ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[EPA–HQ–OAR–2024–0303; FRL–7623–01–OAR]

RIN 2060–AU73

National Emission Standards for Hazardous Air Pollutants: Chemical Manufacturing Area Sources Technology Review

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to establish a new area source category to address chemical manufacturing process units (CMPUs) using ethylene oxide (EtO). The EPA is proposing to list EtO in table 1 to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Chemical Manufacturing Area Sources (referred to as the CMAS NESHAP in this document) and to add EtO-specific requirements to the CMAS NESHAP. The EPA is also proposing to add a fenceline monitoring program for EtO. In addition, the EPA is proposing new requirements for pressure vessels and pressure relief devices (PRDs). This proposal also presents the results of the EPA's technology review of the CMAS NESHAP as required under the Clean Air Act (CAA). As part of this technology review, the EPA is proposing to add new leak detection and repair (LDAR) requirements to the CMAS NESHAP for equipment leaks in organic HAP service and heat exchange systems. The EPA is also proposing performance testing once every 5 years and to add provisions for electronic reporting. We estimate that the proposed amendments to the CMAS NESHAP, excluding the proposed EtO emission standards, would reduce hazardous air pollutant (HAP) emissions from emission sources by approximately 158 tons per year (tpy). Additionally, the proposed EtO emission standards are expected to reduce EtO emissions by approximately 4.6 tpy.

DATES:

Comments. Comments must be received on or before March 24, 2025. Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best assured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before February 21, 2025.

Public hearing: If anyone contacts us requesting a public hearing on or before January 27, 2025 we will hold a virtual public hearing. See **SUPPLEMENTARY INFORMATION** for information on requesting and registering for a public hearing.

ADDRESSES: You may send comments, identified by Docket ID No. EPA–HQ–OAR–2024–0303, by any of the following methods:

• *Federal eRulemaking Portal: https://www.regulations.gov/* (our preferred method). Follow the online instructions for submitting comments.

• *Email: a-and-r-docket@epa.gov.* Include Docket ID No. EPA–HQ–OAR–2024–0303 in the subject line of the message.

• *Fax:* (202) 566–9744. Attention Docket ID No. EPA–HQ–OAR–2024–0303.

• *Mail:* U.S. Environmental Protection Agency, EPA Docket Center, Docket ID No. EPA–HQ–OAR–2024–0303, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.

• *Hand/Courier Delivery:* EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operation are 8:30 a.m.–4:30 p.m., Monday–Friday (except Federal Holidays).

Instructions: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to *https://www.regulations.gov/,* including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: For questions about this proposed action, contact U.S. EPA, Attn: Mr. William Gallagher, Mail Drop: E143–01, 109 T.W. Alexander Drive, P.O. Box 12055, RTP, North Carolina 27711; telephone number: (919) 541–2336; and email address: *gallagher.william@epa.gov.*

SUPPLEMENTARY INFORMATION:

Participation in virtual public hearing. To request a virtual public hearing, contact the public hearing team at (888) 372–8699 or by email at *SPPDpublichearing@epa.gov.* If requested, the hearing will be held via virtual platform. The EPA will announce the date of the hearing and further details at *https://www.epa.gov/stationary-sources-air-pollution/chemical-manufacturing-area-sources-national-emission-standards.* The hearing will convene at 11:00 a.m. Eastern Time (ET) and will conclude at 4:00 p.m. ET. The EPA may close a session 15 minutes after the last pre-registered speaker has testified if there are no additional speakers.

The EPA will begin pre-registering speakers for the hearing no later than 1 business day after a request has been received. To register to speak at the virtual hearing, please use the online registration form available at *https://www.epa.gov/stationary-sources-air-pollution/chemical-manufacturing-area-sources-national-emission-standards* or contact the public hearing team at (888) 372–8699 or by email at *SPPDpublichearing@epa.gov.* The last day to pre-register to speak at the hearing will be February 3, 2025. Prior to the hearing, the EPA will post a general agenda that will list pre-registered speakers at: *https://www.epa.gov/stationary-sources-air-pollution/chemical-manufacturing-area-sources-national-emission-standards.*

The EPA will make every effort to follow the schedule as closely as possible on the day of the hearing; however, please plan for the hearings to run either ahead of schedule or behind schedule.

Each commenter will have 4 minutes to provide oral testimony. The EPA encourages commenters to submit a copy of their oral testimony as written comments to the rulemaking docket.

The EPA may ask clarifying questions during the oral presentations, but will not respond to the presentations at that time. Written statements and supporting information submitted during the comment period will be considered with the same weight as oral testimony and supporting information presented at the public hearing.

Please note that any updates made to any aspect of the hearing will be posted online at *https://www.epa.gov/stationary-sources-air-pollution/chemical-manufacturing-area-sources-national-emission-standards.* While the EPA expects the hearing to go forward as set forth above, please monitor these websites or contact the public hearing team at (888) 372–8699 or by email at *SPPDpublichearing@epa.gov* to determine if there are any updates. The EPA does not intend to publish a document in the **Federal Register** announcing updates.

If you require the services of a translator or a special accommodation such as audio description, please pre-register for the hearing with the public hearing team and describe your needs by January 29, 2025. The EPA may not be able to arrange accommodations without advanced notice.

Docket. The EPA has established a docket for this rulemaking under Docket ID No. EPA–HQ–OAR–2024–0303. All documents in the docket are listed in *https://www.regulations.gov/.* Although listed, some information is not publicly available, *e.g.,* Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy. With the exception of such material, publicly available docket materials are available electronically in *https://www.regulations.gov/.*

Instructions. Direct your comments to Docket ID No. EPA–HQ–OAR–2024–0303. The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *https://www.regulations.gov/,* including any personal information provided, unless the comment includes information claimed to be CBI or other information whose disclosure is restricted by statute. Do not submit electronically to *https://www.regulations.gov/* any information that you consider to be CBI or other information whose disclosure is restricted by statue. This type of information should be submitted as discussed below.

The EPA may publish any comment received to its public docket. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.,* on the Web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets.*

The *https://www.regulations.gov/* website allows you to submit your comment anonymously, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through *https://www.regulations.gov/,* your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any digital storage media you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should not include special characters or any form of encryption and be free of any defects or viruses. For additional information about the EPA's public docket, visit the EPA Docket Center homepage at *https://www.epa.gov/dockets.*

Submitting CBI. Do not submit information containing CBI to the EPA through *https://www.regulations.gov/.* Clearly mark the part or all of the information that you claim to be CBI. For CBI information on any digital storage media that you mail to the EPA, note the docket ID, mark the outside of the digital storage media as CBI, and identify electronically within the digital storage media the specific information that is claimed as CBI. In addition to one complete version of the comments that includes information claimed as CBI, you must submit a copy of the comments that does not contain the information claimed as CBI directly to the public docket through the procedures outlined in *Instructions* above. If you submit any digital storage media that does not contain CBI, mark the outside of the digital storage media clearly that it does not contain CBI and note the docket ID. Information not marked as CBI will be included in the public docket and the EPA's electronic public docket without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 Code of Federal Regulations (CFR) part 2.

Our preferred method to receive CBI is for it to be transmitted electronically using email attachments, File Transfer Protocol (FTP), or other online file sharing services (*e.g.,* Dropbox, OneDrive, Google Drive). Electronic submissions must be transmitted directly to the Office of Air Quality Planning and Standards (OAQPS) CBI Office at the email address *oaqpscbi@epa.gov* and, as described above, should include clear CBI markings and note the docket ID. If assistance is needed with submitting large electronic files that exceed the file size limit for email attachments, and if you do not have your own file sharing service, please email *oaqpscbi@epa.gov* to request a file transfer link. If sending CBI information through the postal service, please send it to the following address: U.S. EPA, Attn: OAQPS Document Control Officer, Mail Drop: C404–02, 109 T.W. Alexander Drive, P.O. Box 12055, RTP, North Carolina 27711, Attention Docket ID No. EPA–HQ–OAR–2024–0303. The mailed CBI material should be double wrapped and clearly marked. Any CBI markings should not show through the outer envelope.

Preamble acronyms and abbreviations. Throughout this preamble the use of ''we,'' ''us,'' or ''our'' is intended to refer to the EPA. We use multiple acronyms and terms in this preamble. While this list may not be exhaustive, to ease the reading of this preamble and for reference purposes, the EPA defines the following terms and acronyms here:

ACC American Chemistry Council
ACS American Community Survey
ADAF age-dependent adjustment factor
AFPM American Fuels and Petrochemical Manufacturers
APCD air pollution control device
API American Petroleum Institute
AVO audio, visual, and olfactory
BACT best available control technology
CAA Clean Air Act
CBI Confidential Business Information
CEDRI Compliance and Emissions Data Reporting Interface
CFR Code of Federal Regulations
CMAS Chemical Manufacturing Area Source(s)
CMPU chemical manufacturing process unit
CO carbon monoxide
CO_2 carbon dioxide
EAV equivalent annualized value
EFR external floating roof
EIS Emissions Inventory System
EJ environmental justice
EMACT Ethylene Production MACT
EPA Environmental Protection Agency
ERT Electronic Reporting Tool
EtO ethylene oxide
FID flame ionization detector
FR Federal Register
GACT generally available control technologies
HAP hazardous air pollutant(s)
HON Hazardous Organic NESHAP
HQ hazard quotient
HRVOC highly reactive volatile organic compound
ICR information collection request
IFR internal floating roof
IRIS Integrated Risk Information System
km kilometer(s)
kPa kilopascal(s)
LAER lowest achievable emission rate
lb pound(s)
lb/yr pound(s) per year
LDAR leak detection and repair
MACT maximum achievable control technology
MIR maximum individual lifetime [cancer] risk
MON Miscellaneous Organic Chemical Manufacturing NESHAP
MTVP maximum true vapor pressure
NAICS North American Industry Classification System
NATA National Air Toxics Assessment
NEI National Emissions Inventory
NESHAP national emission standards for hazardous air pollutants
NO_X nitrogen oxides
N_2O nitrous oxide

NPRA National Petrochemical and Refiners Association
NSPS new source performance standards
OAQPS Office of Air Quality Planning and Standards
OAR Office of Air and Radiation
OLD Organic Liquids Distribution
OMB Office of Management and Budget
P&R I Group I Polymers and Resins
PDF portable document format
PEPO Polyether Polyols Production
$PM_{2.5}$ particulate matter 2.5
PMPU polyether polyol manufacturing process unit
ppmv parts per million by volume
ppmw parts per million by weight
PRA Paperwork Reduction Act
PRD pressure relief device
PV present value
RACT reasonably available control technology
RDL representative detection limit
RFA Regulatory Flexibility Act
RTR risk and technology review
SOCMI Synthetic Organic Chemical Manufacturing Industry
SO_2 sulfur dioxide
TCEQ Texas Commission on Environmental Quality
TOC total organic compounds
TOSHI target organ-specific hazard index
tpy tons per year
TRE total resource effectiveness
UMRA Unfunded Mandates Reform Act
U.S.C. United States Code
VCS voluntary consensus standards
VOC volatile organic compound(s)
μg/m3 micrograms per cubic meter

Organization of this document. The information in this preamble is organized as follows:

I. General Information

A. Does this action apply to me?

The source categories that are the subject of this proposal are Agricultural Chemicals and Pesticides Manufacturing, Chemical Manufacturing with Ethylene Oxide, Cyclic Crude and Intermediate Production, Industrial Inorganic Chemical Manufacturing, Industrial Organic Chemical Manufacturing, Inorganic Pigments Manufacturing, Miscellaneous Organic Chemical Manufacturing, Plastic Materials and Resins Manufacturing, Pharmaceutical Production, and Synthetic Rubber Manufacturing, regulated under 40 CFR part 63, subpart VVVVVV. The North American Industry Classification System (NAICS) code for the chemical manufacturing operations at any of the ten chemical manufacturing area source (CMAS) categories is 325. This list of categories and NAICS codes is not intended to be exhaustive, but rather provides a guide for readers regarding the entities that this proposed action is likely to affect. The proposed standards, once promulgated, will be directly applicable to the affected sources. Federal, state, local, and Tribal government entities would not be affected by this proposed action. We listed Cyclic Crude and Intermediate Production, Industrial Inorganic Chemical Manufacturing, Industrial Organic Chemical Manufacturing, Plastic Materials and Resins Manufacturing, and Synthetic Rubber Manufacturing as area source categories under CAA section 112(c)(3) as part of the 1999 Integrated Urban Air Toxics Strategy (64 FR 38721, July 19, 1999). On June 26, 2002, we amended the area source category list by adding source categories, including Agricultural Chemicals and Pesticides Manufacturing, Miscellaneous Organic Chemical Manufacturing, and Pharmaceutical Production (67 FR 43112, 43113). On November 22, 2002, we added Inorganic Pigments Manufacturing to the area source category list (67 FR 70427, 70428). In this action, we are proposing to amend the area source category list by adding Chemical Manufacturing with Ethylene Oxide (see section II.A.1 of this preamble). The other nine CMAS categories are discussed further in section II.B of this preamble.

B. Where can I get a copy of this document and other related information?

In addition to being available in the docket, an electronic copy of this action is available on the internet. In accordance with 5 U.S.C. 553(b)(4), a summary of this rulemaking may be found at *https://www.regulations.gov/,* Docket ID No. EPA–HQ–OAR–2024–0303. Following signature by the EPA Administrator, the EPA will post a copy of this proposed action at *https://www.epa.gov/stationary-sources-air-pollution/chemical-manufacturing-area-sources-national-emission-standards.* Following publication in the **Federal Register***,* the EPA will post the **Federal Register** version of the proposal and key technical documents at this same website.

A memorandum showing the edits that would be necessary to incorporate the changes to the CMAS NESHAP (40 CFR part 63, subpart VVVVVV) proposed in this action is available in the docket (Docket ID No. EPA–HQ–OAR–2024–0303). Following signature by the EPA Administrator, the EPA also will post a copy of this document to *https://www.epa.gov/stationary-sources-air-pollution/chemical-manufacturing-*

area-sources-national-emission-standards.

II. Background

A. What is the statutory authority for this action?

The statutory authority for this action is provided by sections 112 and 301 of the CAA, as amended (42 U.S.C. 7401 *et seq.*). Several CAA sections are relevant to this action as they specifically address regulations of HAP emissions from area sources. Collectively, CAA sections 112(c)(3), (d)(5), and (k)(3) are the basis of the Area Source Program under the Urban Air Toxics Strategy, which provides the framework for regulation of area sources under CAA section 112. Section 112(k)(3)(B) of the CAA requires the EPA to identify at least 30 HAP that pose the greatest potential health threat in urban areas with a primary goal of achieving a 75 percent reduction in cancer incidence attributable to HAP emitted from stationary sources. As discussed in the Integrated Urban Air Toxics Strategy (64 FR 38706, 38715, July 19, 1999), the EPA identified 30 HAP emitted from area sources that pose the greatest potential health threat in urban areas, and these HAP are commonly referred to as the ''30 urban HAP.'' CAA section 112(c)(3), in turn, requires the EPA to list sufficient categories or subcategories of area sources to ensure that area sources representing 90 percent of the emissions of the 30 urban HAP are subject to regulation. The EPA implemented these requirements through the Integrated Urban Air Toxics Strategy by identifying and setting standards for categories of area sources including the original nine CMAS categories that are addressed in this action. This proposed action presents the required CAA 112(d)(6) technology review of the generally available control technology (GACT) standards that the EPA established in 2009 [1] for the nine CMAS categories. In this action, we are also proposing to set additional GACT standards for these categories. In addition to the source categories and subcategories listed pursuant to CAA section 112(c)(3), CAA section 112(c)(5) provides the EPA discretion to establish additional categories and subcategories of sources for regulation if a threat of adverse effects to human health or the environment is identified, per the criteria set forth in CAA section 112(c)(1) and (3). Pursuant to CAA section 112(c)(5), and consistent with the requirements of CAA section 112(c)(3), this action also proposes for regulation as part of the CMAS NESHAP a new area source category, Chemical Manufacturing with Ethylene Oxide, and proposes GACT standards for that new source category pursuant to CAA section 112(d)(5). Information about establishing a new area source category for regulation pursuant to CAA section 112(c)(3) and (5), setting GACT standards under CAA section 112(d)(5), and reviewing standards under CAA section 112(d)(6) are provided in sections II.A.1, II.A.2, and II.A.3 of this preamble, respectively.

1. Listing An Additional Category Under CAA Section 112(c)(5)

CAA section 112(c)(5) provides that ''the Administrator may at any time list additional categories and subcategories of sources of hazardous air pollutants according to the same criteria for listing applicable under [CAA section 112(c)(1) and (3)].'' CAA 112(c)(3), in turn, provides in part that ''[t]he Administrator shall list . . . each category or subcategory of area sources which the Administrator finds presents a threat of adverse effects to human health or the environment (by such sources individually or in the aggregate) warranting regulation under this section.''

In 2016, the EPA updated the integrated risk information system (IRIS) value for EtO to reflect new science related to the pollutant.[2] The updated IRIS value indicates that EtO is far more carcinogenic than previously understood. In response to this update, the EPA Office of Inspector General (OIG) released a report in 2021 using data from the 2014 National Air Toxics Assessment (NATA) identifying facilities that could present lifetime cancer risks to the public greater than or equal to 100-in-1 million.[3] Several of these facilities were area source chemical manufacturers. Based on the revised carcinogenicity of EtO, the EPA decided to assess whether EtO emissions from CMAS should be listed as an area source category pursuant to CAA section 112(c)(3) and (5).

EtO is not one of the fifteen urban HAP currently regulated by the CMAS NESHAP. Therefore, to fully assess whether a source category including EtO emissions from area source chemical manufacturing operations presents an adverse effect to human health or the environment, facilities not currently part of the nine regulated source categories were considered. To that end, we conducted a risk assessment evaluating all reported HAP emissions from sources currently subject to the CMAS NESHAP as well as sources that we believe would become subject to the CMAS NESHAP if EtO were to be added to table 1 to 40 CFR part 63, subpart VVVVVV. The results of the risk assessment are summarized in section II.E of this preamble. Based on the assessment, seven area source chemical manufacturing facilities were estimated to have maximum cancer risks greater than 100-in-1 million, all of which were driven primarily (greater than 90 percent) by EtO emissions.[4] The maximum individual lifetime [cancer] risk (MIR) posed by the evaluated sources is 800-in-1 million, driven by EtO emissions from process vents (97 percent).

