corrective action, such as automatic shutdown, additional higher-quality monitoring, curtailment, and oversight such as an inspection and audit by EPA expert staff or an independent expert. EPA must consider requiring at least what its own enforcement division is including in consent decrees, such as the Shell Deer Park decree.[469]

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[467] *See supra* Part V.C.

[468] *See Sierra Club*, 551 F.3d at 1028; *Natural Res. Def. Council*, 749 F.3d at 1063.

[469] Shell Deer Park Consent Decree, *supra*, at 74.

An exceedance of an action level should be deemed a violation of emission standards, such that all applicable Clean Air Act penalties apply until the facility ends and corrects the problem. Anything less is a malfunction exemption, and thus is unlawful under the Act and D.C. Circuit precedent.[470]

I. EPA Must Improve Public Availability of the Fenceline Monitoring Data.

The final rule must require fenceline monitoring data to be reported and made publicly accessible as it is collected and analyzed. The proposed rule requires data to be reported only quarterly.[471] Making pollution data public is a low-cost, efficient manner to drive pollution reduction. For example, the Toxics Release Inventory program has led to emissions reductions.[472] Having real-time data helps facilities, surrounding communities, and the local, state, and federal governments detect and respond to chemical disasters. The data become less valuable to these actors the longer facilities wait to report them. Furthermore, reporting through EPA's electronic reporting and data retrieval portal is not sufficient. EPA enforcement consent decrees have required real-time fenceline monitoring and reporting at refineries and chemical plants.[473] Local regulations for refineries in Los Angeles require open-path monitoring that has a higher detection limit but allows for real-time alerts.[474] EPA must provide or require facilities regulated under this rule to create and provide a public website that makes these data accessible to a layperson community member near a facility who is not aware of and has not had training on that portal.

Real-time data collection and reporting is also consistent with Section 222(b)(ii) of Executive Order 14008: "The Administrator of the Environmental Protection Agency shall, within existing appropriations and consistent with applicable law: [...] (ii) create a community notification program to monitor and provide real-time data to the public on current environmental pollution, including emissions, criteria pollutants, and toxins, in frontline and fenceline communities—places with the most significant exposure to such pollution."

J. Environmental Justice Supports Strong Fenceline Monitoring Requirements.

Applying the proposed fenceline monitoring requirements to all covered sources and improving public availability of fenceline monitoring data would meaningfully advance the environmental justice goals stated in the Administration's *Executive Order on Revitalizing our Nation's Commitment to Environmental Justice for All*, which specifically recognizes fenceline

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[470] *See Sierra Club*, 551 F.3d at 1028; *Natural Res. Def. Council*, 749 F.3d at 1063.

[471] 88 Fed. Reg. at 25,147.

[472] EPA, *Next Generation Compliance* 25 (2013), https://www.epa.gov/sites/default/files/2014-09/documents/giles-next-gen-article-forum-eli-sept-oct-2013.pdf.

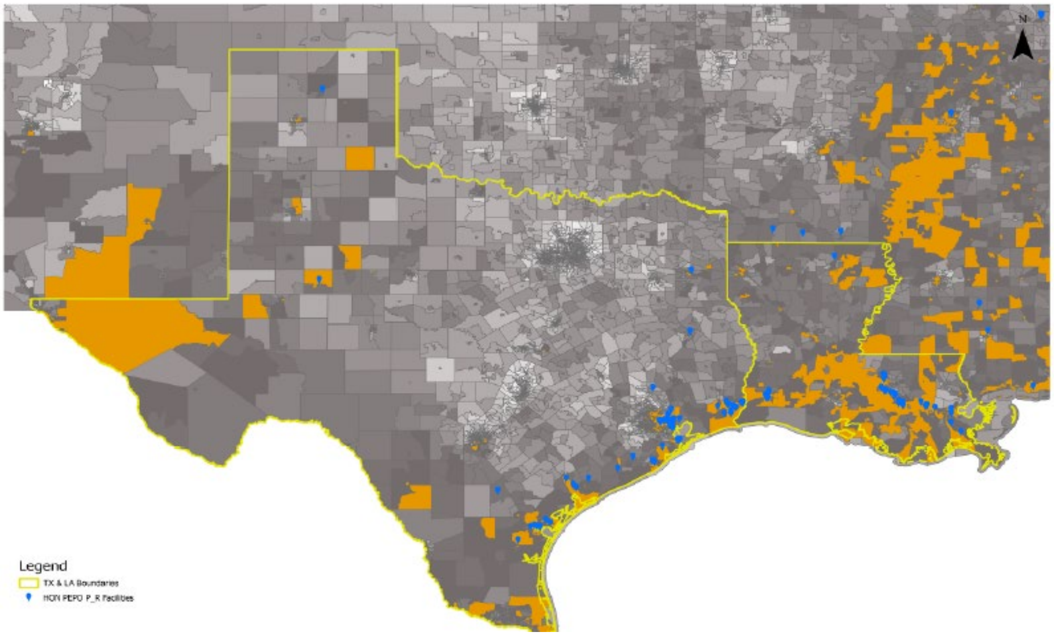
[473] *See, e.g.*, Shell Deer Park Consent Decree, *supra*, at 30-35.

[474] *See* SCAQMD, Rule 1180 - Refinery Community and Fenceline Air Monitoring, http://www.aqmd.gov/home/rules-compliance/rules/support-documents/rule-1180-refinery-fenceline-monitoring-plans (last visited June 28, 2023).

monitoring as a tool of pollution measurement.[475] Stronger fenceline monitoring requirements will assist in reducing existing information inequities from gaps in air quality information in overburdened and under resourced communities.

EDF and Texas A&M University developed the Climate Vulnerability Index (CVI), a data driven tool created to identify communities most vulnerable to cumulative impacts of climate change, health, social and economic impacts, infrastructure, and the environment. The CVI integrates 184 indicators from publicly available data sets of baseline vulnerabilities and climate change risks to better understand the intersection between longstanding disparities and effects of a warming climate on community resilience in the United States. Map 1 shows the distribution of HON regulated, PEPEO, and polymer and resin producing industrial facilities across the US and the most disadvantaged census tracts with a CVI rank scores in the top 5%. Map 2 shows the spatial clustering of these facilities among neighborhoods with the greatest cumulative vulnerability in Texas and Louisiana.

Map 1: Distribution of Hazardous Organic NESHAP, PEPO, Polymers & Resins, regulated industrial facilities in Texas and Louisiana. Census tracts ranking in the CVI top 5% nationally are shown in orange.[476]



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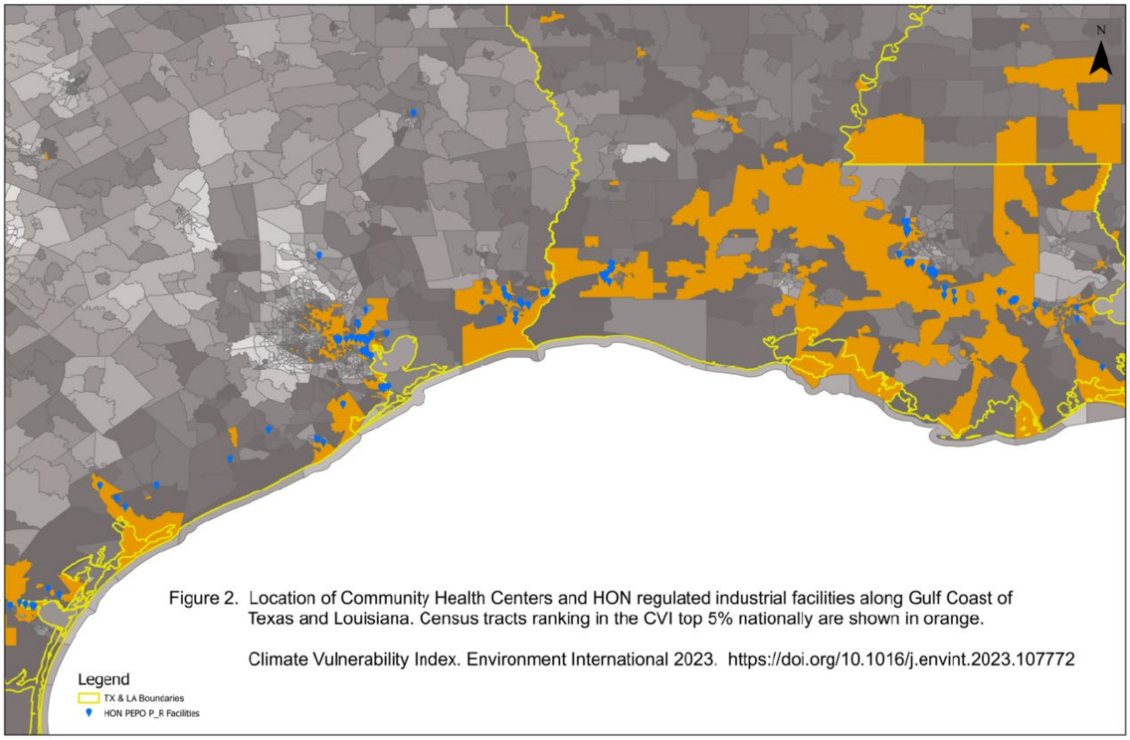
[475] *Executive Order on Revitalizing our Nation's Commitment to Environmental Justice for All* (April 21, 2023), https://www.whitehouse.gov/briefing-room/presidential-actions/2023/04/21/executive-order-on-revitalizing-our-nations-commitment-to-environmental-justice-for-all/.

[476] Source: Climate Vulnerability Index. Environment International 2023, https://doi.org/10.1016/j.envint.2023.107772.

Map 2: Location of Hazardous Organic NESHAP, PEPO, Polymers & Resins, regulated industrial facilities along Gulf Coast of Texas and Louisiana. Census tracts ranking in the CVI top 5% nationally are shown in orange.[477]



Comprehensive fenceline monitoring requirements are also needed to enable stronger enforcement and compliance measures at covered facilities. Data from EPA's Enforcement and Compliance History Online (ECHO) database shows that more than 80 percent of covered facilities, almost 60 percent of which are located in Louisiana and Texas, have been in noncompliance with federal environmental laws in the past three years.[478] Accessible data from fenceline monitoring is necessary to strengthen transparency, hold polluters accountable for violating federal and state regulations, and provide communities with actionable data to protect their health. For example, the recent lawsuit filed by the Department of Justice against Denka Performance Elastomer in St. John the Baptist Parish, Louisiana illustrates the role of fenceline monitoring in providing actionable data to improve public health and welfare. The Complaint alleges that Denka's chloroprene emissions are presenting an imminent and substantial endangerment based on nearly six years of data collected from monitoring systems operated by

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[477] *See* Climate Vulnerability Index, Environment International 2023, https://doi.org/10.1016/j.envint.2023.107772.