Given these estimates of risk, we propose that an area source category associated with EtO emissions from area source chemical manufacturers presents a threat of adverse effect on human health. Accordingly, consistent with CAA section 112(c)(3) and (5), we are proposing to list a new area source category. This area source category, Chemical Manufacturing with Ethylene Oxide, would encompass processes that produce a material or family of materials described by NAICS code 325 where EtO is used as a feedstock, generated as a byproduct, or is the material produced. This proposed source category matches the scope of the nine source categories currently regulated by the CMAS NESHAP, as described in section II.B of this preamble. Since the existing CMAS NESHAP currently regulates these nine area source categories collectively, we are proposing to also regulate the new Chemical Manufacturing with Ethylene Oxide area source category under the CMAS NESHAP at 40 CFR part 63, subpart VVVVVV. Alongside the listing of this new area source category, the EPA is proposing to add EtO specific applicability requirements at 40 CFR 63.11494(a)(2)(v) and to list EtO in table 1 to 40 CFR part 63, subpart VVVVVV.

In conjunction with proposing to establish a new area source category for Chemical Manufacturing with Ethylene Oxide, the EPA must establish the level of control for the source category. Section II.A.2 provides details on our authority to establish GACT standards pursuant to CAA section 112(d)(5) in lieu of maximum achievable control

[1] See 74 FR 56008, October 29, 2009.

[2] The review is available at *https://iris.epa.gov/static/pdfs/1025tr.pdf.*

[3] The report is available at *https://www.epaoig.gov/sites/default/files/2021-05/documents/_epaoig_20210506-21-p-0129.pdf.*

[4] For additional details on these facilities, please see the document titled *Risk Assessment for the Chemical Manufacturing Area Source (CMAS) Categories in Support of the 2025 Technology Review for the Proposed Rule* in the docket for this action.

technology (MACT) standards pursuant to CAA section 112(d)(2) and (3).

2. Alternative Standards for Area Sources Under CAA Section 112(d)(5)

Under CAA section 112(d)(5), the EPA may elect to promulgate standards or requirements for area sources ''which provide for the use of generally available control technologies or management practices by such sources to reduce emissions of hazardous air pollutants.'' Additional information on GACT or management practices is found in the Senate report on the legislation (Senate report Number 101–228, December 20, 1989), which describes GACT as ''. . . methods, practices and techniques which are commercially available and appropriate for application by the sources in the category considering economic impacts and the technical capabilities of the firms to operate and maintain the emissions control systems.''

Consistent with the legislative history, we can consider costs and economic impacts in determining GACT. Determining what constitutes GACT involves considering the control technologies and management practices that are generally available to the area sources in the source category. As previously mentioned, GACT standards were set for the CMAS categories in 2009. These GACT standards are discussed in section IV.C of this preamble. See section II.B of this preamble for details about each of the nine currently regulated CMAS categories.

In this action, we are proposing to set additional GACT standards for the CMAS categories that would apply to certain emission sources (*i.e.,* equipment leaks, heat exchange systems, process vents, storage tanks, wastewater, and transfer operations) associated with the proposed area source category, Chemical Manufacturing with Ethylene Oxide. In addition, we are proposing to set GACT standards for pressure vessels and PRDs. The proposed GACT standards are discussed in sections IV.A and IV.B of this preamble. In setting GACT, we always look to the standards applicable to major sources in the same industrial sector to determine if the control technologies and management practices are transferable and generally available to area sources. In appropriate circumstances, we may also consider technologies and practices at area and major sources in similar categories to determine whether such technologies and practices could be considered generally available for the area source category at issue. In this case, the control technologies and management practices for process units are transferable because process units at major source chemical manufacturing facilities are essentially no different than process units at area source chemical manufacturing facilities excepting that the former exceeds the major source HAP thresholds with respect to emissions and the latter does not. Finally, as we have already noted, in determining GACT for a particular area source category, we consider the costs and economic impacts of available control technologies and management practices on that category.

GACT differs from MACT in that cost can be considered in the first instance when establishing a GACT standard. By contrast, when establishing MACT standards pursuant to CAA section 112(d)(3), the EPA must determine the average emission limitation achieved by the best performing 12 percent of existing sources (or average emission limitation achieved by the best performing 5 sources for existing sources with fewer than 30 sources) and the emission limitation achieved by the best controlled similar source for new sources, without regard to cost.

As explained in greater detail in sections IV.A and IV.B of this preamble, we determined that the GACT standards we are proposing for sources emitting EtO (*i.e.,* GACT standards for equipment leaks, heat exchange systems, process vents, storage tanks, wastewater, and transfer operations) located at CMAS, and the GACT standards we are proposing for pressure vessels and PRDs at these same area sources, should be similar, if not the same, as the major source standards that were finalized in the Miscellaneous Organic Chemical Manufacturing NESHAP (MON) and Hazardous Organic NESHAP (HON) pursuant to CAA section 112(d)(6) and (f) (see 85 FR 49084, August 12, 2020 and 89 FR 42932, May 16, 2024, respectively). Our rationale for this is based on the similarities between production processes, emission points, emissions, and control technologies that are characteristic of both major and area source chemical manufacturing facilities and considerations of cost.[5]

We note that if standards for EtO are finalized, the EPA has committed to the Office of the Inspector General (OIG) to assess the risk posed from EtO emission sources subject to the CMAS NESHAP. Specifically, the EPA committed to assess risk within four years of promulgation of standards. At that time, the EPA would determine if it is appropriate to review the standards prior to the date required by CAA section 112(d)(6) (*i.e.,* 8 years).[6]

3. Technology Review Under CAA Section 112(d)(6)

CAA section 112(d)(6) requires the EPA to review standards promulgated under CAA section 112(d) and revise them ''as necessary (taking into account developments in practices, processes, and control technologies)'' no less often than every 8 years following promulgation of those standards. This is referred to as a ''technology review'' and is required for all standards established under CAA section 112(d) including GACT standards that apply to area sources.

As previously mentioned, GACT standards were set for the CMAS categories in 2009. Although in this action we are proposing additional GACT standards for these categories, this proposed action also presents the required CAA 112(d)(6) technology review of the 2009 GACT standards for these source categories.

B. What are the source categories and how does the current NESHAP regulate HAP emissions?

The EPA promulgated the CMAS NESHAP on October 29, 2009 (74 FR 56008), and codified the NESHAP at 40 CFR part 63, subpart VVVVVV. As promulgated in 2009, and further amended on December 21, 2012 (77 FR 75740), the CMAS NESHAP regulates HAP emissions from chemical manufacturing process units at an area source of HAP emissions if HAP listed in table 1 to 40 CFR part 63, subpart VVVVVV are present in the CMPU. A CMPU includes all process vessels, equipment, and activities necessary to

[5] The EPA also considers the costs and economic impacts of available control technologies and management practices when determining whether to revise a standard pursuant to section 112(d)(6); and the EPA also considers costs, energy, and other relevant factors when determining whether to revise a standard in the second step of the ample margin of safety analysis pursuant to CAA section 112(f)(2)(A).

[6] On June 1, 2022, the EPA, in response to the OIG's report stating that EPA should revise the CMAS NESHAP to regulate EtO and conduct a residual risk review, stated: ''. . . technology-based standards for EtO have not yet been established for the CMAS source category. Therefore, we plan to first evaluate EtO emissions from the source category, and if EtO emissions present a public health concern (*i.e.,* by considering risk information), we will regulate EtO in the CMAS rule . . . However, within four years of promulgation (enough time to understand the level of emissions remaining after implementation of new standards) of an any initial EtO standards for CMAS, EPA would assess the risks from EtO emissions from CMAS sources to inform us on whether an earlier review date is appropriate.'' Refer to *https://www.epaoig.gov/sites/default/files/documents/2022-06/_epaoig_21-P-0129_Agency_Response2.pdf* for additional details.

operate a chemical manufacturing process that produces a material or a family of materials described by NAICS code 325.[7] A CMPU consists of one or more unit operations and any associated recovery devices. A CMPU also includes each storage tank, transfer operation, surge control vessel, and bottoms receiver associated with the production of such NAICS code 325 materials. The affected source is the facility-wide collection of CMPUs and each heat exchange system and wastewater system associated with a CMPU.

The CMAS NESHAP currently applies to chemical manufacturing operations at nine area source categories: (1) Agricultural Chemicals and Pesticides Manufacturing; (2) Cyclic Crude and Intermediate Production; (3) Industrial Inorganic Chemical Manufacturing; (4) Industrial Organic Chemical Manufacturing; (5) Inorganic Pigments Manufacturing; (6) Miscellaneous Organic Chemical Manufacturing; (7) Plastic Materials and Resins Manufacturing; (8) Pharmaceutical Production; and (9) Synthetic Rubber Manufacturing. These nine CMAS categories encompass facilities that use as feedstocks,[8] generate as byproducts, or produce as products any of the following 15 HAP: 1,3-butadiene; 1,3-dichloropropene; acetaldehyde; chloroform; ethylene dichloride; hexachlorobenzene; methylene chloride; quinoline (these eight HAP are referred to as the ''Table 1 [9] organic HAP''); compounds of arsenic, cadmium, chromium, lead, manganese, or nickel (these six HAP are referred to as the ''Table 1 metal HAP''); or hydrazine. In this preamble we refer to the nine source categories collectively as CMAS categories (we are also proposing a tenth source category as discussed in section II.A.1 of this preamble). Descriptions of the nine source categories are as follows:

Agricultural Chemicals and Pesticides Manufacturing. The agricultural chemicals and pesticides manufacturing source category is designated by NAICS codes 325311 (nitrogenous fertilizer manufacturing), 325312 (phosphatic fertilizer manufacturing), and 325320 (pesticide and other agricultural chemical manufacturing). Products of this industry include nitrogenous and phosphatic fertilizer materials including anhydrous ammonia, nitric acid, ammonium nitrate, ammonium sulfate, urea, phosphoric acid, superphosphates, ammonium phosphates, and calcium metaphosphates. The source category also includes the formulation and preparation of ready-to-use agricultural and household pest control chemicals from technical chemicals or concentrates, the production of concentrates which require further processing before use as agricultural pesticides, and the manufacturing or formulating of other agricultural chemicals such as minor or trace elements and soil conditioners.

Organic Chemical Production. The cyclic crude and intermediate production, industrial organic chemical manufacturing, and miscellaneous organic chemical manufacturing source categories are discussed collectively because there is considerable overlap in the NAICS codes that apply to these source categories. These source categories include cellulosic organic fiber manufacturing as well as other source categories that are designated by NAICS codes 32511 (petrochemical manufacturing), 325130 (synthetic dye and pigment manufacturing), 32519 (other basic organic chemical manufacturing), and 3256 (soap, cleaning compound, and toilet preparation manufacturing). The source category also includes organic gases designated by NAICS code 325120 (industrial gas manufacturing), and it includes production of chemicals such as explosives and photographic chemicals designated by NAICS code 3259 (other chemical product and preparation manufacturing). Raw materials for this industry include, for example, refined petroleum chemicals, coal tars, and wood. The industry manufactures a wide variety of final products as well as numerous chemicals that are used as feedstocks to produce these final products and products in other chemical manufacturing source categories. Examples of types of products include solvents, organic dyes and pigments, plasticizers, alcohols, detergents, and flavorings.

Industrial Inorganic Chemical Manufacturing. The industrial inorganic chemical manufacturing source category includes manufacturing of inorganic gases that are designated by NAICS code 325120 (industrial gas manufacturing), manufacturing of inorganic dyes that are designated by NAICS code 325130 (synthetic dye and pigment manufacturing), and most manufacturing designated by NAICS code 32518 (other basic inorganic chemical manufacturing). Exceptions to production designated by NAICS code 32518 include carbon black and mercury cell chlor-alkali production, which are separate source categories.

Inorganic Pigment Manufacturing. Inorganic pigments are part of NAICS code 325130 (synthetic dye and pigment manufacturing). The majority of inorganic pigments are oxides, sulfides, oxide hydroxides, silicates, sulfates, or carbonates that normally consist of single component particles. The inorganic pigment manufacturing processes can generally be divided between those that use partial combustion and those that use pure pyrolysis. Inorganic pigments generally are used to impart colors to a variety of compounds. They may also impart properties of rust inhibition, rigidity, and abrasion resistance. Inorganic pigments are generally insoluble and remain unchanged physically and chemically when mixed with a carrier. Pigment manufacturers supply inorganic colors in a variety of forms including powders, pastes, granules, slurries, and suspensions. Pigments are used in the manufacture of paints and stains, printing inks, plastics, synthetic textiles, paper, cosmetics, contact lenses, soaps, detergents, wax, modeling clay, chalks, crayons, artists' colors, concrete, masonry products, and ceramics.

Pharmaceutical Production. The pharmaceutical manufacturing source category consists of chemical production operations that produce drugs and medication. These operations include chemical synthesis (deriving a drug's active ingredient) and chemical formulation (producing a drug in its final form). The source category is designated by NAICS codes 325411 (medicinal and botanical manufacturing), 325412 (pharmaceutical preparation manufacturing), and 325414 (biological product, except diagnostic, manufacturing).

Plastic Materials and Resins Manufacturing. This source category is designated by NAICS code 325211 (plastics material and resin manufacturing). Examples of products in this source category include epoxy resins, nylon resins, phenolic resins, polyesters, polyethylene resins, and styrene resins. The source category does not include polyvinyl chloride and copolymers production, which is a separate source category.

Synthetic Rubber Manufacturing. The synthetic rubber manufacturing source category is designated by NAICS code

[7] Except for: (1) processes classified in NAICS Code 325222, 325314, 325413, or 325998; (2) processes subject to standards for other listed area source categories in NAICS 325; (3) certain fabricating operations; (4) manufacture of photographic film, paper, and plate where material is coated or contains chemicals (but the manufacture of the photographic chemicals is regulated); and (5) manufacture of radioactive elements or isotopes, radium chloride, radium luminous compounds, strontium, and uranium.

[8] Feedstocks are reactants, solvents, or any other additives to the process.

[9] ''Table 1'' refers to table 1 to 40 CFR part 63, subpart VVVVVV.

325212 (synthetic rubber manufacturing). Facilities in this source category manufacture synthetic rubber or vulcanizable elastomers by polymerization or copolymerization. For this source category, an elastomer is defined as a rubber-like material capable of vulcanization, such as copolymers of butadiene and styrene, copolymers of butadiene and acrylonitrile, polybutadienes, chloroprene rubbers, and isobutylene-isoprene copolymers.

The HAP emission sources at facilities subject to the CMAS NESHAP include process vents, storage tanks, equipment leaks, transfer operations, and wastewater. Additionally, some facilities have cooling towers or other heat exchangers. The GACT standards for CMAS include emission standards in the form of management practices for each CMPU as well as emission limits for certain emission sources including process vents and storage tanks. The rule also establishes management practices and other emission reduction requirements for wastewater systems and heat exchange systems.

As of May 1, 2024, the EPA identified 251 facilities in operation that are subject to the CMAS NESHAP. In addition, we are aware of 29 more facilities that would become subject to the CMAS NESHAP if EtO were to be added to table 1 to the CMAS NESHAP, as proposed (see section II.A.1 of this preamble)[10]. In this preamble, we referred to all 280 of these facilities collectively as ''CMAS facilities.'' The list of CMAS facilities located in the United States that are part of the CMAS categories with processes subject to the CMAS NESHAP is presented in the document titled *List of Facilities Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking.

C. What data collection activities were conducted to support this action?

1. Facility List

The EPA used several data sources to determine the facilities that are subject to the CMAS NESHAP discussed in section II.B of this preamble. We began with the facility list from the original rulemaking for the CMAS NESHAP (74 FR 56008, October 29, 2009). This list was supplemented with information from the Office of Enforcement and Compliance Assurance's Enforcement and Compliance History Online tool (*https://echo.epa.gov*) as well as other facility lists from the EPA's recent chemical sector rulemakings (*e.g.,* HON, MON, Organic Liquid Distribution NESHAP (OLD), Ethylene Production MACT standards (EMACT standards), and Polyether Polyols Production (PEPO) NESHAP).

We also collected and considered facility specific information from the regions and/or states, if the information had not already been captured by the previous steps. For example, we obtained title V air permits from publicly available online state databases (where available). In cases where an online database was incomplete or did not exist, the EPA contacted the region and/or state for help in obtaining the air permits or determining whether a facility was subject to the CMAS NESHAP or may become subject to the CMAS NESHAP if EtO were to be added to table 1 to 40 CFR part 63, subpart VVVVVV. The EPA also conducted internet searches to determine the status of the facility (*e.g.,* whether the facility was still open, permanently closed, and/or sold). Additional details about how the facility list was developed are provided in the document titled *List of Facilities Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking.

The EPA solicits comment on the assumptions used to estimate the number of facilities anticipated to be impacted by this action.

2. Emissions Inventory

For each facility subject to the CMAS NESHAP, we gathered emissions data from the most recent version of the 2017 National Emissions Inventory (NEI), published in January 2021. Apart from the 2020 NEI (which was the first year of the COVID–19 pandemic), the 2017 NEI was the most vetted and recent publicly available data set at the time EPA began gathering information for this proposed rulemaking.[11]

We consulted with state agencies, EPA regions, air permits, and facilities to determine whether any EtO records in the CMAS emissions inventory needed to be updated (beyond the 2017 NEI).[12] This review revealed that several facilities have either voluntarily implemented EtO emission reduction measures since 2017 or implemented them due to state or other requirements; therefore, we made amendments to these EtO records to reflect the specific reduction measures. See appendix 1 of the document titled *Risk Assessment for the Chemical Manufacturing Area Source (CMAS) Source Categories in Support of the 2025 Technology Review for the Proposed Rule,* which is available in the docket for this rulemaking, for additional details on the analysis and methodology used to develop the CMAS emissions inventory.

3. Other Data Collection Activities

To inform our reviews of the Agency's emission standards, we reviewed the EPA's Reasonably Available Control Technology (RACT)/Best Available Control Technology (BACT)/Lowest Achievable Emission Rate (LAER) Clearinghouse and regulatory development efforts for similar sources published after the CMAS NESHAP was developed.