[478] EDF, HON Facilities Compliance Analysis Summary (2023), *available at* https://blogs.edf.org/climate411/wp-content/blogs.dir/7/files/2023/04/HON-facilities-compliance-analysis-summary-20230330pm.pdf.

EPA and Denka.[479] The lawsuit follows years of advocacy using air quality data and reports by Louisiana advocacy group Concerned Citizens of St. John.[480]

VI. PROCESS-SPECIFIC CONTROLS

EPA should follow a logical approach to determine site-specific, process-specific controls, including investigating alternatives that would use less hazardous feedstocks.

First, a facility should identify one or more spatial domains where processes that handle and therefore emit the air toxic pollutants of interest are located. Each of these areas should be clearly identified by the facility.

Second, for each area identified above, all point sources (i.e., vents, whether intermittent or continuous) that have the potential to emit the air toxic pollutant in question should be controlled in non-flare properly design devices such as oxidizers, scrubbers, etc.

Third, the universe of fugitive emission sources in the process area capable of emitting the toxic air pollutant should be identified via a thorough inventory – going above and beyond the LDAR database, and including all fugitive sources/components, without exception. The facility should then evaluate and replace as many of these components with leakless devices, eliminating fugitive emissions from such components completely (and also therefore simplifying its LDAR compliance obligations).

Fourth, to the extent that even after the replacement or substitution of leakless components still leaves numerous fugitive components that are still present in the process area, EPA should require the use of area monitoring—as discussed in detail in Part II.A.1, *supra*—preferably continuously, in order to identify the general presence/location of leaking components. The identification can then be confirmed by techniques such as optical gas imaging, followed by additional LDAR Method 21 confirmation as needed – followed by quick repair.

This formalism will logically: (i) eliminate the source of emissions to the maximum degree possible; and (ii) identify/repair sources rapidly – collectively minimizing the emissions of the toxic air contaminant in question. This formalism blends risk-based and technology-based approaches, leading to minimal emissions and risks. It also incorporated monitoring to enhance the identification and control of emissions sources.

It also avoids the fallacy of unverifiable facility-wide caps, such as the 3.8 tons per year for chloroprene for P&R I facilities and the 1.0 ton per year cap on EtO emissions from process

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[479] *See* EPA Denka Complaint, *United States v. Denka Performance Elastomer*, No. 2:23-cv-00735 (E.D. La. Feb. 28, 2023) [hereinafter EPA Denka Complaint], https://www.justice.gov/d9/press-releases/attachments/2023/02/28/denka_complaint.pdf.

[480] Bobby Taylor, *DOJ Takes Action Against Denka: Victory for St. John Parish Citizens in the Fight Against Pollution*, Concerned Citizens of St. John, https://www.ccosj.com/single-post/doj-takes-action-against-denka-victory-for-st-john-parish-citizens-in-the-fight-against-pollution (last visited July 7, 2023).

vents. While arriving at such a back-calculated cap from the risk assessment (itself flawed, per previous comments), may seem logical, the cap fails as a practical matter because it is unverifiable – especially where the cap encompasses not just non-flare point sources (which can, with some effort, be properly monitored) but also flare (which cannot be tested) and numerous fugitive sources, whose emissions simply cannot be monitored and verified. Caps such as these, back-calculated from risk determinations, are not proper.

The tons-per-year cap on ethylene and chloroprene are unenforceable and should be replaced by other control requirements. The 3.8 tpy cap on chloroprene is inappropriate for several reasons. First, EPA back-calculated this cap from a flawed risk assessment. As explained above, EPA likely underestimated its emissions in risk modeling. As discussed above, from almost every single source type, EPA's input emission rates rely uncritically on facility-reported emissions data with no verification. The fact that local monitoring data often shows pollution levels many times that predicted by modeling directly confirms the underestimation in the emissions inventory and inputs used by EPA. Based on our experience, emissions are likely to be underestimated from: flares (via generous and unverifiable assumptions about destruction efficiency); fugitives (by relying on poor data in LDAR databases); tanks (by algorithms that have been known to underestimate emissions by many multiples); and also from process vents (by not having accurate process data such as vent stream flow rates and compositions). EPA does not audit the emissions input values before using them in its risk review. As noted in the monitoring/modeling discrepancy, EPA's risk estimates are likely to be substantially low.

Second, a facility-wide cap fails as a practical matter because it is unverifiable and therefore unenforceable, particularly here where it encompasses not only non-flare point sources (which can, with some effort be properly monitored) but also flare and numerous fugitive sources (whose emissions simply cannot be tested, monitored, and verified).