In January 2022, the EPA issued requests, pursuant to CAA section 114, to collect information from HON facilities (nine being also subject to the PEPO NESHAP) owned and operated by eight entities (*i.e.,* corporations). This effort focused on gathering comprehensive information about process equipment, control technologies, point and fugitive emissions, and other aspects of facility operations. Additionally, the EPA requested stack testing for certain emission sources (*e.g.,* pollutants, including EtO, for vent streams). Also, the EPA required that facilities conduct fugitive emission testing (*i.e.,* fenceline monitoring) for any of six specific HAP they emit: benzene; 1,3-butadiene; chloroprene; EtO; ethylene dichloride; and vinyl chloride. Companies submitted responses (and follow-up responses) and testing results to the EPA during the summer and fall of 2022. Given that CMPU sources subject to the CMAS NESHAP can be similar to HON CMPU sources and PEPO sources,[13] the EPA used the collected information to estimate environmental and cost impacts associated with some of the regulatory options considered and reflected in this proposed action. The information not claimed as CBI by respondents is provided in the document titled *Data Received from Information Collection Request for*

[10] While 29 facilities were identified to become subject to CMAS NESHAP if EtO were to be added to table 1 to 40 CFR part 63, subpart VVVVVV, four of the 251 facilities currently subject to the CMAS NESHAP also emit EtO. As such, in total, there are 33 facilities emitting EtO that may be impacted by this action.

[11] Refer to the 2017 NEI Technical Support Document for detailed discussion on the types of review and augmentation performed for 2017 NEI (*https://www.epa.gov/sites/default/files/2021-02/documents/nei2017_tsd_full_jan2021.pdf*).

[12] For facilities that would become subject (or are already subject) to the CMAS NESHAP if EtO were to be added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed.

[13] HON CMPUs and polyether polyol manufacturing process units (PMPUs) associated with the PEPO NESHAP have similar processes as CMAS CMPUs in that regardless of size, each of these process units may include chemical manufacturing equipment, heat exchange systems, process vents, storage tanks, transfer operations, and/or wastewater.

Chemical Manufacturers, which is available in the docket for this rulemaking.

D. What other relevant background information and data are available?

In proposing these amendments, we relied on certain technical reports and memoranda that the EPA developed for flares used as air pollution control devices (APCDs) in the Petroleum Refinery Sector risk and technology review (RTR) and new source performance standards (NSPS) rulemaking (80 FR 75178, December 1, 2015). The Petroleum Refinery Sector rulemaking docket is at Docket ID No. EPA–HQ–OAR–2010–0682. For completeness of the rulemaking record for this action and for ease of reference in finding these items in the publicly available Petroleum Refinery Sector rulemaking docket, we are including the most relevant flare-related technical support documents in the docket for this proposed action (Docket ID No. EPA–HQ–OAR–2024–0303) and including a list of all documents used to inform the 2015 flare provisions in the Petroleum Refinery Sector RTR and NSPS rulemaking in the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Flares that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Flares Associated with Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking.

We are also relying on data gathered to support the rulemakings for the EMACT standards, HON, and MON, as well as memoranda documenting the technology reviews for those processes. Many of the emission sources for ethylene production facilities, HON facilities, and MON facilities are similar to CMAS facilities, and the EPA analyzed several of the control options for the CMAS NESHAP that the Agency also analyzed for the rulemakings for the EMACT standards, HON, and MON. The memoranda and background technical information can be found in the Ethylene Production RTR rulemaking docket (Docket ID No. EPA–HQ–OAR–2017–0357), the HON rulemaking docket (Docket ID No. EPA–HQ–OAR–2022–0730), and the MON RTR rulemaking docket (Docket ID No. EPA–HQ–OAR–2018–0746). Additional information related to the promulgation and subsequent amendments of the CMAS NESHAP is available in Docket ID No. EPA–HQ–OAR–2008–0334.

E. What are the results of the EPA's risk assessment?

As discussed in section II.A.1, the EPA conducted a human health risk assessment to determine if EtO emissions from CMAS present a threat of adverse effects to human health (*e.g.,* a public health concern) and therefore warrant regulation via the creation of a new source category pursuant to CAA section 112(c)(3) and (5). Following the update to the IRIS value for EtO, it became apparent that emissions of EtO from CMAS could be posing a significant threat to public health. The OIG released a report in 2021 that identified potential elevated cancer risks due to EtO emissions from CMAS using data from the 2014 NATA.[14] While the primary focus of the risk assessment was on EtO emissions, consistent with other risk assessments for HAPs, we estimated the MIR posed by emissions of HAP that are carcinogens from each evaluated CMAS, the hazard index (HI) for chronic exposures to HAP with the potential to cause noncancer health effects, and the hazard quotient (HQ) for acute exposures to HAP with the potential to cause noncancer health effects.[15] This section summarizes the results of those analyses.

The EPA often conducts risk assessments at both the facility and source category level when investigating human health concerns and uses standard methodology for all risk assessments. However, we note that this risk assessment was completed using the emissions inventory described in section II.C.2 of this preamble. As such, there are uncertainties with the results of the risk assessment engendered by the uncertainties associated with the emissions inventory. However, given the information available, we believe the risk assessment supports our conclusion that these sources present a threat of an adverse impact on human health. Additional details on the risk assessment and exact methodology are presented in the document titled, *Risk Assessment for the Chemical Manufacturing Area Source (CMAS) Source Categories in Support of the 2025 Technology Review for the Proposed Rule,* which is available in the docket for this rulemaking.

[14] The report is available at *https://www.epaoig.gov/sites/default/files/2021-05/documents/_epaoig_20210506-21-p-0129.pdf.*

[15] The MIR is defined as the cancer risk associated with a lifetime of exposure at the highest concentration of HAP where people are likely to live. The HQ is the ratio of the potential HAP exposure concentration to the noncancer dose-response value; the HI is the sum of HQs for HAP.

As discussed in section II.A.1 of this preamble, the MIR posed by the evaluated sources is 800-in-1 million, driven primarily (greater than 90 percent) by EtO emissions from process vents (97 percent). Approximately 4.4 million people within 50 kilometers (km) of the evaluated CMAS are estimated to have cancer risks above 1-in-1 million and 3,600 people are estimated to have cancer risks above 100-in-1 million due to emissions from the sources. The people with risks above 100-in-1 million all reside within 10 km of the sources. The sources are estimated to result in 0.4 additional cancer cases per year, or 1 cancer case every 2.5 years. Emissions from the evaluated CMAS drive cancer risk attributable to whole facility emissions, such that the risk posed by all HAP emissions from the facilities are generally the same as the risk posed by the evaluated sources, except that emissions from whole facility emissions increase the population with risk greater than 1-in-1 million living within 50 km by 200,000 people.

The maximum chronic noncancer target organ-specific hazard index (TOSHI) for the evaluated CMAS is estimated to be 3 (for respiratory and immunological effects) at two facilities due to nickel compounds emissions from process vents at one facility and equipment leaks and fugitive emissions at the other facility. The same nickel emissions also drive the estimated maximum facility-wide TOSHI of 3. Approximately 1,500 people are estimated to have a TOSHI greater than 1 due to emissions from the evaluated CMAS.

The estimated reasonable worst-case off-site acute inhalation exposures to emissions from the CMAS categories results in an estimated maximum modeled acute noncancer HQ of 20 based on CalEPA's Chronic Reference Exposure Level for acrolein. It is important to note that when assessing acute inhalation exposures, the EPA makes conservative assumptions about emission rates, meteorology, and exposure location. We assume that an individual is present at the location of maximum exposure at the exact same hour that peak emissions occur (using a default factor of 10 from average actual annual emissions rates) and the exact same hour the reasonable worst-case air dispersion conditions (*i.e.,* 99th percentile) occur. Together, these assumptions represent a reasonable worst-case actual exposure scenario. In most cases, it is unlikely that a person would be located at the point of maximum exposure during the time when peak emissions and reasonable worst-case air dispersion conditions occur simultaneously. Furthermore, at the facility where the maximum HQ of 20 is estimated, the maximum exposure is modeled to occur along the fenceline of the facility at a location immediately surrounded by farmland making it more unlikely a person would be located at that point at the exact hour the peak emissions and the reasonable worst-case air dispersion conditions occur.

We also conducted a community-based risk assessment for facilities currently subject to the CMAS NESHAP or who would become subject to the CMAS NESHAP with the proposal of the new area source category (see section II.C.1 of this preamble for details on how the facility list was developed). The goal of this assessment was to estimate cancer risk from HAP emitted from all local stationary point sources for which we have emissions data. We estimated the overall inhalation cancer risk due to emissions from all stationary point sources impacting census blocks within 10 km of the CMAS facilities. Specifically, we combined the modeled impacts from category and non-category HAP sources at CMAS facilities, as well as other stationary point source HAP emissions. The results indicate that the community-level maximum individual cancer risk is 5,000-in-1 million, with all risk attributable to chromium VI emissions from an area source iron foundry. The Agency will investigate these emissions to determine if follow-up action is necessary. We note that the 2020 NEI data (the baseline for the community-level assessment) for the facility driving the community-level MIR present an anomalously high year of chromium VI emissions compared to other years. Also, the default speciation of chromium emissions to chromium III and chromium VI emissions done by the NEI is a conservative estimate of emissions and may not be representative of the actual emissions. In addition, we note that there is additional uncertainty in non-CMAS categories emissions because they were not reviewed to the same extent as emissions from CMAS facilities. Within 10 km, the population exposed to cancer risks greater than 100-in-1 million from all nearby emissions is approximately 5,600. For comparison, approximately 3,600 people have cancer risks greater than 100-in-1 million due to emissions from the evaluated CMAS NESHAP (see table 1 of this preamble).

After the controls proposed in this action are implemented for the CMAS categories (see sections IV.A through IV.C of this preamble), including the contribution from all non-EtO HAP, the maximum individual cancer risk is estimated to be 100-in-1 million and no facilities are estimated to pose cancer risk greater than 100-in-1 million. The number of people living within 50 km of CMAS facilities with risk greater than 1-in-1 million due to emissions from the CMAS categories will decrease from 4.4 million to 2.3 million. Chronic and acute noncancer risk is not estimated to change, although our proposal to remove the 50 parts per million by volume (ppmv) criteria as part of the definition of ''metal HAP process vent'' (see section IV.C.3 of this preamble) is anticipated to reduce emissions of nickel that drive the chronic noncancer risk. After implementation of the proposed controls, the community-level maximum individual cancer risk will remain unchanged at 5,000-in-1 million. The population (within 10 km of CMAS facilities) exposed to cancer risks greater than 100-in-1 million from all nearby emissions will be reduced from 5,600 people to 1,900 people; a 66 percent reduction from the baseline. The increased cancer risk for most of these 1,900 people is driven largely by emissions of chromium VI from non-CMAS facilities within 10 km of CMAS facilities.

See table 1 of this preamble for a summary of the CMAS NESHAP inhalation risk assessment results. We present the full results and methods of the risk assessment in more detail, in the document titled *Risk Assessment for the Chemical Manufacturing Area Source (CMAS) Source Categories in Support of the 2025 Technology Review for the Proposed Rule,* which is available in the docket for this rulemaking.

TABLE 1—INHALATION CANCER RISK ASSESSMENT RESULTS FOR COMMUNITIES LIVING WITHIN 10 TO 50 KM OF CMAS FACILITIES

Risk assessment	Number of facilities [1]	Maximum individual cancer risk (-in-1 million) [2]	Estimated population at increased risk of cancer		Estimated annual cancer incidence (cases per year)	Maximum chronic noncancer TOSHI	Refined maximum screening acute non-cancer HQ
			>100-in-1 million	≥1-in-1 million			
Baseline (Pre-Control) Actual Emissions [3]							
Source Category	248	800	3,600 (10 km) 3,600 (50 km)	2 million (10 km). 4.4 million (50 km).	0.2 (10 km) 0.4 (50 km)	3 (respiratory, immunological)	20
Facility-wide	279	800	3,600 (10 km) 3,600 (50 km)	2.2 million (10 km). 4.6 million (50 km).	0.2 (10 km) 0.4 (50 km)	3 (respiratory, immunological)	[4] —
Community-based	[5] 9,932	5,000	5,600 (10 km)	8.6 million (10 km).	0.8 (10 km)		
Post-Control Emissions							
Source Category	248	100	0	1.3 million (10 km). 2.3 million (50 km).	0.1 (10 km) 0.2 (50 km)	3 (respiratory, immunological)	20
Facility-wide	279	100	0	1.4 million (10 km). 2.5 million (50 km).	0.1 (10 km) 0.2 (50 km)	3 (respiratory, immunological)	
Community-based	[3] 9,932	5,000	1,900 (10 km)	8 million (10 km).	0.6 (10 km)		

[1] Thirty-one (31) additional facilities were modeled for the CMAS whole-facility analysis compared to the CMAS categories analysis, because 279 facilities were originally identified as potentially subject to the CMAS NESHAP considering the current and proposed source categories based on permit review and/or the facility's presence in the previous rulemaking's facility list. However, upon further review, only 248 of these 279 facilities were identified as having emissions from the CMAS categories.

[2] Maximum individual excess lifetime cancer risk due to HAP emissions.
[3] Potential differences between actual emission levels and the maximum emissions allowable under EPA's standards (*i.e.,* ''allowable emissions'') were also evaluated for the CMAS categories. For the 248 CMAS facilities, there were 4 facilities with allowable emissions that differed from actual emissions. These emissions were evaluated and it was determined there would be no appreciable difference in the risk results; therefore, the risk results provided based on actual emissions also describe the risk assessment results based on allowable emissions.
[4] ''—'' Indicates where an assessment was not conducted.
[5] 9,653 nearby non-CMAS facilities in addition to the 279 facilities CMAS facilities evaluated.

III. Analytical Procedures and Decision-Making

A. How do we determine GACT?

As provided in CAA section 112(d)(5), we are proposing standards representing GACT to regulate EtO emissions from equipment leaks, heat exchange systems, process vents, storage tanks, wastewater, and transfer operations located at CMAS. The statute does not set any condition precedent for issuing standards under CAA section 112(d)(5) other than that the area source category or subcategory at issue must be one that EPA listed pursuant to CAA section 112(c), which is the case here. In determining what constitutes GACT for this proposed rule, we considered the control technologies and management practices that are generally available to EtO emission sources at CMAS by examining relevant data and information, including information collected from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) and PEPO Production major source categories. We also considered the standards for major chemical manufacturing sources subject to the MON and HON (see 85 FR 49084, August 12, 2020, and 89 FR 42932, May 16, 2024, respectively) to determine if the control technologies and work practice standards for the major sources are generally available to area sources as well. Finally, we considered the costs of available control technologies and management practices on area sources.

From the information that we have collected to date in conjunction with this rulemaking, which includes information about process equipment, control technologies, point and fugitive emissions, and other aspects of facility operations at major chemical manufacturing sources, we know that area sources have the same types of emissions, emission sources, and controls as major sources. Equipment leaks, heat exchange systems, process vents, storage tanks, wastewater, and transfer operations at major and area sources are using the same control technologies. There are generally no discernible differences between the processes at area and major chemical manufacturing sources excepting size. In fact, major and area sources use similar, if not identical, control technologies and practices to manage process emissions. Therefore, the control technologies used by chemical manufacturing major sources are generally available for CMAS.

B. How do we perform the technology review?

For the NESHAP area source GACT standard, our technology review primarily focuses on the identification and evaluation of developments in practices, processes, and control technologies that have occurred since the standards were promulgated. Where we identify such developments, we analyze their technical feasibility, estimated costs, energy implications, and non-air environmental impacts. We also consider the emission reductions associated with applying each development. This analysis informs our decision of whether it is ''necessary'' to revise the emissions standards. In addition, we consider the appropriateness of applying controls to new sources versus retrofitting existing sources. For this exercise, we consider any of the following to be a ''development'':

- Any add-on control technology or other equipment that was not identified and considered during development of the original GACT standards;
- Any improvements in add-on control technology or other equipment (that were identified and considered during development of the original GACT standards) that could result in additional emissions reduction;
- Any work practice, management practice, or operational procedure that was not identified or considered during development of the original GACT standards;
- Any process change or pollution prevention alternative that could be broadly applied to the industry and that was not identified or considered during development of the original GACT standards; and
- Any significant changes in the cost (including cost effectiveness) of applying controls (including controls the EPA considered during the development of the original GACT standards).

In addition to reviewing the practices, processes, and control technologies that were considered at the time we originally developed (or last updated) the CMAS NESHAP, we review a variety of data sources in our investigation of potential practices, processes, or controls to consider. See sections II.C and II.D of this preamble for information on the specific data sources that were reviewed as part of the technology review.

IV. Analytical Results and Proposed Decisions

A. What are our proposed decisions regarding standards representing GACT for EtO emissions from CMAS, and what is the rationale for those decisions?

As discussed in section II.A.1 of this preamble, the EPA is proposing, pursuant to CAA section 112(c)(3) and (5), to create an area source category describing chemical manufacturing operations using EtO. Specifically, we are proposing at 40 CFR 63.11494(a)(2)(v) that you are subject to the CMAS NESHAP if you own or operate a CMPU that is located at an area source of HAP and EtO is used as a feedstock at an individual concentration greater than 0.1 percent by weight; generated as a byproduct and is present in the CMPU in any liquid stream (process or waste) at a concentration of greater than or equal to 1 part per million by weight (ppmw); generated as a byproduct and is present in the CMPU in any continuous process vent or batch process vent at a concentration greater than 1 ppmv; or is produced as a product of the CMPU. The EPA is also proposing amendments to the CMAS NESHAP pursuant to CAA section 112(d)(5) to include:

- New monitoring requirements for leaks from equipment in EtO service;
- New monitoring requirements for leaks from heat exchange systems in EtO service;
- A new emissions standard for batch and continuous process vents in EtO service;
- A new emissions standard for storage tanks in EtO service;
- New control requirements for wastewater streams in EtO service;
- Improved operational and monitoring requirements for flares that emit EtO;
- A new fenceline monitoring standard related to EtO emissions; and
- A requirement that any release event from a PRD in EtO service is a deviation.

The data, analyses, results, and proposed decisions pursuant to CAA section 112(d)(5) are presented for each emission source in sections IV.A.1 through IV.A.8 of this preamble.

The EPA considers multiple factors in assessing the costs of emission reductions.[16] These factors include, but are not limited to, total capital costs, total annual costs, cost effectiveness, and annual costs compared to total annual revenues for ultimate owners of affected facilities (*i.e.,* costs to sales ratios). EtO is a highly potent carcinogen and the cost-effectiveness numbers presented in sections IV.A.1 through IV.A.8 of this preamble are within range of values that we have determined to be cost effective for highly toxic HAP. For small hard chromium electroplating, to provide an ample margin of safety to protect public health, costs of $15,000 per pound (lb) ($30,000,000 per ton) were finalized due to the toxicity of hexavalent chromium (see 77 FR 58227–8 and 77 FR 58239, September 19, 2012). EtO is similarly highly toxic. The cost-effectiveness values presented in sections IV.A.1 through IV.A.8 of this preamble are also within the range of cost-effectiveness for control of EtO emissions that the EPA found reasonable as part of the recent commercial sterilizers rulemaking (see 89 FR 24090, April 5, 2024). In this rulemaking, the EPA accepted costs of up to $17,500,000/ton for existing sources in setting standards under CAA section 112(d)(5). In addition, our established methodology for assessing economic impacts of regulations indicates that the potential for adverse economic impacts begins when a costs to sales ratio exceeds three percent. According to our estimates, the anticipated annual costs of the proposed emission control options discussed below are well below three percent of annual sales for the majority of the owners of potentially impacted EtO sources.

1. Equipment Leaks in EtO Service

Emissions from equipment leaks occur in the form of gases or liquids that escape to the atmosphere through connection points (*e.g.,* threaded connectors) or through the moving parts of components such as pumps and valves. EtO emissions are released from equipment leaks when the components are associated with equipment that contain EtO (referred to as equipment in EtO service). We provide details about equipment leaks, including how the CMAS NESHAP regulates them, in our technology review discussion (see section IV.C.1 of this preamble). For the GACT standard analysis, we evaluated a single control option for leaks from equipment in EtO service. The control option evaluated is identical to the HON standards for leaks from equipment in EtO service and similar (in terms of the technology, which is using EPA Method 21 instrument monitoring) to the control options that we evaluated in the equipment leaks technology review (see section IV.C.1 of this preamble). The EPA recently added EtO-specific requirements into the HON for equipment in EtO service that requires a more stringent monitoring frequency (*i.e.,* monthly monitoring) and lower leak definitions (*i.e.,* 100 ppmv or 500 ppmv) compared to monitoring for leaks from equipment not in EtO service. In the HON, equipment in EtO service is equipment that contains or contacts a fluid that is at least 0.1 percent by weight EtO.

As such, given the transferability of major source work practice standards to CMAS management practices due to the minimal differences between performing instrument monitoring at a major source compared to an area source, we evaluated the following option to represent GACT for equipment ''in ethylene oxide service'' that are located at CMAS:

- Control Option 1 (if EtO was added to table 1 to 40 CFR part 63, subpart VVVVVV): conduct monthly EPA Method 21 monitoring at a leak definition of 100 ppmv for connectors and valves in EtO service and 500 ppmv for pumps in EtO service.

We find this Control Option and the associated technologies to be ''generally available'' per the language of CAA section 112(d)(5). While it was not proposed in the original CMAS rulemaking, an instrument monitoring program similar to the MON was evaluated as part of the original CMAS rulemaking in 2008. In addition, conducting EPA Method 21 monitoring has been an option for the CMAS management practices since promulgation (*i.e.,* owners and operators may perform EPA Method 21 monitoring in lieu of conducting audio, visual, and olfactory (AVO) inspections). Also, the EPA is aware of facilities that have already implemented instrument monitoring in some capacity as part of complying with other regulatory requirements or as part of a company-wide initiative to address EtO emissions. Therefore, we conclude that instrument monitoring is generally available.

We estimated the cost and emissions reductions of Control Option 1 for 33 CMAS EtO facilities. Using background information available to the EPA (including air permits and information received from various EPA regional offices), it was determined that 10 CMAS EtO facilities are already conducting instrument monitoring as part of an LDAR program for their equipment in EtO service. Based on this, there are two types of facilities for purposes of identifying their baseline LDAR program for equipment in EtO service: those that do not have an LDAR program of any kind; and those that already conduct EPA Method 21 instrument monitoring. When evaluating the cost and emissions reductions for each facility, we calculated the incremental cost and reductions to meet Control Option 1 compared to a facility's baseline LDAR program. The memorandum *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Equipment Leaks that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Equipment Leaks from Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, summarizes the baseline LDAR program for each of the 33 CMAS EtO facilities evaluated for this control option and presents details on the methodologies used in this analysis.

Table 2 of this preamble presents the nationwide impacts for requiring owners and operators of equipment in EtO service to perform EPA Method 21 monitoring in accordance with Control Option 1. Based on the costs and emission reductions, we are proposing to revise the CMAS NESHAP for equipment in EtO service to reflect Control Option 1 pursuant to CAA section 112(d)(5).

[16] *Natural Resources Defense Council* v. *EPA,* 749 F.3d 1055, 1060 (DC Circ. April 18, 2014) (''Section 112 does not command the EPA to use a particular form of cost analysis'').

TABLE 2—NATIONWIDE EMISSIONS REDUCTIONS AND COST IMPACTS OF CONTROL OPTION 1 FOR REQUIRING EPA METHOD 21 MONITORING FOR EQUIPMENT IN EtO SERVICE AT CERTAIN FACILITIES [1]

Control option	Total capital investment ($)	Total annualized costs w/o recovery credits ($/yr)	Total annualized costs with recovery credits ($/yr)	VOC emission reductions (tpy)	EtO emission reductions (tpy) [2]	EtO cost effectiveness w/o recovery credits ($/ton)	EtO cost effectiveness with recovery credits ($/ton)
1	511,000	1,261,000	1,129,400	146	83	15,100	13,500

[1] Facilities that would either become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed, or are already subject to the CMAS NESHAP and emit EtO.
[2] We note that EtO emission reductions from equipment leaks (and subsequent cost-effectiveness values for EtO from equipment leaks) differ from reductions expected to occur from reported emissions inventories due to use of model plants, engineering assumptions made to estimate baseline emissions, and uncertainties in how fugitive emissions may have been calculated for reported inventories compared to our model plants analysis (and are documented in the memorandum).

The EPA is proposing to define equipment leaks ''in ethylene oxide service'' at 40 CFR 63.11502(b), by reference to the HON (40 CFR 63.101). We are proposing Control Option 1 for equipment leaks in EtO service at 40 CFR 63.11495(a)(7). These proposed requirements would apply to all new and existing affected sources and specify that:

- All connectors in EtO service be monitored monthly at a leak definition of 100 ppmv with no skip period, and delay of repair is not allowed unless the equipment can be isolated such that it is no longer in EtO service (see 40 CFR 63.174(a)(3), (b)(3)(vi), and (g)(3), and 40 CFR 63.171(f)).
- All gas/vapor and light liquid valves in EtO service be monitored monthly at a leak definition of 100 ppmv with no skip period, and delay of repair is not allowed unless the equipment can be isolated such that it is no longer in EtO service (see 40 CFR 63.168(b)(2)(iv) and (d)(5), and 40 CFR 63.171(f)).
- All light liquid pumps in EtO service be monitored monthly at a leak definition of 500 ppmv, and delay of repair is not allowed unless the equipment can be isolated such that it is no longer in EtO service (see 40 CFR 63.163(a)(1)(iii), (b)(2)(iv), (c)(4), and (e)(7), and 40 CFR 63.171(f)).

2. Heat Exchange Systems in EtO Service

Emissions of EtO from heat exchange systems occur when a heat exchanger's internal tubing material corrodes or cracks, allowing some process fluids to mix or become entrained with the cooling water. Pollutants (*e.g.,* EtO) in the process fluids may subsequently be released from the cooling water into the atmosphere when the water is exposed to air (*e.g.,* in a cooling tower for closed-loop systems or trenches/ponds in a once-through system). We provide more details about heat exchange systems, including how the CMAS NESHAP regulates them, in our technology review discussion (see section IV.C.2 of this preamble). Our CMAS heat exchange system technology review (see section IV.C.2 of this preamble) identified use of the Modified El Paso Method as a development in practice for heat exchange systems with a cooling water flow rate equal to or greater than 8,000 gallons per minute (gpm). Specifically, we identified the following control option for heat exchange systems: quarterly monitoring with the Modified El Paso Method, using a leak action level defined as a total strippable hydrocarbon concentration (as methane) in the stripping gas of 6.2 ppmv. This option would also require repairing a leak no later than 45 days after first identifying the leak, delay of repair within 120 days (except within no more than 30 days where a total strippable hydrocarbon concentration (as methane) in the stripping gas of 62 ppmv or higher is found), and re-monitoring at the monitoring location where the leak was identified to ensure that any leaks found are fixed.

To assess what GACT standards may be appropriate if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, we reviewed other rulemakings to identify the level of control required for heat exchange systems emitting EtO. As part of that review, we identified one rule requiring monitoring of heat exchange systems ''in ethylene oxide service.'' The EPA recently added EtO-specific requirements into the HON for heat exchange systems in EtO service that require more stringent monitoring frequency (weekly instead of quarterly) and repair of leaks within 15 days from the sampling date (in lieu of the current 45-day repair requirement after receiving results of monitoring indicating a leak) (see 89 FR 42932, May 16, 2024). Additionally, delay of repair is not allowed unless there is no longer an active EtO leak once the heat exchange system is isolated and not in EtO service. A heat exchange system in EtO service means any heat exchange system in a process that cools process fluids (liquid or gas) that are 0.1 percent or greater by weight of EtO. If knowledge exists that suggests EtO could be present in a heat exchange system, then the heat exchange system is considered to be ''in ethylene oxide service'' unless the procedures specified in the HON at 40 CFR 63.109 are performed to demonstrate that the heat exchange system does not meet the definition of being ''in ethylene oxide service.'' Examples of information that could suggest EtO could be present in a heat exchange system include calculations based on safety data sheets, material balances, process stoichiometry, or previous test results provided the results are still relevant to the current operating conditions.

Given the EtO specific requirements in the HON for heat exchange systems in EtO service and minimal operational differences between heat exchange systems operating at SOCMI and CMAS facilities, we evaluated the following options in the selection of GACT for all heat exchange systems ''in ethylene oxide service'' that are located at CMAS:

- Control Option 1: quarterly monitoring (after an initial six months of monthly monitoring) with the Modified El Paso Method, using a leak action level defined as a total strippable hydrocarbon concentration (as methane) in the stripping gas of 6.2 ppmv; reduce the allowed amount of repair time from 45 days after finding a leak to 15 days from the sampling date; and prohibit delay of repair.
- Control Option 2: same as Control Option 1, except monthly monitoring with the Modified El Paso Method instead of quarterly monitoring.
- Control Option 3: same as Control Option 1, except weekly monitoring with the Modified El Paso Method instead of quarterly monitoring. This option is required in the HON.

The Modified El Paso Method is required and in use by sources regulated under other rulemakings including, but not limited to the MON, the HON, and the Petroleum Refineries NESHAP. The method works via air stripping and use of a flame ionization detector (FID), both of which are well understood technologies in the chemical manufacturing sector and have been in use for decades. Given the widespread use of the fundamental technologies and method in other, similar chemical manufacturing facilities, we consider use of the Modified El Paso Method to be ''generally available.''

We estimated the impacts of these Control Options using information from the original CMAS rulemaking.[17] We estimated that 27 of the 33 facilities that either would become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV or that are already subject to the CMAS NESHAP and emit EtO would be affected by Control Options 1 through 3; and we assumed each affected facility does not currently have an LDAR program for monitoring their cooling water. As part of our analysis, we also assumed all facilities monitoring quarterly for two or less heat exchange systems would elect to contract out the Modified El Paso monitoring (instead of purchasing a stripping column and FID analyzer and performing the monitoring in-house); however, facilities monitoring monthly or weekly would elect to purchase a stripping column and FID analyzer and perform in-house monitoring due to logistics. In addition, we assumed repairs could be performed by plugging a specific heat exchanger tube, and if a heat exchanger is leaking to the extent that it needs to be replaced, then it is effectively at the end of its useful life. Therefore, we determined that the cost of replacing a heat exchanger is an operational cost that would be incurred by the facility because of routine maintenance and equipment replacement, and it is not attributable to the Control Options.

Table 3 of this preamble presents the nationwide impacts for requiring owners and operators of heat exchange systems in EtO service to use the Modified El Paso Method and repair leaks of total strippable hydrocarbon concentration (as methane) in accordance with Control Options 1 through 3. See the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Heat Exchange Systems that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Heat Exchange Systems Associated with Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, for details on the assumptions and methodologies used in this analysis.

While all Control Options were identified as cost effective based on values accepted as part of other recent rulemakings regulating EtO emissions (see 89 FR 24090, April 5, 2024, for the commercial sterilizer rulemaking), the potency of EtO as a carcinogen, and historic cost-effectiveness values accepted for highly toxic HAP (such as hexavalent chromium), there are no records in the emissions inventory from heat exchangers in EtO service. We note that leaks from heat exchange systems handling EtO can still occur, even if there are no specific emissions records in the inventory. This absence of records is likely because most facilities emitting EtO have not been required to monitor leaks in their heat exchange systems. Consequently, the impacts associated with controlling these emissions are less certain due to the lack of records. In addition, there are concerns that monthly or weekly monitoring of heat exchangers in EtO service would be significantly more burdensome for area sources than major sources. Major sources may have additional capital and personnel bandwidth to accommodate installation and operation of a stripping column and lab equipment (such as a gas chromatograph/mass spectroscopy unit) necessary for in-house analysis compared to area sources who may not have previously been subject to any monitoring of heat exchange systems. As such, based on the costs, emissions reductions, and uncertainties, we are proposing that Control Option 1 represents GACT for heat exchange systems in EtO service. However, we are soliciting comments and data on whether more frequent monitoring (*i.e.,* Control Options 2 and 3) would be appropriate for CMAS considering the proposed addition of EtO to table 1 to 40 CFR part 63, subpart VVVVVV.

TABLE 3—NATIONWIDE EMISSIONS REDUCTIONS AND COST IMPACTS OF CONTROL OPTIONS 1 THROUGH 3 FOR REQUIRING THE MODIFIED EL PASO METHOD FOR HEAT EXCHANGE SYSTEMS IN ETO SERVICE AT CERTAIN FACILITIES[1]

Control option	Total capital investment ($)	Total annualized costs w/o recovery credits ($/yr)	Total annualized costs with recovery credits ($/yr)	VOC emission reductions (tpy)	EtO emission reductions (tpy)	EtO cost effectiveness w/o recovery credits ($/ton)	EtO cost effectiveness with recovery credits ($/ton)	EtO Incremental cost effectiveness with recovery credits (from option 1) ($/ton)
1	122,000	157,000	117,900	43.4	24.8	6,300	4,700	....
2	122,000	359,400	319,500	44.3	25.3	14,200	12,500	388,500
3	122,000	1,371,500	1,331,300	44.7	25.5	52,300	52,200	1,688,800

[1] Facilities that would either become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed, or are already subject to the CMAS NESHAP and emit EtO.

The EPA is proposing to define a heat exchange system ''in ethylene oxide service'' at 40 CFR 63.11502(b), by reference to the HON (40 CFR 63.101). We are proposing Control Option 1 at 40 CFR 63.11499(e) and item 2 of table 8 to the CMAS NESHAP, by reference to the HON (40 CFR 63.104(a), (f) through (i), and (k)), to specify quarterly monitoring (after an initial six months of monthly monitoring) for leaks for all new and existing affected sources with heat exchange systems in EtO service using the Modified El Paso Method, and if a leak is found, we are proposing owners and operators must repair the leak to below the applicable leak action level as soon as practicable, but no later than 15 days after the sample was collected with no delay of repair allowed (see 40 CFR 63.104(h)(6)).

3. Process Vents and Storage Tanks in EtO Service

Emissions of EtO can occur from several types of gas streams associated with CMAS processes, such as distillation columns, evaporator vents, and vacuum operations, as well as during vapor displacements and heating losses. CMAS storage tanks are used to store liquid and gaseous feedstocks for use in a process, as well as to store

[17] EPA, 2008. *Control Options and Impacts for Cooling Tower Control Measures Chemical Manufacturing Area Source Standards.* September 5, 2008. Docket ID No. EPA–HQ–OAR–2008–0334–0003; and EPA, 2009. *Update to the Control Options and Impacts for Heat Exchange System Control Measures for Promulgation Chemical Manufacturing Area Source Standards.* May 5, 2009. Docket ID No. EPA–HQ–OAR–2008–0334–0081.

liquid and gaseous products from a process. EtO is typically stored under pressure as a liquified gas but may also be found in small amounts in atmospheric storage tanks storing liquid products that are formed with EtO as a reactant in their production. Typical emissions from atmospheric storage tanks occur from working and breathing losses while pressure vessels are considered closed systems and, if properly maintained and operated, should have virtually no emissions. In some instances, pressurized vessels also could use a blanket of inert gas, most often nitrogen, to maintain a non-decomposable vapor space, and continuous purge of vapor space from non-loading operations could also lead to emissions from storage tanks. We provide details about process vents and storage tanks, including how the CMAS NESHAP regulates them, in our technology review discussion (see sections IV.C.3 and IV.C.4 of this preamble, respectively).

To assess what GACT standards may be appropriate, we reviewed other rulemakings to identify the level of control required for process vents and storage vessels emitting EtO. As part of that review, we identified two rules requiring stringent control of emissions from vents and process tanks ''in ethylene oxide service.'' The EPA recently added EtO-specific requirements into the MON and HON for process vents and storage vessels in EtO service (see 85 FR 49084, August 12, 2020, and 89 FR 42932, May 16, 2024, respectively). We note that the MON and HON use the term ''storage vessel'' in lieu of ''storage tank'' which is used in the CMAS NESHAP. According to the MON and HON, a process vent in EtO service is a process vent that contains a concentration of greater than or equal to 1 ppmv undiluted EtO when uncontrolled, and when all process vents within the process are combined, the sum of uncontrolled EtO emissions are greater than or equal to 5 pounds per year (lb/yr) (2.27 kilogram per year, kg/yr). A storage vessel in EtO service means a storage vessel of any capacity and vapor pressure storing a liquid that is at least 0.1 percent by weight of EtO. The EtO-specific standards established for the Miscellaneous Organic Chemical Manufacturing and SOCMI source categories are as follows:

- Requirements that owners and operators must reduce emissions of EtO from process vents in EtO service by either: (1) venting emissions through a closed vent system to a control device that reduces EtO by greater than or equal to 99.9 percent by weight, to a concentration less than 1 ppmv for each process vent, or to less than 5 lb/yr for all combined process vents per CMPU; or (2) venting emissions through a closed vent system to a flare meeting certain new operating and monitoring requirements for flares; and
- Requirements that owners and operators must reduce emissions of EtO from storage tanks in EtO service by either: (1) venting emissions through a closed vent system to a control device that reduces EtO by greater than or equal to 99.9 percent by weight or to a concentration less than 1 ppmv for each storage tank vent; or (2) venting emissions through a closed vent system to a flare meeting certain new operating and monitoring requirements for flares.