Third, given that this facility-wide cap is based on a flawed assessment and is unenforceable, EPA cannot finalize it and keep its promise to residents of St. John the Baptist Parish to address the health crisis caused by chloroprene emissions. In addition to broadly promising to address the health crisis in St. John,[481] EPA specifically stated that it would issue a strong P&R I rule in lieu of resolving residents' Title VI complaints—and specifically in lieu of addressing the complaints allegations with respect to Denka's chloroprene emissions and the cancer risk they drive.[482]

Fourth, given that the 3.8 ton-per-year cap will apply to one facility—Denka Performance Elastomer—it is appropriate to consider items in the facility's history of compliance and reporting. While Denka's is better on track with chloroprene monitoring and emission reductions than in the past, intervention by EPA has been critical in getting to this place. Before community monitoring began in 2016, there was no way to verify whether the numbers reported by Denka

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[481] *See* EPA, *ICYMI: On his Journey to Justice, EPA Administrator Michael S. Regan Toured Historically Marginalized Communities in the American South, Highlighted Benefits of Bipartisan Infrastructure Law* (Nov. 22, 2021), https://www.epa.gov/newsreleases/icymi-his-journey-justice-epa-administrator-michael-s-regan-toured-historically.

[482] *See* EPA Title VI Closure Letter to LDEQ, *supra*.

and—previously—DuPont reflected actual emissions. Furthermore, chloroprene emitters had an incentive to underreport starting in 2010 with the new, higher IRIS value for chloroprene. Once community monitoring began in 2016 and Denka reached its Agreement on Consent with the Louisiana Department of Environmental Quality to reduce stack emissions, its emissions of chloroprene gradually decreased.

That being said, there have recently been large problems with "unknown" and therefore unreported emissions at the facility. For example, in 2022, EPA discovered that Denka was using an unpermitted brine pit to allow poly-kettle waste to off-gas chloroprene. This resulted in EPA reaching a consent order with Denka in December 2022 and the cessation of brine pit use in early 2023.[483] EPA's recent filing of an emergency section 7603 action under the Clean Air Act—and its motion for a preliminary injunction—demonstrates that there are still significant problems with the facility's emissions that are not addressed by permit terms and likely will not be curtailed by an unenforceable cap on emissions.[484]

For similar reasons, EPA's proposed 1 ton-per-year cap on ethylene oxide emissions from all maintenance vents suffers from the same shortcomings. Moreover, ethylene oxide is highly carcinogenic even at low concentrations.

In lieu of an unenforceable cap, EPA should require the following in the final rule:

(1) All process vents should be controlled, even those with "de minimis" emissions of chloroprene and ethylene oxide. The controls should not be flares, but rather more effective control technologies, such as thermal oxidizers.
(2) For fugitives, EPA must go beyond what it has proposed and require the use of leakless or low-emission components like valves, connectors, and pumps, as discussed in Part II.A.3, *supra*.
(3) For other fugitives that are not readily controlled with leakless components, EPA should require additional monitoring such as area monitoring, optical gas imaging, or leak detection sensor networks, such as those developments discussed in Part II.A, *supra*.

Additionally, EPA proposes to divide process vents into two groups, one of which EPA finds "generally do not require controls provided they do not exceed Group 1 thresholds."[485] EPA's proposal to exempt for example Group 2 process vents from controls is contrary to *LEAN*.[486] This Circuit decision holds that where there are uncontrolled HAP emissions (or where

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[483] *See* Consent Agreement, *In the Matter of Denka Performance Elastomer, LLC*, Docket No. RCRA-06-2023-0906 (Dec. 20, 2022), *available at* https://www.epa.gov/system/files/documents/2022-12/Denka%20Consent%20Agreement%2012-20-2022.pdf.

[484] *See* EPA Denka Complaint, *supra*; Press Release, EPA, *United States Seeks Preliminary Injunction Against Denka Performance Elastomer to Immediately Reduce Chloroprene Emissions* (March 20, 2023), *available at* https://www.epa.gov/newsreleases/united-states-seeks-preliminary-injunction-against-denka-performance-elastomer.

[485] 88 Fed. Reg. at 25,113.

[486] *LEAN,* 955 F.3d at 1096.

a standard is otherwise unlawful), EPA's obligation under section 7412(d)(6) to review and revise "as necessary" includes setting limits for these emissions. EPA has failed to satisfy this core requirement of section 7412(d)(6). EPA has neither identified and assessed all currently uncontrolled HAP emissions, nor has EPA issued limits to control all such emissions.

VII. EPA UNLAWFULLY FAILED TO REGULATE 1-BROMOPROPANE (1-BP) EMISSIONS AS REQUIRED BY SECTION 7412(D)(6) AND *LEAN*

In the proposed rule, EPA declines to regulate 1-BP emissions from covered sources, despite the fact that EPA's own data shows that covered sources emit significant quantities of 1-BP—with some HON sources emitting tons of 1-BP every year—and that such regulation is urgently needed. EPA has never established an emission standard for 1-BP for the HON, P&R I, or P&R II source categories, because 1-BP was only listed as a HAP in 2022 and thus it was not considered a HAP when EPA previously promulgated standards for these categories.[487] Consequently, EPA has a mandatory obligation under 7412(d)(6) to regulate 1-BP emissions in this rulemaking: EPA must "add limits" for 1-BP and these limits must be "calculated consistent with section [741](d)(2)-(3)."[488] EPA's proposal fails to do so and violates the Act and the DC Circuit's binding precedents.

"It is well established…that the [Clean Air] Act requires each source category's emission standard to address <u>every</u> recognized hazardous pollutant that the source category is known to emit."[489] "Each source category's 'emission standard' must specify the source's maximum allowable emission 'of hazardous air pollutants listed for regulation.' In other words, each 'emission standard' includes limits on emissions of air toxics from a particular kind of air polluter. An emission standard must contain limits for <u>each</u> listed air toxic the relevant category of source emits."[490] And those limits must be calculated in the specific manner commanded by Section 7412: "Section [7412](d)(2)-(3) prescribes the <u>method</u> by which EPA, in promulgating an emission standard, must calibrate source-specific limits on emission <u>of each</u> air toxic."[491]

In *LEAN*, the court addressed the situation presented here, whether as part of a 7412(d)(6) review, EPA must set MACT standards for HAPs for which the agency has not previously set MACT standards.[492]

The court answered unambiguously yes: "We read the statutory text to require EPA during its section [7412](d)(6) review to establish any missing limits."[493] Section 7412(d)(6) "is a mandate to address the adequacy of each emission standard on the books against the statutory

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[487] *See* 87 Fed. Reg. 393 (Jan. 5, 2022).

[488] *LEAN*, 955 F.3d at 1095.

[489] *Id.* at 1090 (emphasis added).

[490] *Id.* at 1092 (emphasis added) (internal citation omitted).

[491] *Id.* (emphasis added).

[492] *See id.* at 1095 ("The question here is whether, when EPA undertakes those updates, it must add limits, <u>calculated consistent</u> with section [7412](d)(2)-(3), for any air toxics the source emits that the existing standard does not address." (emphasis added)).

[493] *Id.* at 1096.

demand of section [7412](d)(2) for an 'emission standard' for each source category—one with the requisite degree of control of all of the air toxics the source emits. The obligatory periodic review and revision of 'emission standards' thus must ensure that each source category's standard imposes appropriate limits—not just on whatever subset of toxics the existing standard addressed, but on all the toxics the source category emits."[494]

Thus, as part of the 7412(d)(6) review, EPA must actually "add[] limits for those overlooked toxics."[495] And those limits must be "calculated consistent" with the requirements of 7412(d)(2) & (d)(3) for calculating the MACT floor and any beyond the floor standards.[496]

Because EPA did not list 1-BP as a HAP until 2022, EPA has never before established an emission standard for 1-BP the covered source categories. Pursuant to section 7412(d)(6) and the DC Circuit's decision in *LEAN*, EPA must do so here. Despite that clear obligation, EPA unlawfully proposes to do nothing to regulate 1-BP emissions. That failure is unlawful.

EPA offers a number of justifications for this unlawful decision, none of which have merit. EPA claims that it has "no information that 1-BP is used, produced, or emitted" to make SOCMI chemicals regulated under the HON rule or as part of the production of any polymers or resins covered under the P&R I or P&R II rules.[497] But EPA's own data demonstrate that is false. For example, EPA's TRI data shows that the Albemarle plant in Magnolia, Arkansas, which is listed as one of the covered sources, has emitted tons of 1-BP every year since the chemical was added to the TRI list and the facility was first obligated to report its 1-BP emissions.[498] Similarly, TRI data shows that FHR Corpus Christi West Plant, another source covered by the HON,

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[494] *Id.* 955 F.3d at 1097.
[495] *Id.*
[496] *Id.* at 1095. "Section [7412](d)(2)-(3) prescribes the method by which EPA, in promulgating an emission standard, must calibrate source-specific limits on emission of each air toxic. Specifically, for existing major sources, EPA must 'require the maximum degree of reduction in emissions' by the particular source category that the Agency 'determines is achievable.' 42 U.S.C. § 7412(d)(2). To that end, the Act directs EPA to calculate the average level of emissions of each air toxic achieved by the best-performing 12 percent of facilities in a given source category—those that emit the toxic at the lowest levels. Id. § 7412(d)(3)(A). That baseline emissions limit is referred to as the 'maximum achievable control technology' floor or 'MACT floor.' *Sierra Club v. EPA*, 895 F.3d 1, 7-8 (D.C. Cir. 2018). EPA must then determine, considering cost, health, and environmental effects, whether a more stringent limit is 'achievable.' 42 U.S.C. § 7412(d)(2). If so, EPA must promulgate a 'beyond-the-floor' limit at that more stringent level." *LEAN*, 955 F.3d at 1092 (emphasis added).
[497] 88 Fed. Reg. at 25,175.
[498] Between 2016 and 2021, Albemarle reported annual 1-BP air emissions between 9,677 and 33,614 pounds. *See* EPA ECHO, Detailed Facility Report for Albemarle, *available at* https://echo.epa.gov/detailed-facility-report?fid=110000743508&ej_type=sup&ej_compare=US (last visited July 7, 2023); *see also* EPA TRI, 2021 Form R Reports for Albemarle, *available at* https://enviro.epa.gov/enviro/tri_formr_partone_v2.get_thisone?rpt_year=2021&dcn_num=1321220362420&ban_flag=Y (last visited July 7, 2023).

reports tons of 1-BP air emissions in recent years.[499] Elsewhere, EPA has stated that as much as 26 million pounds of 1-BP are manufactured in the United States, suggesting that there may be many other covered facilities that emit 1-BP.[500]