Given the EtO specific requirements in the MON and HON for process vents and storage vessels in EtO service and minimal operational differences between an APCD controlling emissions from process vents or storage vessels/tanks at MON, SOCMI, and CMAS facilities, we evaluated a Control Option to represent GACT for process vents and storage tanks that are ''in ethylene oxide service'' that would require owners and operators at certain CMAS (*i.e.,* facilities that would either become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed, or are already subject to the CMAS NESHAP and emit EtO) to reduce emissions of EtO by 99.9 percent from process vents and storage tanks that are ''in ethylene oxide service'' as defined by the MON and HON (*i.e.,* Control Option 1). Our evaluation considered the use of a thermal oxidizer achieving a 99.9 percent reduction of EtO emissions to control emissions from process vents and storage tanks in EtO service, as it is common for the same control device to control emissions from both emission sources at chemical plants. Control Option 1 reflects the EtO-specific requirements in the MON and HON for process vents and storage vessels in EtO service; therefore, it would apply to process vents in which the uncontrolled, undiluted EtO emissions from all process vents in a CMPU are greater than or equal to 5 lb/yr and the concentration of the uncontrolled, undiluted stream is greater than or equal to 1 ppmv. This Control Option would also apply to storage tanks of any capacity and vapor pressure storing a liquid that is at least 0.1 percent by weight of EtO.

We find this Control Option to be ''generally available'' per the language of CAA section 112(d)(5). Control devices include a wide array of potential technologies and so a facility may use whatever methods are available to achieve the 99.9 percent by weight reduction in EtO emissions. Thermal oxidizers, which we assumed will be installed by facilities needing to meet the proposed standards, are used to control emissions from process vents and storage tanks at sources regulated under other rulemakings including, but not limited to, the MON and the HON and have been in use in industry for decades. In addition, the CMAS NESHAP already allows for the venting of emissions through a closed vent system to a flare for both process vents and storage tanks. Given the widespread use of a readily available control technology such as a thermal oxidizer in other, similar chemical manufacturing facilities, we consider this Control Option of proposing a 99.9 percent by weight reduction of EtO emissions from process vents and storage tanks to be ''generally available.''

To determine which emission points at facilities would need additional control of EtO emissions, we reviewed the CMAS emissions inventory data (see section II.C.2 of this preamble). For each process vent and storage tank emission point record with EtO emissions in the CMAS emissions inventory, we determined whether it was controlled by a non-flare combustion device, a non-combustion control device, a non-combustion control device able to achieve 99.9 percent emissions reduction, or was uncontrolled. There are no process vent or storage tank emission point records associated with a non-flare combustion device; however, for emission point records that are controlled by a non-combustion control device, our impacts analyses assumed that none of the facilities with existing non-combustion controls would be able to achieve 99.9 percent control of EtO, unless a stack test or data provided by a state agency confirmed otherwise. Therefore, we treated non-combustion control devices unable to achieve 99.9 percent control and uncontrolled emission point records in the same manner and assumed that each would need to be controlled by a thermal oxidizer. Some facilities that would need to install a thermal oxidizer to control EtO have multiple process vent and/or storage tank emission points with EtO emissions. Rather than costing out multiple thermal oxidizers for these facilities, we assumed they would combine the streams together and install a single thermal oxidizer (to control all EtO emissions), as is commonly done at chemical plants. We also recognize that some emission points could possibly achieve a 99.9 percent reduction in EtO emissions by upgrading or installing a new scrubber system instead of a new thermal oxidizer; and upgrading or installing a new scrubber system would likely cost less than installing a new thermal oxidizer. However, for simplicity, we only evaluated the use of a thermal oxidizer to meet the Control Option because using thermal oxidizers is common for controlling emissions from both process vents and storage tanks in EtO service at chemical plants. Ultimately, we determined that seven facilities would be impacted by Control Option 1 to reduce emissions of EtO by 99.9 percent from process vents and storage tanks that are ''in ethylene oxide service'' as defined by the MON and HON (1 of these 7 facilities is already subject to the CMAS NESHAP and the remaining 6 facilities would become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed). We estimated costs to install a thermal oxidizer using the EPA's control cost template.[18] Table 4 of this preamble presents the nationwide impacts of Control Option 1, requiring owners and operators to reduce emissions of EtO by 99.9 percent from process vents and storage tanks that are ''in ethylene oxide service'' as defined by the MON and HON. See the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Process Vents and Storage Tanks that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Process Vents and Storage Tanks Associated with Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, for details on the assumptions and methodologies used in this analysis. Based on the costs and emission reductions for Control Option 1, we are proposing to revise the CMAS NESHAP for process vents and storage tanks in EtO service to reflect Control Option 1 pursuant to CAA section 112(d)(5). The cost effectiveness of this Control Option is within the range of values that have been accepted in other recent rulemakings regulating EtO emissions such as the commercial sterilizer rulemaking (see 89 FR 24090, April 5, 2024)[19] and is within the range of historic cost-effectiveness values that have been accepted for highly toxic HAP (such as hexavalent chromium).[20] EtO is similarly toxic due to its potency as a carcinogen. As such, we find that this Control Option is cost effective.

TABLE 4—NATIONWIDE EMISSIONS REDUCTIONS AND COST IMPACTS OF CONTROL OPTION 1 FOR REQUIRING 99.9 PERCENT CONTROL OF PROCESS VENTS AND STORAGE TANKS IN EtO SERVICE AT CERTAIN FACILITIES[1]

Control option	Total capital investment ($)	Total annualized costs ($/yr)	EtO emission reductions (tpy)	EtO cost effectiveness ($/ton)
1	1,395,000	2,126,000	1.1	1,933,000

[1] Facilities that would either become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed, or are already subject to the CMAS NESHAP and emit EtO.

The EPA is proposing to define a process vent ''in ethylene oxide service'' at 40 CFR 63.11502(b), by reference to the HON (40 CFR 63.101). We are proposing Control Option 1 for all new and existing affected sources with process vents in EtO service at 40 CFR 63.11496(j), item 4 of table 2 to the CMAS NESHAP (for batch process vents), and item 4 of table 3 to the CMAS NESHAP (for continuous process vents), by reference to the HON. These proposed requirements specify that owners and operators of process vents in EtO service must reduce emissions of EtO by venting emissions through a closed vent system to a flare in accordance with the requirements in 40 CFR 63.108 and 40 CFR 63.124 (see section IV.A.6 of this preamble for additional details regarding our proposed requirements for flares that emit EtO), or to a control device that reduces EtO by greater than or equal to 99.9 percent by weight, or to a concentration less than 1 ppmv for each process vent or to less than 5 lb/yr for all combined process vents within the process in accordance with the requirements in 40 CFR 63.124.

The EPA is proposing to define a storage tank (vessel) ''in ethylene oxide service'' at 40 CFR 63.11502(b), by reference to the HON (40 CFR 63.101). We are also proposing that the exemption for ''tanks storing organic liquids containing HAP only as impurities'' listed in the definition of ''storage tank'' at 40 CFR 63.11502(b) does not apply for storage tanks in EtO service. We are also proposing Control Option 1 for storage tanks in EtO service at 40 CFR 63.11497(e) and item 5 of table 5 to the CMAS NESHAP, by reference to the HON. These proposed requirements specify that owners and operators of storage tanks in EtO service must reduce emissions of EtO by venting emissions through a closed vent system to a flare in accordance with the requirements in 40 CFR 63.108 and 40 CFR 63.124 (see section IV.A.6 of this preamble for additional details regarding our proposed requirements for flares that emit EtO), or to a control device that reduces EtO by greater than or equal to 99.9 percent by weight, or to a concentration less than 1 ppmv for each storage tank vent in accordance with the requirements in 40 CFR 63.124.

In addition, given that 40 CFR 63.124 requires owners and operators to comply with the HON leak inspection requirements in 40 CFR 63.148 and the delay of repair provisions associated with these inspection requirements (*i.e.,* 40 CFR 63.148(e)) rely on a definition for ''shutdown'' that does not include batch processes, we are also proposing to substitute the use of ''shutdown'' with language at 40 CFR 63.11496(j)(5)(iv) and 40 CFR 63.11497(e)(5)(iv) to accommodate both continuous and batch processes. We are proposing that for 40 CFR 63.148(e), the term ''shutdown'' for a continuous operation, means the cessation of the unit operation for any purpose. Shutdown begins with the initiation of steps as described in a written standard operating procedure or shutdown plan to cease normal/stable operation (*e.g.,* reducing or immediately stopping feed). For batch operations, we are proposing that for 40 CFR 63.148(e), the term ''shutdown'' means the cessation of a

[18] Refer to the file ''*Incinerators and Oxidizers Calculation Spreadsheet* (note: updated on 1/16/2018) (xlsm)'' which follows the methodology from the sixth edition of the EPA Air Pollution Control Cost Manual and can be found at the following website: *https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution.*

[19] The EPA finalized EtO emissions standards in the RTR for sterilization facilities with costs estimated to be as much as $17,500,000 per ton EtO.

[20] For small hard chromium electroplating, to provide an ample margin of safety, the EPA finalized a requirement with a cost effectiveness of $15,000 per lb ($30,000,000 per ton) (see 77 FR 58227–8 and FR 77 58239, September 19, 2012).

batch operation except shutdown does not apply to cessation of batch operations at the end of a campaign or between batches within a campaign when the steps taken to cease operation are normal operations.

Finally, we are also proposing to remove the option to allow use of a design evaluation in lieu of performance testing to demonstrate compliance for controlling process vents and storage tanks that are in EtO service. In addition, owners or operators that choose to control emissions with a non-flare control device would be required to conduct an initial performance test on each control device in EtO service to verify performance at the required level of control, and would also be required to conduct periodic performance testing on non-flare control devices in EtO service every 5 years (see proposed 40 CFR 63.11496(j) and 40 CFR 63.11497(e) by reference to 40 CFR 63.124).

4. Wastewater in EtO Service

EtO is emitted into the air from wastewater collection, storage, and treatment systems that are uncovered or open to the atmosphere through volatilization of the compound at the liquid surface. The rate of volatilization is related directly to the speed of the air flow over the water surface. We provide more details about wastewater streams, including how the CMAS NESHAP regulates them, in our technology review discussion (see section IV.C.5 of this preamble).

To assess what GACT standards may be appropriate for wastewater in EtO service, we reviewed other rulemakings to identify the level of control required for wastewater emitting EtO. As part of that review, we identified one rule requiring control of emissions from wastewater ''in ethylene oxide service.'' In the HON rulemaking, the EPA recently added EtO-specific requirements for wastewater streams in EtO service (see 89 FR 42932, May 16, 2024). These standards require owners and operators to manage and treat existing and new wastewater streams with total annual average concentration of EtO greater than or equal to 1 ppmw at any flow rate. As such, we evaluated a Control Option to represent GACT for wastewater streams that are ''in ethylene oxide service'' that would require owners and operators at certain CMAS (those that would either become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed, or are already subject to the CMAS NESHAP and emit EtO) to comply with the HON Group 1 wastewater requirements for wastewater streams that are ''in ethylene oxide service'' as defined by the HON (*i.e.,* Control Option 1).

The HON specifies performance standards for treatment processes managing Group 1 wastewater streams including performance standards for open or closed biological treatment systems or a design steam stripper with vent control. For APCDs (*e.g.,* thermal oxidizers) used to control emissions from collection system components, steam strippers, or closed biological treatment, the HON provides owners or operators several compliance options, including a 95 percent destruction efficiency standard, a 20 ppmv outlet concentration standard, or design specifications for temperature and residence time. Given the EtO specific requirements in the HON at 40 CFR 63.138(b)(3) and (c)(3) for wastewater streams in EtO service to reduce, by removal or destruction, the concentration of EtO to a level less than 1 ppmw and minimal operational differences between controlling emissions from HON CMPUs and CMAS CMPUs, we evaluated the use of steam stripping to comply with Control Option 1. While we acknowledge EtO can be biodegraded, the compound is not on table 37 to subpart G of the HON suggesting that it is not a readily biodegradable compound when using a biological treatment method, and EtO would need to be stripped out of the wastewater to meet the standard at 40 CFR 63.138(b)(3) and (c)(3). Therefore, we evaluated Control Option 1 using a steam stripper achieving a 98 percent reduction of EtO emissions (based on the fraction removed (Fr) value of EtO [21] in table 9 to subpart G of the HON).

We find Control Option 1 to be ''generally available'' per the language of CAA section 112(d)(5). Steam strippers are used to control emissions from wastewater streams at sources regulated under other rulemakings including, but not limited to, the MON and the HON. In addition, steam stripping was evaluated as part of the original rulemaking and is currently a method of compliance for controlling certain CMPU wastewater streams. Given the widespread use of this control technology in other, similar chemical manufacturing facilities, and current applicability of the technology to certain CMAS wastewater streams, we consider this Control Option of proposing the use of steam strippers to control EtO emissions from wastewater to be ''generally available.''

[21] The Fr is the fraction of a HAP that is stripped from wastewater and is an indicator of the extent to which a HAP is effectively removed during the steam stripping process, which for EtO is 98 percent.

We reviewed the CMAS emissions inventory data (see section II.C.2 of this preamble) as well as air permits and determined that there are 4 CMAS facilities that have wastewater processes that use and emit EtO and therefore would be impacted by Control Option 1. To evaluate the impacts of requiring these facilities to meet Control Option 1, we used PEPO-specific wastewater data submitted in response to the EPA's 2022 CAA section 114 request (see section II.C.3 of this preamble). We used the PEPO-specific wastewater data rather than HON-specific data because for EtO processes, CMAS CMPUs are more like PEPO PMPUs given that both CMAS CMPUs and PEPO PMPUs use EtO as a reactant (often in batch reactions to make a product), whereas HON CMPUs produce EtO and are continuous. In addition, we removed all PEPO-specific wastewater data that could not be representative of an area source (based on the amount of HAP emissions that could potentially be emitted to the atmosphere from the wastewater streams); and therefore, not representative of a CMAS facility. We estimated costs to install a steam stripper using the cost algorithm for wastewater stripper steam requirements used for the development of the HON.[22] Table 5 of this preamble presents the nationwide impacts of Control Option 1, requiring owners and operators to manage and treat existing and new wastewater streams with total annual average concentration of EtO greater than or equal to 1 ppmw at any flow rate in accordance with HON Group 1 wastewater requirements. See the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Wastewater Streams that Emit Ethylene Oxide and Clean Air Act Section 112(d)(6) Technology Review for Wastewater Systems Associated with Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, for details on the assumptions and methodologies used in this analysis. Based on the costs and emission reductions for Control Option 1, we are proposing to revise the CMAS NESHAP for wastewater in EtO service to reflect Control Option 1 pursuant to CAA section 112(d)(5). The

[22] EPA, 1992a. *Hazardous Air Pollutant Emissions from Process Units in the Synthetic Organic Chemical Manufacturing Industry—Background Information for Proposed Standards, Volume 1B: Control Technologies.* EPA–453/D–92–016b. November 1992; and EPA, 1992b. *Hazardous Air Pollutant Emissions from Process Units in the Synthetic Organic Chemical Manufacturing Industry—Background Information for Proposed Standards, Volume 1C: Model Emission Sources.* EPA–453/D–92–016c. November 1992.

cost effectiveness of this Control Option is within the range of values that have been accepted in other recent rulemakings regulating EtO emissions, such as the commercial sterilizer rulemaking (see 89 FR 24090, April 5, 2024) [23], and is within the range of historic cost-effectiveness values that have been accepted for highly toxic HAP (such as hexavalent chromium).[24] EtO is similarly toxic due to its potency as a carcinogen. As such, we find that this Control Option is cost effective.

TABLE 5—NATIONWIDE EMISSIONS REDUCTIONS AND COST IMPACTS OF CONTROL OPTION 1 FOR REQUIRING CONTROL OF WASTEWATER IN ETO SERVICE AT CERTAIN FACILITIES [1]

Control option	Total capital investment ($)	Total annualized costs ($/yr)	EtO emission reductions (tpy) [2]	EtO cost effectiveness ($/ton)
1	12,899,400	5,471,300	8.3	659,200

[1] Facilities that would either become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed, or are already subject to the CMAS NESHAP and emit EtO.

[2] We note that EtO emission reductions from wastewater (and subsequent cost-effectiveness values for EtO from wastewater) differ from reductions expected to occur from reported emissions inventories due to use of model plants, engineering assumptions made to estimate baseline emissions, and uncertainties in how fugitive emissions may have been calculated for reported inventories compared to our model plants analysis (and are documented in the memorandum).

The EPA is proposing to define a wastewater stream ''in ethylene oxide service'' at 40 CFR 63.11502(b), by reference to the HON (40 CFR 63.101). We are proposing Control Option 1 for all new and existing affected sources with wastewater streams in EtO service at 40 CFR 63.11498(c) and item 3 of table 6 to the CMAS NESHAP, by reference to the HON. These proposed requirements specify that owners and operators of wastewater in EtO service must reduce, by removal or destruction, the concentration of ethylene oxide in existing and new wastewater streams (*i.e.,* wastewater streams with total annual average concentration of EtO greater than or equal to 1 ppmw at any flow rate) to a level less than 1 ppmw as determined by the procedures specified in § 63.145(b) and in accordance with the Group 1 wastewater stream requirements of §§ 63.133 through 63.148 and the requirements referenced therein. Additionally, we are aware that some chemical manufacturing facilities dispose of certain wastewater streams that contain EtO by adding those wastewaters to the cooling water of their heat exchange systems, rather than considering those EtO-containing streams to be potential sources of wastewater. To eliminate these types of EtO emissions from wastewater being injected into heat exchange systems, we are also proposing to prohibit owners and operators from injecting water into or disposing of water through any heat exchange system in a CMPU meeting the conditions of 40 CFR 63.11494 if the water contains any amount of EtO, has been in contact with any process stream containing EtO, or the water is considered wastewater as defined in 40 CFR 63.11502 (see proposed 40 CFR 63.11495(b)(4) and items 1.c and 2 of table 8 to the CMAS NESHAP).