EPA further states "[f]or the source categories covered by the HON, P&R I, and P&R II, we do not believe that the inclusion of 1-BP as an organic HAP would have any effect on the MACT standards."[501] This statement is unintelligible. To the extent that EPA means that it would have established identical MACT standards had 1-BP been a listed HAP at the time EPA initially set the MACT for the covered sources, that justification is unlawful and arbitrary. The Clean Air Act requires EPA to set emission standards for <u>each</u> HAP and to do so using a specific "method"—calculating the MACT floors for 1-BP and determining whether beyond the floor standards are warranted.[502] Because EPA has never taken those required steps it must do so here.[503] It cannot substitute its unsubstantiated belief about the adequacy of existing standards for those congressionally-mandated actions. That is all the more true here, where EPA has demonstrated that it has no understanding of how much 1-BP is emitted by covered sources, and thus no basis for concluding that MACT standards would be unchanged.

EPA also states "that in many instances in the HON and P&R I, many MACT emission standards allow facilities to comply with a total organic compound concentration standard (*e.g.,* 20 ppmv), which could adequately regulate emissions of 1-BP should we receive additional information that it is emitted from these source categories."[504] The fact that years before 1-BP was listed as a HAP, EPA set standards for other HAPs and expressed those standards as a limit on total organic does not relieve EPA of its obligation to calculate and set MACT standards for each HAP.

Finally, EPA states that "1-BP is not a SOCMI chemical,"[505] presumably meaning that 1-BP is not on the list of chemicals in Tables 1 and 2 of 40 CFR Part 63 Subpart F. As with EPA's other explanations, this is irrelevant. While EPA has defined the scope of the HON category to include facilities that manufacture or use the discrete set of pollutants identified in these

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[499] EPA ECHO, Air Pollutant Report for FHR Corpus Christi, *available at* https://echo.epa.gov/air-pollutant-report?fid=110000504918 (15,951 pounds in 2021); EPA TRI, 2016 Form R Reports for https://enviro.epa.gov/enviro/tri_formr_partone_v2.get_thisone?rpt_year=2017&dcn_num=1317216405872&ban_flag=Y (15,951 pounds in 2017); EPA TRI, 2017 Form R Reports for FHR Corpus Christi, *available at* https://enviro.epa.gov/enviro/tri_formr_partone_v2.get_thisone?rpt_year=2016&dcn_num=1316215428347&ban_flag=Y (21,741 pounds in 2016).

[500] EPA, Risk Evaluation for 1-BromoPropane (1-BP), *available at* https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-evaluation-1-bromopropane-1-bp.

[501] 88 Fed. Reg. at 25,175.

[502] *LEAN*, 955 F.3d at 1092 (citing 42 U.S.C. § 7412(d)(2)-(3)).

[503] *Id.*

[504] 88 Fed. Reg. at 25,175.

[505] *Id.*

tables,[506] EPA is nonetheless required to set emissions standards for each and every HAP emitted by the source category regardless of whether they are included on this list.

In light of the indisputable fact that covered facilities emit 1-BP and that EPA has never established an emission standard for the pollutant, EPA is required to do so in this rulemaking.[507] EPA has ignored its obligation to do so and must work to remedy that unlawful conduct. Unfortunately, in light of its flatly incorrect statements that no covered sources emit 1-BP, it appears EPA has no idea of the scope of 1-BP emissions from covered sources. EPA should immediately begin working with the commenters (and other impacted community members) to develop a plan for filling the data gaps that both: (1) ensures that EPA actually fulfills its legal obligations to regulate 1-BP; and (2) does not delay or otherwise jeopardize the much needed standard tightening for other pollutants emitted from the covered source categories.

VIII. EPA MUST NOT DELAY COMPLIANCE WITH EMISSION STANDARDS FOR EXISTING SOURCES

Commenters strongly urge EPA to set much shorter compliance dates for the rule's emission standards, in order that the rule's important controls, emission reductions, and monitoring will address the human health impacts from these hazardous emissions as soon as possible. As it stands, it appears that EPA has applied the maximum allowable compliance deadlines to nearly all the NESHAP standards proposed here.[508] This is inappropriate and unacceptable, particularly for those communities that have been calling for the needed relief and health protections provided by stronger standards for years.

Under section 7412(f)(2), EPA must require existing sources to comply with emission standards within 90 days after the effective date. The statute allows for extensions of no more than two years only if "necessary for the installation of controls" *and* "steps will be taken during the period of the waiver to assure that the health of persons will be protected from imminent endangerment."[509] Similarly, under section 7412(d), EPA must require existing sources to comply with section 7412(d) emission standards "as expeditiously as practicable, but in no event later than three years after the effective date of such standard." The statute allows only a one-year extension if "necessary for the installation of controls.[510] This provision does not authorize an automatic three-year compliance deadline for all section 7412(d) standards.

In this rulemaking, EPA proposes a 2-year compliance delay for its proposed section 7412(f)(2) emission standards for equipment leaks, flares, heat exchange systems, maintenance vents, process vents, storage vessels, and wastewater at HON processes in EtO service and for continuous front-end process vents, batch front-end process vents, maintenance vents, storage vessels, and wastewater associated with neoprene production processes subject to P&R I.[511]

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[506] *See* 40 C.F.R. § 63.100.