5. Standards for Transfer Operations That Emit EtO

The EPA includes transfer operations as part of the equipment collection that makes up a CMPU (see 40 CFR 63.11494(b)). According to the CMAS NESHAP, transfer operations involve loading liquid containing organic HAP into tank trucks and rail cars from a transfer rack. This does not include loading into other containers like cans, drums, and totes.

The CMAS NESHAP defines a transfer rack as the system used to load organic liquids into tank trucks and railcars at a single location. This system includes all necessary loading arms, pumps, meters, shutoff valves, relief valves, and other piping and equipment. Transfer equipment that do not share common piping, valves, and other equipment are considered separate transfer racks.

The CMAS NESHAP regulates transfer operations through specific management practices. According to 40 CFR 63.11495(a)(2), owners and operators must use one of the following methods to control total organic HAP emissions when transferring certain liquids (those containing any organic HAP listed in table 1 to 40 CFR part 63, subpart VVVVVV) to tank trucks or railcars: (1) submerged loading or bottom loading; (2) routing emissions to a fuel gas system or process; (3) vapor balancing back to the storage tank or another storage tank connected by a common header; or (4) venting through a closed vent system to a control device.

Since we are proposing to add EtO to table 1 to 40 CFR part 63, subpart VVVVVV, owners and operators of new and existing affected sources with transferring liquids containing EtO to tank trucks or railcars would be subject to these same management practices. We are proposing that these management practices reflect GACT for these transfer operations. We anticipate that all facilities that may become subject to the CMAS NESHAP if EtO were to be added to table 1 to 40 CFR part 63, subpart VVVVVV already use at least one of these management practices when transferring liquids containing EtO to tank trucks or railcars. Therefore, we do not expect any additional costs from this proposed GACT standard.

The EPA is soliciting comments and data on the proposed transfer operation practices.

6. Standards for Flares That Emit EtO

As previously discussed in section IV.A.3 of this preamble, the EPA is proposing to add specific requirements for EtO to the CMAS NESHAP for batch process vents, continuous process vents, and storage tanks in EtO service. Each of these requirements mandates 99.9 percent control, reduction in concentration to less than 1 ppmw, or the use of a flare. These requirements are based on EtO-specific requirements in the MON and HON. If a flare is used to meet the MON and HON standards for process vents and storage tanks in EtO service, the owner or operator must comply with several operational and monitoring requirements that are reflective of requirements for petroleum refinery flares which address: (1) the presence of a pilot flame; (2) visible emissions; (3) flare tip velocity; (4) net heating value of flare combustion zone gas; and (5) net heating value dilution parameter (if the flare actively receives perimeter assist air). More details about these requirements are provided in our

[23] See footnote 19.

[24] See footnote 20.

technology review discussion (see section IV.C.6 of this preamble). As such, we evaluated the option (*i.e.,* Control Option 1) to require flares used to comply with the proposed GACT standards for process vents and storage tanks in EtO service to meet the same operational and monitoring requirements included in the MON and HON.

Control Option 1 requires various monitoring equipment (*i.e.,* hydrogen analyzers, calorimeters, and flow monitors) be installed on the flare vent gas stream header and/or steam- or air-assist header. Flares are used to control emissions from sources such as process vents and storage tanks regulated under other rulemakings including, but not limited to, the HON and the MON. The HON and MON apply to chemical manufacturing facilities and already require these types of monitoring equipment. Given the widespread use of this monitoring equipment in other, similar chemical manufacturing facilities, we consider Control Option 1, which includes the use of hydrogen analyzers, calorimeters, and flow monitors, to be ''generally available'' per the language of CAA section 112(d)(5).

Using information from the CMAS emissions inventory data (see section II.C.2 of this preamble), we estimated there are only two flares at two different facilities that would be impacted by Control Option 1 (one of the facilities is already subject to the CMAS NESHAP and the other facility would become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed). We estimated costs for each flare for a given facility, considering current monitoring systems already installed on each individual flare. Given that the same type of equipment is used for flares in the CMAS categories and for the petroleum refinery sector, we estimated costs for any additional monitoring systems needed based on installed costs received from petroleum refineries. If those installed costs were unavailable, we estimated costs based on vendor-purchased equipment. The baseline emission estimate and the emission reductions achieved by Control Option 1 were estimated based on the CMAS emissions inventory data (see section II.C.2 of this preamble) and current vent gas and steam flow data submitted by industry representatives.[25] The results of the impact estimates are summarized in table 6 of this preamble for Control Option 1. See the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Flares that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Flares Associated with Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, for details on the assumptions and methodologies used in this analysis. Based on the costs and emission reductions for Control Option 1, we are proposing to revise the CMAS NESHAP for flares used to comply with the proposed GACT standards for process vents and storage tanks in EtO service to reflect Control Option 1 pursuant to CAA section 112(d)(5). The cost-effectiveness of this Control Option is within the range of values that have been accepted in other recent rulemakings regulating EtO emissions such as the commercial sterilizer rulemaking (see 89 FR 24090, April 5, 2024)[26] and is within range of historic cost-effectiveness values that have been accepted for highly toxic HAP (such as hexavalent chromium).[27] EtO is similarly toxic due to its potency as a carcinogen. As such, we find that this Control Option is cost-effective.

TABLE 6—NATIONWIDE EMISSIONS REDUCTIONS AND COST IMPACTS OF CONTROL OPTION 1 FOR REQUIRING THE SUITE OF OPERATIONAL AND MONITORING REQUIREMENTS FOR FLARES THAT EMIT EtO AT CMAS FACILITIES[1]

Control option	Total capital investment ($)	Total annualized costs ($/yr)	VOC emission reductions (tpy)	EtO emission reductions (tpy)	EtO cost effectiveness ($/ton)
1	3,770,000	960,000	12.8	1.56	606,700

[1] Facilities that would either become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed, or are already subject to the CMAS NESHAP and emit EtO.

We are proposing Control Option 1 for flares at new and existing affected sources that are used to comply with the proposed GACT standards for process vents and storage tanks in EtO service at item 4.a of table 2 to the CMAS NESHAP, item 4.a of table 3 to the CMAS NESHAP, item 5.a of table 5 to the CMAS NESHAP, and 40 CFR 63.11497(f)(5), all by reference to the HON (40 CFR 63.108 and 40 CFR 63.124). These proposed requirements specify that owners and operators that choose to use a flare to comply with the proposed standards for process vents and storage tanks in EtO service as described in section IV.A.3 of this preamble must vent emissions through a closed vent system and meet the applicable requirements for flares as specified in 40 CFR 63.670 and 63.671, including the provisions in tables 12 and 13 to 40 CFR part 63, subpart CC (*i.e.,* the suite of operational and monitoring requirements for refinery flares). In addition, we are proposing amendments to 40 CFR 63.11501(c)(2)(iii) and (c)(4)(vii) to align the recordkeeping requirements with this proposed Control Option.

We also note that we are proposing an LDAR program for equipment leaks at 40 CFR 63.11495(a)(6) and (7) (see sections IV.A.1 and IV.C.1 of this preamble). Part of this LDAR program requires owners and operators that vent equipment leak emissions through a closed vent system to a flare used to control equipment leaks in EtO service, to comply with the same suite of operational and monitoring requirements for flares as we are proposing for flares used to comply with the proposed GACT standards for process vents and storage tanks in EtO service (see proposed 40 CFR 63.11495(a)(7)). Given that we only identified two flares in the CMAS emissions inventory data that emit EtO and we have already estimated impacts for these flares to comply with Control

[25] To estimate the baseline control efficiency of volatile organic compounds (VOC) and HAP anticipated by applying Control Option 1, we reviewed data submitted to the EPA in 2011 by the American Petroleum Institute (API), the American Chemistry Council (ACC), and the National Petrochemical and Refiners Association (NPRA), now known as the American Fuels and Petrochemical Manufacturers (AFPM). This dataset includes detailed hourly operational information for 38 steam-assisted flares, characterizing different operating conditions by waste gas flow rate, steam flow rate, waste gas composition, and duration of that operating condition.

[26] See footnote 19.

[27] See footnote 20.

Option 1, we do not expect any additional costs from this proposed GACT standard.

7. Standards for Fenceline Monitoring EtO

As discussed in section IV.C.7 of this preamble as well, fenceline monitoring is the practice by which monitors are placed around the perimeter of a facility to measure the concentration of certain pollutants. When required in conjunction with root cause analysis and corrective action, fenceline monitoring can reduce uncertainties associated with fugitive emissions estimation and characterization. This section of the preamble is limited to the discussion of fenceline monitoring for EtO. Section IV.C.7 of this preamble provides details on why we are not proposing fenceline monitoring for CMPUs using, producing, storing, or emitting other table 1 HAP.

In the promulgated amendments to the HON, the EPA finalized a new EPA method (EPA Method 327 of 40 CFR part 63, appendix A) to monitor the concentration of EtO at facility fenceline locations. EPA Method 327 provides procedures for canister sampling and analysis for measuring trace levels of targeted VOC (including organic HAP) in air. EPA Method 327 collects ambient air samples using specially prepared and pre-cleaned evacuated stainless-steel canisters. For analysis, the method specifies procedures for concentrating the target VOC (*i.e.,* EtO) in a known volume of air drawn from the canister, desorbing the target VOC from the preconcentrator, and determining the concentration of the target VOC using a gas chromatograph–mass spectrometer. The EPA continues to investigate cost-effective monitoring methods and technologies that could offer improved sensitivity, improved time resolution, or increased time integration.

As part of the HON, fenceline monitoring in combination with root cause analysis and corrective action was required for affected sources using, producing, storing, or emitting EtO. The program requires a cannister sample to be collected in accordance with EPA Method 327 for one 24-hour period every five days. This monitoring frequency is necessary to ensure that all onsite processes are monitored regularly while maintaining the cost effectiveness of implementing a canister monitoring network. A sampling frequency of every 5 days also ensures that the annual average concentration derived from the fenceline data are indicative of the actual average emissions from the site by reducing the possibility that sampling occurs only during emission spikes. Once samples are analyzed, the lowest sample value for EtO is subtracted from the highest sample value for EtO, generating a Δc. This approach subtracts the estimated contributions from background emissions that do not originate from the facility. The owner or operator would average the Δc for the most recent year of samples (73 sampling periods) to calculate an annual average Δc on a rolling basis (*i.e.,* calculate a new annual average Δc every 5 days using data from the most recent 73 sampling periods). The owner or operator would compare this rolling annual average Δc against the concentration action level for EtO. The action level for EtO established as part of the HON is 0.2 micrograms per cubic meter (μg/m^3) based on three times the representative detection limit (RDL) for EtO.

If the annual average Δc for a facility exceeds the action level, then root cause analysis and corrective action must be performed. Root cause analysis is an assessment conducted through a process of investigation to determine the primary underlying cause and other contributing causes of an exceedance of the action level. If the underlying causes of the action level exceedance are deemed to be from sources under the control of the owner or operator, the owner or operator is required to take corrective action to address the underlying cause of the exceedance and to bring the annual average Δc back below the action level as expeditiously as possible. Completion of the root cause analysis and initial corrective action is required within 45 days of determining that the annual average Δc exceeded the action level. If the owner or operator requires longer than 45 days to implement the corrective actions identified by the root cause analysis, the owner or operator is required to submit a corrective action plan no later than 60 days after completion of the root cause analysis.

After completion of the initial corrective action, if the Δc for the next three sampling periods for samples collected by EPA Method 327 are below the action level, then the corrective action is assumed to have fixed the problem, and the owner and/or operator has no further obligation for additional corrective action. However, if the Δc for the subsequent sampling periods after initial corrective action is greater than the action level, then the owner or operator must submit a corrective action plan and schedule for implementing design, operation, and maintenance changes to eliminate as quickly as possible and prevent recurrence of the primary cause and other contributing causes to the exceedance of the action level, to reduce annual average concentrations below the action level. If the owner or operator cannot determine the root cause of the exceedance within 30 days of determining that there was an exceedance of an action level, the proposed revisions require use of real-time sampling techniques (*e.g.,* mobile gas chromatographs) to determine the root cause of the exceedance. While the action level(s) are based on annual average concentrations, once an action level is exceeded, each sampling period that exceeds the action level contributes to the Δc remaining above the action level. An investigation must be conducted to determine the root cause and, if appropriate, to correct the root cause expeditiously to bring the annual average Δc below the action level.

Given the similarities between certain sources subject to the HON and CMAS CMPUs in EtO service, the threat of adverse effect on human health (as discussed in section II.A.1 of this preamble), and the observed inconsistency between modeling the fenceline concentrations of sources subject to the HON and actual fenceline concentration measurements,[28] we assessed whether the same fenceline monitoring program was appropriate. We find fenceline monitoring via EPA Method 327 to be ''generally available'' per the language of CAA section 112(d)(5). Canister measurements for EtO have been possible since 1999 via Method TO–15. While EPA Method 327 was finalized in May 2024 as part of the revisions to the HON (see 89 FR 42932); many of the practices, media, and instrumentation necessary for the analysis have been available since 2019 via an update to Method TO–15, Method TO–15A. EPA Method 327 codifies the best practices of Method TO–15A and mandates enhanced QA/QC approaches, such as a regular validation of the sampling media, site verification for the sampling, defined sample holding times, and ongoing field and spike blanks to evaluate performance. In addition, development of logistics and practices to support EPA Method 327 laboratory analysis will also be occurring alongside other, similar chemical manufacturing rulemakings. Lastly, as a practice, placing monitors around a facility to measure fugitive emissions has been required as part of

[28] EPA, 2023. *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 Docket ID No. EPA–HQ–OAR–2022–0730–0091.

the Petroleum Refineries NESHAP (40 CFR part 63, subpart CC) since 2018. Given the monitoring technology has been available for several decades and the methodology, while new, is an adjustment to a well understood 2019 method to ensure the validity of samples, we find EPA Method 327 to be ''generally available'' per the language of CAA section 112(d)(5). Both root cause analysis and corrective action already take place at facilities where large emission events occur. When an event occurs, the source will be determined and will be fixed. This is a regular part of operation and thus root cause analysis and corrective action are already available to every facility potentially impacted by the proposed fenceline monitoring management practice.

For the 33 facilities within the proposed source category, Chemical Manufacturing with Ethylene Oxide, EtO is ubiquitous and should be present in most streams associated with CMPUs in EtO service. As such, for these facilities, EtO can act as a surrogate pollutant to track and limit overall fugitive emissions of HAP at the fenceline. Therefore, using information from the CMAS emissions inventory (see section II.C.2 of this preamble), we modeled what the fenceline concentrations for EtO would be for the 33 facilities identified to use, produce, store, or emit EtO based on whole facility emissions when considering those options proposed in sections IV.A.1 through IV.A.6 and section IV.A.8. The modeling showed that 32 of the 33 facilities had EtO fenceline concentrations at or below 0.2 $\mu g/m^3$, three times the RDL for EtO and the action level finalized as part of the HON. In addition, the one facility that was modeled to have a fenceline concentration greater than 0.2 $\mu g/m^3$ was identified as having a high degree of uncertainty associated with their emissions inventory as the facility only reported a single EtO record. In addition to revisions made to the baseline data, post-control emission reductions were established using state permitting and approximate impacts (for additional details on facility specific adjustments to emissions, see appendix 1 of the document entitled *Risk Assessment for the Chemical Manufacturing Area Source (CMAS) Category in Support of the 2025 Technology Review for the Proposed Rule,* available in the docket for this rulemaking). While exact emission reductions cannot be calculated due to the nature of fugitive emissions and uniqueness of each root cause analysis and corrective action performed as part of the fenceline monitoring program, we anticipate there will be EtO emission reductions associated with fenceline monitoring.

The cost of the fenceline monitoring program is shown in table 7 of this preamble. We estimated the cost required for each impacted facility to build the necessary housing for the cannisters, purchase and install the cannisters, and continually monitor the fenceline concentration of EtO. See the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis and CAA Section 112(d)(6) Technology Review for Fenceline Monitoring for Chemical Manufacturing Process Units Associated with the Chemical Manufacturing Area Sources NESHAP,* which is available in the docket for this rulemaking, for additional details on the analysis and methodology associated with these costs.

Based on the costs and need to monitor for fugitive emissions of EtO, we are proposing to revise the CMAS NESHAP to require fenceline monitoring for EtO if a new or existing affected source uses, produces, stores, or emits EtO pursuant to CAA section 112(d)(5).

We are soliciting comment on the proposed fenceline monitoring program and the supporting analysis including the costs, benefits, and underlying assumptions.

TABLE 7—NATIONWIDE COST IMPACTS FOR REQUIRING FENCELINE MONITORING FOR CMAS THAT USE, PRODUCE, STORE, OR EMIT EtO AT CMAS FACILITIES [1]

Number of CMAS facilities impacted	Total capital investment ($)	Total annualized costs ($/yr)
33	488,000	20,990,000

[1] Facilities that would either become subject to the CMAS NESHAP if EtO is added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed, or are already subject to the CMAS NESHAP and emits EtO.

We are proposing to require fenceline monitoring for CMAS using, producing, storing, or emitting EtO at 40 CFR 63.11495(a)(8) by reference to the HON (40 CFR 63.184).

A primary requirement for a fenceline monitoring system is that it provides adequate spatial coverage for determination of representative pollutant concentrations at the boundary of the facility. In an ideal scenario, owners or operators would place fenceline monitors so that any fugitive plume originating within the facility would have a high probability of intersecting one or more monitors, regardless of wind direction. Therefore, by referencing 40 CFR 63.184(b)(3) via 40 CFR 63.11495(a)(8) we propose that each facility would place eight canisters evenly spaced on the monitoring perimeter. The monitoring perimeter may be the facility fenceline or may be inside the facility fenceline, provided all sources of EtO are contained within the perimeter. The EPA is also proposing to require that facilities move the canister sampling locations with alternating sampling periods to ensure complete spatial coverage of the facility. For facilities with perimeters less than or equal to 5,000 meters, all eight sampling points would be monitored during each sampling period. For facilities with perimeters greater than 5,000 meters but less than or equal to 10,000 meters, 16 sampling points would be required; for facilities with perimeters greater than 10,000 meters, 24 sampling points would be required. For facilities with EtO emission sources that are not contained within one contiguous area, the EPA is proposing monitoring of these secondary areas as well, with the size of the secondary area dictating the number of canisters.