[507] *LEAN*, 955 F.3d 1088.

[508] *See* 88 Fed. Reg. at 25,175-79.

[509] 42 U.S.C. § 7412(f)(4).

[510] *Id.* § 7412(i)(3).

[511] 88 Fed. Reg. at 25,178.

This is unlawful, because section 7412(f)(4) requires compliance 90 days after the effective date for section 7412(f) standards. Section 7412(f)(4) only allows a waiver of "*up to* 2 years" if EPA finds that "such period is necessary for the installation of controls *and that* steps will be taken during the period of the waiver to assure that the health of persons will be protected from imminent endangerment."[512] EPA has not demonstrated either of these necessary elements. While EPA speculates that "the proposed provisions will require additional time to plan, purchase, and install equipment for EtO or chloroprene control," it does not justify that a period of two years is *necessary* for the installation of controls.[513] More importantly, EPA makes no showing that it is taking any steps "to assure that the health of persons will be protected from imminent endangerment." This is particularly egregious, given the large amount of unacceptable risk that EPA estimated exists before the requirement of these controls: for example, the HON MIR of 2,000-in-1 million from the Indorama Port Neches facility.[514]

An exchange between OMB and EPA on the proposed rule is particularly telling regarding EPA's lack of steps to protect public health. Questioning EPA's reasoning for the two-year compliance deadline for risk-based standards, OMB provided the following comment:

> 2 years seems long, particularly in view of the community concern and the fact that people near these sources have been exposed to these health risks for a long time. EPA recognizes particular impacts in childhood from the risk-driving pollutants and notes children are more susceptible during the developmental years. It would be helpful for EPA *to address in some way what steps will be taken during the proposed 2-year period* to assure that the health of people exposed to these emissions (including children) will receive protection from imminent endangerment?[515]

In response, EPA entirely failed to respond to the question as to the steps it would take to protect health in the meantime, focusing only on the investments that facilities would need to make to comply with the rule:

> Significant capital will need to be invested in controls here to further reduce emissions or EtO and chloroprene. We are talking about requiring installation of large thermal oxidizers, steam-strippers, etc. at all of the facilities emitting these HAP. This takes significant time engineer, install, and update operating procedures and staff. This is discussed in section III.F.1.c of the preamble.[516]

In other words, even when posed with its duty to provide these steps and given the opportunity to spell them out, EPA focused only on the regulated industry and only in broad terms that did not justify the specific period of delay. This is not acceptable and not in compliance with section 7412(f)(4).

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[512] 42 U.S.C. § 7412(f)(4).

[513] 88 Fed. Reg. at 25,178.

[514] *Id.* at 25,106.

[515] OMB EPA Passback 1, *supra*, at 347.

[516] *Id.*

For removing the SSM exemption from HON and P&R II standards, EPA proposes a 3-year compliance deadline, including due to facilities "need[ing] some time to read and understand the amended rule requirements, to evaluate their operations to ensure that they can meet the standards during periods of startup and shutdown, . . . and make any necessary adjustments, including making adjustments to standard operating procedures, and to convert reporting mechanisms to install necessary hardware and software."[517] EPA has not established that this is "as expeditiously as practicable," especially considering these exemptions have always been unlawful under the Act, were struck down in 2008, and EPA has been removing these unlawful exemptions from its emission standards since then.[518] In the Refinery Sector Rule EPA appropriately required compliance immediately at all times, after removing the unlawful SSM exemption.[519] EPA must do the same here. EPA has no lawful or rational ground under which it can allow the blatantly unlawful exemption to continue for another three years.

Further, in this rulemaking, EPA proposes a 3-year delay for existing sources to comply with many of the proposed section 7412(d) emission standards,[520] including: for operating and monitoring requirements, due to "installation of new flare monitoring equipment . . . and control systems to monitor and adjust assist gas (air or steam) addition rates"; for new vent control requirements for bypasses, due to "addition of piping and potentially new control requirements"; for atmospheric PRDs in hazardous air pollutant service "work practice standards," including due to sources' "identify the most appropriate preventive measures or control approach; design, install, and test the system; install necessary process instrumentation and safety systems; and may need to time installations with equipment shutdown or maintenance outages;" for heat exchange systems, including due to "need[ing] time to read and understand the amended rule requirements and update standard operating procedures."[521] EPA has failed to show, as required, that these compliance delays are "as expeditious[] as practicable."[522] Thus, the proposed compliance delays are unlawful and arbitrary.

Lastly, while EPA has determined that it eliminated unacceptable health risks above the 100-in-1 million benchmark as required by section 7412(f)(2)—again noting Commenters' objection to EPA's continued use of this inappropriately high figure—Commenters have serious concerns that EPA's modeling has underestimated emissions and that EPA has overestimated the reductions of its proposed controls. Commenters additionally note, as referenced above, that EPA's Office of Environmental Justice and External Civil Rights has put even further reliance on the proposed rule's elimination of unacceptable risk and used this as one of its four bases for closing the Title VI complaint against the Louisiana Department of Environmental Quality for civil rights violations in its administration of its air quality program with respect to HON and P&R I sources.[523]

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[517] 88 Fed. Reg. at 25,178.

[518] *Sierra Club*, 551 F.3d at 1028.