In addition, we are proposing to allow the subtraction of offsite interfering sources (as they are not within the control of the owner or operator) through site-specific monitoring plans, but we are not providing this option for onsite, non-source category emissions. We based the action level on facility-wide emissions; therefore, we considered these non-source category sources in its development. Applying the fenceline standard to the whole facility will also limit emissions of EtO from all sources and provide more certainty in decisions being made as to whether the entire facility emissions align with what is expected from the EPA's analysis. It will also provide assurance to fenceline communities that emission reductions are achieved and maintained.

The EPA is also proposing, by reference to the HON at 40 CFR 63.182(e), that owners or operators report fenceline data on a quarterly basis. Each report would contain the results for each sample where the field portion of sampling is completed by the end of the quarter, as well as for associated field and method blanks (*i.e.,* each report would contain data for 18 canister sampling periods). Owners or operators would report these data electronically to the EPA within 45 days after the end of each quarterly period. See section IV.D.1 of this preamble for further discussion on electronic reporting and section IV.E.1 of this preamble for further discussion on the compliance dates being proposed.

8. PRDs in EtO Service

The CMAS NESHAP regulates PRDs through equipment leak management practices. These practices require owners and operators to conduct quarterly sensory-based inspections (using sight, sound, or smell) to ensure that equipment (including PRDs) is ''sound and free of leaks.'' However, these provisions do not apply to an emissions release from a PRD (see section IV.B.2 of this preamble for more detail).

The EPA is proposing an LDAR program (using EPA Method 21) for all equipment in organic HAP service (see section IV.C.1 of this preamble). Additionally, management practices for PRD releases are being proposed (see section IV.B.2 of the preamble). A 2023 study at an area source chemical manufacturing facility indicated that EtO PRD releases because of railcar switchover contributed to elevated levels of EtO at the facility's fenceline.[29] If those emissions had not been released to the atmosphere, the emissions would be characterized as process vent emissions and potentially subject to the proposed provisions in section IV.A.3 of this preamble. Given that neither the equipment leaks nor the process vents analyses account for the episodic nature of PRD releases and the observed need via the 2023 study, it is reasonable to consider a management practice regulating PRDs in EtO service.

To assess appropriate GACT standards for EtO releases from PRDs, we reviewed other rulemakings and identified two rules with requirements for PRDs ''in ethylene oxide service.'' The EPA recently added requirements to the MON and HON making any release event from a PRD in EtO service a deviation [30] from the work practice standards for PRD releases (see 85 FR 49084, August 12, 2020, and 89 FR 42932, May 16, 2024, respectively).

Given these EtO specific requirements in the MON and HON for PRDs in EtO service, the minimal operational differences between PRDs at MON, SOCMI, and CMAS facilities, and to ensure that EtO is not released to atmosphere from a PRD, we are also proposing at 40 CFR 63.11495(a)(7), by reference to the HON (40 CFR 63.165(e)(3)(v)(D)), that any release event from a PRD in EtO service at a new or existing affected source is a deviation of the standard. We do not expect any additional costs from this proposed GACT standard.

B. What are our other proposed decisions regarding GACT standards for CMAS, and what is the rationale for those decisions?

In addition to the GACT standards we are proposing for certain emission sources that emit EtO as discussed in section IV.A of this preamble, we are also proposing GACT standards for pressure vessels and PRDs as described in sections IV.B.1 and IV.B.2 of this preamble, respectively. In addition, we are proposing in section IV.B.3 of this preamble to clarify regulatory provisions for vent control bypasses for closed vent systems containing bypass lines.

1. Pressure Vessels

Pursuant to CAA section 112(d)(5), we are proposing new requirements for pressure vessels that are associated with processes subject to the CMAS NESHAP. The EPA is proposing to define pressure vessel at 40 CFR 63.11502(a), by reference to the HON (40 CFR 63.101), to mean ''a storage vessel that is used to store liquids or gases and is designed not to vent to the atmosphere as a result of compression of the vapor headspace in the pressure vessel during filling of the pressure vessel to its design capacity.'' To eliminate any ambiguity in applicability or control requirements, the EPA is also proposing at 40 CFR 63.11502(b) to remove the exemption for ''pressure vessels designed to operate in excess of 204.9 kilopascals (kPa) and without emissions to the atmosphere'' from the definition of storage tank. This long-standing exemption is ambiguous with respect to what ''without emissions to the atmosphere'' means. For example, most pressure vessels have relief devices that allow for venting when pressure exceeds setpoints. In many cases, these vents are routed to control devices; however, control devices are not completely effective (*e.g.,* achieve 95-percent control), and therefore there are emissions to the atmosphere from these pressure vessels, even if they are controlled. There are also instances where other components in pressure systems may allow for fugitive releases because of leaks from fittings or cooling systems. These events arguably are ''emissions to the atmosphere'' and therefore it is likely that even if the CMAS NESHAP maintained this exemption, owners and operators of pressure vessels would still have uncertainty regarding whether they were subject to substantive requirements. Therefore, the proposed revisions remove the ambiguity associated with the exemption and set new GACT standards intended to limit emissions to the atmosphere from pressure vessels storing organic HAP with capacities greater than or equal to 20,000 gallons at new and existing affected sources. We are proposing the same standards for pressure vessels of any capacity and vapor pressure storing EtO such that it can be considered to be a storage tank in EtO service. We are also clarifying in the definition of CMPU at 40 CFR 63.11494(b) that the collection of equipment that is part of a CMPU includes pressure vessels.

We estimate a pressure vessel is located at 15 of the 247 CMAS facilities given that these 15 facilities reported 1,3-butadiene emissions from processes subject to the CMAS NESHAP, and this chemical is stored in pressure vessels. We excluded CMAS facilities that may have pressure vessels storing EtO given that we are proposing more stringent standards for connectors in EtO service, gas/vapor and light liquid valves in EtO service, and light liquid pumps in EtO service (see section IV.A.1 of this preamble). Using information from a 2012 analysis that identified developments for storage vessels at chemical manufacturing facilities and petroleum refineries,[31] we estimate a total HAP emission reduction of 2.24 tpy for all affected pressure vessels associated with processes subject to the CMAS NESHAP (assuming 10 percent of all CMAS pressure vessels storing 1,3-butadiene would have components that leak). The nationwide capital cost for the proposed pressure vessel LDAR requirements for the CMAS NESHAP is about $3,800 and the annualized capital cost is $3,330.

Based on the costs and emission reductions, we are proposing LDAR requirements at 40 CFR 63.11497(f) and items 6 and 7 of table 5 to the CMAS NESHAP that are based on similar no-detectable emission requirements required for closed vent systems in most chemical sector NESHAP, including but not limited to the HON and MON. We

[29] The study, *Assessment of chemical facility ethylene oxide emissions using mobile and multipoint monitoring,* focused on measuring the concentration of EtO at a chemical manufacturer's fenceline. Elevated levels of EtO were measured nearest sources of ground level fugitive emissions such as wastewater outfall and during periods of irregular operation via PRD releases. The complete study can be found and read here: *https://doi.org/10.1016/j.aeaoa.2023.100214.*

[30] The current HON rule text does not define or use the term ''deviation'' and instead uses the term ''violation.'' Given that both the CMAS NESHAP and the MON rule text define and uses the term ''deviation'' to describe emissions events, we believe it is more appropriate to continue to use the term ''deviation'' (in lieu of ''violation'') in all of the CMAS rule text.

[31] Randall, 2012. Memorandum from Randall, D., RTI International to Parsons, N., EPA/OAQPS. *Survey of Control Technology for Storage Vessels and Analysis of Impacts for Storage Vessel Control Options.* January 20, 2012. EPA Docket ID No. EPA–HQ–OAR–2010–0871.

are proposing that these LDAR requirements for pressure vessels reflect GACT at new and existing affected sources. We did not identify any additional options beyond this for controlling emissions from pressure vessels. The requirements would apply to all new and existing affected sources and impose a standard that requires no detectable emissions at all times (*i.e.,* owners and operators would be required to meet a leak definition of 500 ppmv at each point on the pressure vessel where total organic HAP could potentially be emitted); require initial and annual leak monitoring using EPA Method 21 of 40 CFR part 60, appendix A–7; and require routing organic HAP through a closed vent system to a control device (*i.e.,* no releases to the atmosphere through a pressure vessel's PRD). These proposed LDAR requirements would also subject connectors in EtO service, gas/vapor or light liquid valves in EtO service, and light liquid pumps in EtO service to more stringent LDAR requirements under the proposed EtO equipment leak standards.

See the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Pressure Vessels Associated with Processes Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, for details on the assumptions and methodologies used in this analysis.

2. PRDs

The CMAS NESHAP regulates PRDs through equipment leak management practices. These practices require owners and operators to conduct quarterly sensory-based inspections (using sight, sound, or smell) to ensure that a PRD is ''sound and free of leaks'' (see 40 CFR 63.11495(a)(3)). These inspections typically occur when the PRD is seated, as PRDs are designed to open only during a pressure release (*i.e.,* when the system pressure exceeds the PRD's set pressure).

The CMAS NESHAP does not explicitly regulate atmospheric pressure releases, regardless of whether they are single or multiple releases over time. Consequently, no CMAS facility is subject to numeric emission limits for PRDs that vent to the atmosphere. It is impractical to measure emissions from PRDs that release to the atmosphere, making numeric emission limits inappropriate. However, the EPA has included work practice standards that regulate atmospheric pressure releases from PRDs in other chemical sector NESHAP, such as the EMACT standards (85 FR 40386, July 6, 2020; see 40 CFR 63.1107(h)(3)), the MON (85 FR 49084, August 20, 2020; see 40 CFR 63.2480(e)(3)), and the HON and Group I Polymers and Resins Industry (P&R I) NESHAP (89 FR 42932, May 16, 2024; see 40 CFR 63.165(e)(3)). The EPA also added PRD work practice standards to the petroleum refinery NESHAP for similar reasons (81 FR 45241, December 1, 2015; see 40 CFR 63.648(j)(3)). These PRD work practice standards (in all these listed NESHAP) require owners and operators to: (1) implement at least three prevention measures; [32] (2) perform root cause analysis and corrective action if a PRD releases emissions directly to the atmosphere; and (3) monitor PRDs using a system that can identify and record the time and duration of each pressure release and notify operators when a pressure release occurs.

We assessed whether the same PRD work practice standards, already included in the previously mentioned NESHAPs, represent GACT (*i.e.,* in the form of management practices) for CMAS. These standards would regulate emissions from CMAS PRDs during a pressure release. The PRD work practice standards require monitoring systems that can alert an owner or operator when a PRD release occurs. We find this equipment to be ''generally available'' according to CAA section 112(d)(5). As noted, this type of monitoring equipment is already mandated under other chemical sector regulations, including the HON and the MON. Given its widespread use in similar chemical manufacturing facilities, we consider the PRD work practice standards, which include the use of monitoring systems capable of alerting an owner or operator when a PRD release occurs, to be ''generally available.''

The cost for CMAS facilities to implement a management practice identical to the work practice standard in the HON and MON and install monitors for PRDs that vent to the atmosphere is based on the number of PRDs at each facility. However, we do not have actual equipment counts for CMAS facilities. To estimate the number of PRDs at CMAS facilities nationwide, we used HON-specific PRD data that was submitted in response to the EPA's 2022 CAA section 114 request (see section II.C.3 of this preamble). We calculated an average of 14 atmospheric PRDs in organic HAP service per CMAS CMPU. Multiplying this average by the total CMAS processes nationwide (247, assuming one CMPU per CMAS facility), we estimated there are 3,458 atmospheric PRDs in organic HAP service nationwide. We excluded 33 facilities [33] from this analysis given that we anticipate that these facilities are likely to only operate PRDs in EtO service that already have PRD monitoring installed. We used work practice costs from a 2015 memorandum [34] on PRD impacts for petroleum refineries to estimate costs for implementing at least three prevention measures and performing root cause analysis and corrective action at CMAS facilities. Similarly, based on the HON-specific PRD data from the EPA's 2022 CAA section 114 request, we calculated an average of three atmospheric PRDs in organic HAP service per CMAS CMPU that have a monitoring system installed capable of identifying releases and recording the time and duration of each pressure release. Therefore, multiplying the average of 11 (14 atmospheric PRDs less the three that already have monitoring systems installed) atmospheric PRDs in organic HAP service per CMAS CMPU that do not have a monitoring system by the total CMAS processes nationwide (247, assuming one CMPU per CMAS facility), we estimated that of the 3,458 PRDs in organic HAP service nationwide, 2,717 PRDs in organic HAP service nationwide vent to the atmosphere without a device or monitoring system capable of identifying releases and recording the time and duration of each pressure release. We then used PRD monitor costs from a 2017 memorandum [35] on PRD options for off-site waste and recovery operations to estimate the costs for installing PRD monitors at CMAS facilities. Based on our cost assumptions, the nationwide capital cost for complying with the PRD work practice requirements for the CMAS NESHAP (in the form of management practices) is $15.9 million, with annualized capital costs of $4.7 million. This translates to approximately $64,300 in total capital investment and $19,200 in total annual cost per CMAS

[32] Examples of prevention measures include the following: Flow indicators, level indicators, temperature indicators, pressure indicators, routine inspection and maintenance programs, operator training, inherently safer designs, safety instrumentation systems, deluge systems, and staged relief systems where the initial PRD discharges to a control system.

[33] These facilities are already subject to, or may become subject to, the CMAS NESHAP if EtO were to be added to table 1 to 40 CFR part 63, subpart VVVVVV.

[34] EPA, 2015. Coburn, Jeff, RTI International. *Pressure Relief Device Control Option Impacts for Final Refinery Sector Rule.* July 30, 2015. EPA Docket ID No. EPA–HQ–OAR–2010–0682.

[35] EPA, 2017. Carey, Angela, EPA/OAQPS. *Pressure Relief Device Control Options and Impacts for Off-Site Waste and Recovery Operations (OSWRO).* June 26, 2017. EPA Docket ID No. EPA–HQ–OAR–2012–0360.

facility. We are unable to estimate HAP reductions from requiring owners and operators to comply with these management practices because PRD pressure releases can occur as single or multiple events over time. In other words, these releases can result from system overpressure caused by operator error, malfunctions such as power or equipment failures, or other unexpected causes that necessitate immediate venting of gas from process equipment to prevent safety hazards or equipment damage; all of which are too difficult to predict. Even so, we anticipate that implementing these additional PRD management practices, along with the proposed equipment leak LDAR program for PRDs (see section IV.C.1 of this preamble), will achieve significantly greater emission reductions than the equipment leak management practices currently required by the CMAS NESHAP.

As such, pursuant to CAA section 112(d)(5), we are proposing new requirements for PRDs that are associated with processes subject to the CMAS NESHAP. We are proposing PRD management practices for all new and existing affected sources at 40 CFR 63.11495(a)(6), by reference to the HON (40 CFR 63.165(e)(1) through (8)), that require owners and operators to: (1) operate each PRD in organic HAP gas or vapor service with an instrument reading of less than 500 ppm above background as measured by the method specified in 40 CFR 63.180(c); (2) conduct instrument monitoring no later than 5 calendar days after the PRD returns to organic HAP gas or vapor service following a pressure release to verify that the PRD is operating with an instrument reading of less than 500 ppm, or if applicable, install a replacement disk as soon as practicable after a pressure release, but no later than 5 calendar days after the pressure release; (3) implement at least three prevention measures; (4) perform root cause analysis and corrective action if a PRD releases emissions directly to the atmosphere; and (5) monitor PRDs using a system that can identify and record the time and duration of each pressure release and notify operators when a pressure release occurs. The EPA is also proposing to define ''pressure relief device or valve'' at 40 CFR 63.11502(a), by reference to the HON (40 CFR 63.101), to mean ''a valve, rupture disk, or similar device used only to release an unplanned, nonroutine discharge of gas from process equipment in order to avoid safety hazards or equipment damage. A PRD discharge can result from an operator error, a malfunction such as a power failure or equipment failure, or other unexpected cause. Such devices include conventional, spring-actuated relief valves, balanced bellows relief valves, pilot-operated relief valves, rupture disks, and breaking, buckling, or shearing pin devices. Devices that are actuated either by a pressure of less than or equal to 2.5 pounds per square inch gauge or by a vacuum are not pressure relief devices.'' In addition, the EPA is proposing to define ''pressure release'' at 40 CFR 63.11502(a), by reference to the HON (40 CFR 63.101), to mean ''the emission of materials resulting from the system pressure being greater than the set pressure of the pressure relief device. This release can be one release or a series of releases over a short time period.''

See the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Pressure Relief Devices Associated with Processes Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, for details on the assumptions and methodologies used in this analysis. We solicit comments on the proposed management practice for PRDs and assumptions associated with the analysis.

3. Closed Vent System Containing Bypass Lines

For a closed vent system containing bypass lines that can divert the stream away from the APCD to the atmosphere, the CMAS NESHAP requires the owner or operator to either: (1) install, maintain, and operate a continuous parametric monitoring system for flow on the bypass line that is capable of detecting whether a vent stream flow is present at least once every hour, or (2) secure the bypass line valve in the non-diverting position with a car-seal or a lock-and-key type configuration. Under option 2, the CMAS NESHAP also requires owners or operators to inspect the seal or closure mechanism at least once per month to verify the valve is maintained in the non-diverting position (*e.g.,* for more details see items 1.a and 1.b of tables 2 and 3 to the CMAS NESHAP and items 1.b and 1.c of table 5 to the CMAS NESHAP, which all reference provisions in 40 CFR part 63, subpart SS that ultimately point to bypass monitoring requirements in 40 CFR 63.983(a)(3)). To expressly prohibit bypassing an APCD at affected sources, as implied by option 2, we are proposing that an owner or operator may not bypass the APCD at any time and that a bypass is a violation (see proposed 40 CFR 63.11495(e)), and owners and operators must estimate, maintain records, and report the quantity of organic HAP released (see proposed 40 CFR 63.11501(c)(10) and (d)(10)). We are proposing these revisions to ensure continuous compliance with the GACT standards because bypassing an APCD could result in a release of regulated organic HAP to the atmosphere that would be required to be controlled under the existing GACT standards in the CMAS NESHAP. We are also proposing that the use of a cap, blind flange, plug, or second valve on open-ended valves or lines (following the requirements specified in 40 CFR 60.482–6(a)(2), (b), and (c) or following requirements codified in another regulation that are the same as 40 CFR 60.482–6(a)(2), (b), and (c)) is sufficient to prevent a bypass. We solicit comments on these proposed revisions.