[519] *See* 80 Fed. Reg. at 75,185-86.

[520] 84 Fed. Reg. at 69,229.

[521] 88 Fed. Reg. at 25,176-77.

[522] 42 U.S.C. § 7412(i)(3).

[523] *See* EPA Title VI Closure Letter to LDEQ, *supra*, at 4 n.11 ("EPA's proposed rule would reduce by 96% the number of people with elevated excess lifetime cancer risk due to breathing air toxics near these chemical plants.").

There is therefore a significant chance that EPA has *not* eliminated unacceptable risk and that further emission reductions are required, including each of the above changes. If this is the case, EPA must require compliance for all of the proposed changes, and additional changes EPA must finalize to satisfy section 7412(f)(2), by no later than 90 days after the effective date.[524] Further, EPA must propose and finalize prohibitions on *all* currently uncontrolled emissions from PRDs, flares, process vents, storage tanks, and other equipment leaks *without exemption* or any delay. These prohibitions are unlawful and EPA cannot allow unlawful malfunction exemptions to continue for another 3 years.

IX. COST-BENEFIT CONSIDERATIONS

EPA estimates that its proposed NESHAP would reduce emission of HAPs from HON/SOCMI and P&R sources by 5,981 tons per year, including 4,858 tons per year from flares.[525] These reductions include 58 tons per year of ethylene oxide and 14 tons per year of chloroprene.[526] EPA finds that these reductions will reduce the number of people exposed to a cancer risk of greater than 100-in-1 million from HON/SOCMI sources (including the Neoprene Production source) to zero.[527]

However, in its proposal, EPA assigns no monetized benefit at all to the significant cuts in emissions of air toxics required by the rule, including the benefits of reducing the risk of cancer from exposure to those toxics. EPA says it "cannot estimate the full dollar value of the benefits the proposal would yield, including the benefits of reducing the risk of cancer from exposure to those chemicals."[528] To the extent OMB continues to call for or promote monetized health benefits, including those that reduce sickness and risk in addition to mortality, EPA must develop effective tools to fully monetize health benefits, in concert with OMB. Moreover, EPA must more explicitly and prominently state, including in any tables that compare the cost and benefit figures, that the dollar figure shown for benefits does not fully account for all the rule's benefits and therefore the reader cannot determine a net cost or benefit of the rule by comparing the monetized values.[529]

Additionally, EPA fails to estimate the reduction in emissions of air toxics from its proposed NSPS. EPA claims it was "unable to estimate the HAP emission reductions for the

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[524] 42 U.S.C. § 7412(f)(4).

[525] 88 Fed. Reg. at 25,180.

[526] *Id.*

[527] *Id.* at 25,111.

[528] EPA explained its inability to monetize the benefit from reducing hazardous emissions as follows: "Quantifying and monetizing the economic value of reducing the risk of cancer and non-cancer effects are made difficult by the lack of a central estimate of estimate of cancer and non-cancer risk and estimates of the value of an avoided case of cancer (fatal and nonfatal) and morbidity effects." *Id.* at 25,180-81.

[529] *See* Earthjustice and Sierra Club Comments on OMB-2022-0011 (June 20, 2023) (attached as Exhibit 13); Joint comments of Center for Climate and Energy Solutions *et al.* on OMB-2022-0011 (June 20, 2023) (attached as Exhibit 14).

proposed amendments to the NSPS in this rulemaking."[530] EPA does not explain further. EPA must fully estimate the reductions in air toxics from its proposed NESHAP and NSPS standards, and quantify the full benefits of the proposal, as it does for costs.[531]

Finally, EPA must distinguish between the costs of its (d)(6) and (f)(2) standards, as section 7412(f)(2) does not allow consideration of cost in promulgating standards to protect public health with an ample margin of safety.[532]

X. PROCEDURAL AND PUBLIC PARTICIPATION ISSUES

The public notice-and-comment period for the proposed rule involved several procedural issues that undermine the primary goal of notice-and-comment: public participation. When this comment period started, EPA failed to post several key documents in the docket. As a result, commenters had to request that EPA post them—including the P&R I risk review and ICR data—and did not have access to them until over a week into the comment period.

Going forward, EPA must ensure that all supporting documents are in the Regulations.gov docket at the time of signing the rule, rather than waiting until weeks later when the rule is published in the Federal Register. Additionally, for rules in which EPA conducts an ICR pursuant to section 7414, Commenters request that EPA provide the public with the data and information it has gathered as soon as possible, even if before EPA has signed the proposed rule.

CONCLUSION

Thank you for your time and consideration of these comments. Please contact Adam Kron, Senior Attorney (akron@earthjustice.org); Michelle Mabson, Staff Scientist (mmabson@earthjustice.org); Deena Tumeh, Senior Associate Attorney (dtumeh@earthjustice.org); or Kathleen Riley, Senior Associate Attorney (kriley@earthjustice.org), with any questions.

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[530] 88 Fed. Reg. at 25,180; RIA at 4-66.

[531] EPA likely overestimates costs, including by using the outdated $900 VOC recovery credit, as discussed above.

[532] *See* Earthjustice and Sierra Club Comments on OMB-2022-0011 (June 20, 2023); Joint comments of Center for Climate and Energy Solutions *et al.* on OMB-2022-0011 (June 20, 2023).