In addition, we are proposing to remove the 40 CFR 63.107(h)(9) exemption for ''a gas stream exiting an analyzer'' from the definition of continuous process vent at 40 CFR 63.11502(b) and we are proposing at 40 CFR 63.11495(e) to not exempt analyzer vents from the bypass requirements. As such, we are proposing to require that these kinds of vents meet the standards applicable to process vents at all times. Analyzer vents, or ''onstream analyzers,'' generally refer to sampling systems that directly feed to an analyzer located at a process unit and venting is expected to be routine (continuous or daily intermittent venting). We also note that sampling connection systems for CMPUs will be required to be part of a closed loop, closed purge, or closed vent system under our proposed equipment leak standards (*e.g.,* 40 CFR 63.166(a), see section IV.C.1 of this preamble for further details). In these applications, the analyzer vent would not be a bypass of emissions subject to the requirements in 40 CFR 63.11495 through 63.11498, rather the analyzer vent would be a process vent itself, thus engineering calculations would be used to determine if this vent is a process vent requiring control as specified in tables 2 through 4 to the CMAS NESHAP. In rare instances, the owner or operator may classify a release point on a gaseous vent system associated with a CMPU as an ''analyzer vent''. In this case, the analyzer vent when open acts as a bypass line (allowing direct atmospheric release) of a process vent stream. These examples demonstrate that depending on the circumstance, an analyzer vent could be construed as a process vent or a bypass line. Thus, we see no reason to categorically allow use of analyzer vents to bypass controls required for emissions subject to the requirements in 40 CFR 63.11495 through 63.11498.

C. What are the results and proposed decisions based on our technology review, and what is the rationale for those decisions?

As described in section III.B of this preamble, the technology review for the CMAS NESHAP focused on the identification and evaluation of developments in practices, processes, and control technologies that have occurred since the NESHAP was promulgated in 2009. In conducting the technology review, we reviewed various sources of information related to the emissions from chemical manufacturing operations and other relevant information such as control technologies applied, management practices used, processes, and monitoring approaches. Through searches of these data sources, we identified, evaluated, and considered several developments in practices, processes, or control technologies. As discussed below, these include developments and improvements that could result in the addition of emission limits, management practices, and other emission reduction requirements, as well as revised compliance assurance measures. We analyzed costs and emissions reductions for each emission source and determined cost-effectiveness (annualized cost per ton of emissions reduction) on a HAP basis. The data, analyses, results, and proposed decisions pursuant to CAA section 112(d)(6) are presented for each emission source in sections IV.C.1 through IV.C.7 of this preamble.

Based on this review, the EPA is proposing amendments to the CMAS NESHAP pursuant to CAA section 112(d)(6) that improve monitoring of leaks from equipment and heat exchange systems and revises the definition of ''metal HAP process vent.'' We are not proposing any changes to the CMAS NESHAP for storage tanks and wastewater based on our technology review given that we did not identify any cost-effective developments in practices, processes, or control technologies for these emission sources that achieve a greater HAP emission reduction beyond the emission reduction already required by the CMAS NESHAP.

1. Equipment Leaks

Emissions from equipment leaks occur in the form of gases or liquids that escape to the atmosphere through connection points (*e.g.,* threaded connectors) or through the moving parts of different components (*e.g.,* agitators, compressors, PRDs, pumps, valves) and certain types of process equipment. Each component type has a unique manner in which emissions are released (*e.g.,* connectors may leak if the threads become damaged or corroded or if not tightened sufficiently, pumps can leak at the point of contact between the moving shaft and stationary casing, valves can leak through the seal around the valve stem).

The CMAS NESHAP requires that facilities conduct quarterly inspections of process vessels and equipment for each CMPU in organic HAP service or metal HAP service. Equipment is defined as ''each pump, compressor, agitator, pressure relief device, sampling connection system, open-ended valve or line, valve, connector, and instrumentation system in or associated with a CMPU.'' The inspections rely on AVO detection methods to determine whether process vessels and equipment are free of leaks. The CMAS NESHAP also allows instrument monitoring (*i.e.,* use EPA Method 21 with a leak definition of 500 ppmv) in lieu of AVO methods; or, facilities may use EPA Method 21 to confirm the presence of HAP for leaks identified using AVO methods.

To identify developments in practices, processes, and control technologies since the GACT standards were established, we reviewed subsequent regulatory efforts. After reviewing multiple regulations, we identified developments in LDAR program practices in the form of specific leak definitions and monitoring frequencies for LDAR programs that use EPA Method 21 monitoring that are different than those evaluated during the original CMAS rulemaking. We used the HON and MON as initial points of reference to identify developments, since these rules apply to major source chemical manufacturing facilities which are similar to CMAS facilities. The HON and MON require EPA Method 21 monitoring for specific components at varying leak definitions (from 500 ppmv to 10,000 ppmv) and frequencies (monthly monitoring to monitoring every 4 years if few leaks are identified). We also reviewed the Gasoline Distribution area source rule, which recently undertook a similar technology review for equipment leaks where the EPA finalized an LDAR program that requires annual monitoring using EPA Method 21 at a leak definition of 10,000 ppmv in lieu of only AVO methods. We used the Gasoline Distribution LDAR program, which requires annual monitoring at a leak definition of 10,000 ppmv, as the starting option (*i.e.,* Control Option 1). We then considered two additional options that would impose more stringent requirements that would allow us to assess the impacts of more frequent monitoring (*i.e.,* Control Option 2 requiring semiannual monitoring) and a lower leak definition (*i.e.,* Control Option 3 requiring a leak definition of 500 ppmv). We also evaluated the key component types for the LDAR programs (*i.e.,* connectors, valves, pumps) and did not consider an option where connectors were not monitored. The following summarize the three equipment leak control options that we evaluated for this technology review:[36]

- Control Option 1 (for connectors in gas and vapor (G/V) service or in light liquid (LL) service, valves in G/V or LL service, and pumps in LL service): monitor all components annually using EPA Method 21 and a leak definition of 10,000 ppmv.
- Control Option 2 (for connectors in G/V or LL service, valves in G/V or LL service, and pumps in LL service): monitor all components semiannually using EPA Method 21 and a leak definition of 10,000 ppmv.
- Control Option 3 (for connectors in G/V or LL service, valves in G/V or LL service, and pumps in LL service): monitor all components annually using EPA Method 21 and a leak definition of 500 ppmv.

To estimate the costs and emission reductions, we assumed that 247 CMAS facilities currently follow the CMAS requirement of performing quarterly AVO inspections and are impacted by this technology review. For simplicity, we excluded 4 other CMAS facilities from our analysis that may have equipment leaks in EtO service; and instead, we included them in our GACT analysis discussed in section IV.A.1 of this preamble. To get the nationwide impacts of each Control Option, we estimated the cost and reductions for a model CMAS facility to implement each of the three control options and multiplied the model facility results by 247. The memorandum *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Equipment Leaks that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Equipment Leaks from Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, presents

[36] Each equipment leak control option that we evaluated also includes the HON LDAR requirements specified in 40 CFR 63.164 for compressors, 40 CFR 63.166 for sampling connection systems, 40 CFR 63.167 for open-ended valves or lines, 40 CFR 63.169 for equipment in heavy liquid service, 40 CFR 63.173 for agitators in G/V or LL service.

details on the assumptions and methodologies used in this analysis.

Table 8 of this preamble presents the nationwide impacts for requiring owners and operators to perform EPA Method 21 monitoring in accordance with Control Options 1–3. Based on the costs and emission reductions, we are proposing to revise the CMAS NESHAP for equipment in HAP service to reflect Control Option 1 pursuant to CAA section 112(d)(6). Control Options 2 and 3 have incremental costs and emission reductions (*i.e.,* incremental to Control Option 1) that are not cost effective and we are not proposing to revise the CMAS NESHAP to reflect either of these options.

TABLE 8—NATIONWIDE EMISSIONS REDUCTIONS AND COST IMPACTS OF CONTROL OPTIONS 1–3 FOR REQUIRING EPA METHOD 21 MONITORING FOR EQUIPMENT LEAKS AT CMAS FACILITIES

Control option	Total capital investment ($)	Total annualized costs w/o recovery credits ($/yr)	Total annualized costs with recovery credits ($/yr)	VOC emission reductions (tpy)	HAP emission reductions (tpy)	HAP cost effectiveness w/o recovery credits ($/ton)	HAP cost effectiveness with recovery credits ($/ton)	HAP incremental cost effectiveness with recovery credits (from option 1) ($/ton)
1	2,499,600	2,220,500	862,000	1,510	151	14,700	5,700	
2	2,499,600	3,109,700	1,516,600	1,772	177	17,600	8,600	25,000
3	2,499,600	3,465,400	1,968,600	1,662	166	20,900	11,800	72,700

We are proposing Control Option 1 for equipment leaks at 40 CFR 63.11495(a)(6). To effectively incorporate Control Option 1 into the CMAS NESHAP, we specify at proposed 40 CFR 63.11495(a)(6) that owners and operators of new and existing affected sources with equipment in organic HAP service must conduct annual leak detection monitoring of all pumps in light liquid service, valves in gas/vapor service and in light liquid service, and connectors in gas/vapor service and in light liquid service by the method specified in 40 CFR 63.180(b)(1) through (3), with certain exceptions (*e.g.,* pumps, valves, and connectors that are unsafe to monitor may be exempt). We also specify at proposed 40 CFR 63.11495(a)(6) that a leak from any of these types of equipment is detected if the instrument reading equals or exceeds 10,000 ppmv and a first attempt at repair must be made no later than 5 calendar days after a leak is detected. Also, we are proposing that equipment must be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as allowed in the HON for delay of repair at 40 CFR 63.171. Additionally, we are proposing at 40 CFR 63.11495(a)(6) the HON LDAR requirements for compressors (*i.e.,* 40 CFR 63.164), sampling connection systems (*i.e.,* 40 CFR 63.166), open-ended valves or lines (*i.e.,* 40 CFR 63.167), equipment in heavy liquid service (*i.e.,* 40 CFR 63.169), and agitators in G/V or LL service (*i.e.,* 40 CFR 63.173). We note that we are also proposing the HON LDAR requirements for PRDs (*i.e.,* 40 CFR 63.165) which are discussed in section IV.B.2 of this preamble, and the HON fenceline monitoring requirements (*i.e.,* 40 CFR 63.184) which are discussed in sections IV.A.7 and IV.C.7 of this preamble, respectively.

2. Heat Exchange Systems

Heat exchangers are devices or collections of devices used to transfer heat from process fluids to another process fluid (typically water) without intentional direct contact of the process fluid with the cooling fluid (*i.e.,* non-contact heat exchanger). There are two types of heat exchange systems: closed-loop recirculation systems and once-through systems. Closed-loop recirculation systems use a cooling tower to cool the heated water leaving the heat exchanger and then return the newly cooled water to the heat exchanger for reuse. Once-through systems typically use surface freshwater (*e.g.,* from a nearby river) as the influent cooling fluid to the heat exchangers, and the heated water leaving the system is then discharged from the facility. At times, the internal tubing material of a heat exchanger can corrode or crack, allowing some process fluids to mix or become entrained with the cooling water. Pollutants in the process fluids may subsequently be released from the cooling water into the atmosphere when the water is exposed to air (*e.g.,* in a cooling tower for closed-loop systems or trenches/ponds in a once-through system).

The CMAS NESHAP at 40 CFR 63.11502(a), by reference to the HON (40 CFR 63.101), defines a heat exchange system as ‘‘a device or collection of devices used to transfer heat from process fluids to water without intentional direct contact of the process fluid with the water (*i.e.,* non-contact heat exchanger) and to transport and/or cool the water in a closed-loop recirculation system (cooling tower system) or a once-through system (*e.g.,* river or pond water).’’ Pursuant to the recent technology review for the HON (see 79 FR 25080, May 16, 2024), the definition also clarifies that: (1) For closed-loop recirculation systems, the heat exchange system consists of a cooling tower, all CMPU heat exchangers that are in organic HAP service serviced by that cooling tower, and all water lines to and from these process unit heat exchangers; (2) for once-through systems, the heat exchange system consists of all heat exchangers that are in organic HAP service, servicing an individual CMPU and all water lines to and from these heat exchangers; (3) sample coolers or pump seal coolers are not considered heat exchangers and are not part of the heat exchange system; and (4) intentional direct contact with process fluids results in the formation of a wastewater.

The current CMAS NESHAP requirements for heat exchange systems at 40 CFR 63.11499, by reference to the HON (40 CFR 63.104), includes an LDAR program for owners or operators of certain heat exchange systems (*i.e.,* those not meeting one or more of the conditions in 40 CFR 63.104(a)) with a cooling water flow rate equal to or greater than 8,000 gpm. The LDAR program specifies that owners or operators must monitor heat exchange systems for leaks of process fluids into cooling water and take actions to repair detected leaks within 45 days; and owners or operators may delay the repair of leaks if they meet the applicable criteria in 40 CFR 63.104. The CMAS NESHAP allows owners or operators to use any method listed in 40 CFR part 136 to sample cooling water for leaks for the HAP listed in table 4 to 40 CFR part 63, subpart F (for recirculating systems) and table 9 to 40 CFR part 63, subpart G (for once-through systems) (and other representative substances such as total organic compounds (TOC) or VOC that can indicate the presence of a leak can also be used). A leak in the heat exchange system is detected if the exit mean concentration of HAP (or other representative substance) in the cooling water is at least 1 ppmw or 10 percent greater than (using a one-sided statistical procedure at the 0.05 level of significance) the entrance mean concentration of HAP (or other representative substance) in the cooling water. Furthermore, the CMAS NESHAP allows owners or operators to monitor for leaks using a surrogate indicator (*e.g.,* ion-specific electrode monitoring, pH, conductivity), provided that certain criteria in 40 CFR 63.104(c) are met. The CMAS NESHAP requires quarterly monitoring for heat exchange systems. The leak monitoring frequencies are the same whether water sampling and analysis or surrogate monitoring is used to identify leaks.

For heat exchange systems at CMAS CMPUs with a cooling water flow rate less than 8,000 gpm that are not meeting one or more of the conditions in 40 CFR 63.104(a), owners and operators must develop and operate in accordance with a heat exchange system inspection plan that describes the inspections to be performed at least once per quarter. Inspections must provide evidence of hydrocarbons in the cooling water and may include checks for visible floating hydrocarbon on the water, hydrocarbon odor, discolored water, and/or chemical addition rates. Owners and operators of these heat exchange systems must also perform repairs to eliminate the leak within 45 calendar days after indications of the leak are identified but may delay the repair if a reason is documented in the next semiannual compliance report. As an alternative to the requirements described in this paragraph, owners and operators of heat exchange systems at CMAS CMPUs with a cooling water flow rate less than 8,000 gpm can choose to comply with the LDAR monitoring options specified for heat exchange systems with a cooling water flow rate equal to or greater than 8,000 gpm.

As part of our technology review, we reviewed the criteria in 40 CFR 63.11495(b) and 40 CFR 63.11499(a) (*i.e.,* the reference to the exemptions listed in the HON at 40 CFR 63.104(a)), to see if these exemptions were still reasonable to maintain. We identified two criteria in 40 CFR 63.104 dealing with once-through heat exchange systems meeting certain NPDES permit conditions (*i.e.,* 40 CFR 63.104(a)(3) and (4)) that warranted further assessment. Once-through heat exchange systems typically have systems open to the air (*e.g.,* open sewer lines, trenches, and ponds) that are used to transport used cooling water to a discharge point (*e.g.,* an outfall) of a facility. This cooling water can also be mixed with other sources of water (*e.g.,* cooling water used in once-through heat exchange systems in non-CMAS processes, stormwater, treated wastewater, etc.) in sewers, trenches, and ponds prior to discharge from the plant. If this point of discharge from the plant is into a ''water of the United States,'' the facility is required to have a NPDES permit and to meet certain pollutant discharge limits. In reviewing the requirements of 40 CFR 63.104(a)(3), we find that there is a clear disconnect between having a NPDES permit that meets certain allowable discharge limits (*i.e.,* 1 ppmw or less above influent concentration, or 10 percent or less above influent concentration, whichever is greater) at the discharge point of a facility (*e.g.,* outfall) versus being able to adequately identify a leak from a once-through heat exchange system given that these systems are open to the atmosphere prior to this discharge point and, therefore, any volatile HAP leaking from a once-through heat exchange system would likely be emitted to the atmosphere prior to the NPDES outfall. Similarly, while the requirements of 40 CFR 63.104(a)(4) allow facilities with once-through heat exchange systems that have certain requirements (*i.e.,* the requirements of 40 CFR 63.104(a)(3) and (4)) incorporated into their NPDES permit to not comply with the requirements of 40 CFR 63.104(b) and (c), we find this exemption to be problematic. Specifically, the NPDES requirements at 40 CFR 63.104(a)(4) lack the specificity of where a sample must be taken to adequately find and quantify a leak from a once-through heat exchange system (*e.g.,* just prior to the outfall from the plant versus from the exit of the once-through heat exchange system prior to being open to atmosphere), what concentration and/or mass emissions rate constitutes a leak that must be fixed, how quickly a leak must be fixed, what pollutants must be adequately accounted for, and what test method(s)/surrogates facilities are allowed. As such, we find 40 CFR 63.104(a)(4) to be inadequate in terms of being able to detect and repair leaks that are at least as equivalent to those that would be identified if once-through heat exchange systems were complying with 40 CFR 63.104(b) or (c) instead. Therefore, for purposes of demonstrating continuous compliance with the underlying GACT standard, we are proposing at 40 CFR 63.11495(b) and 40 CFR 63.11499(d) and (e) to remove the exemptions for once-through heat exchange systems meeting certain NPDES permit conditions at 40 CFR 63.104(a)(3) and (4) and to instead require facilities to monitor the cooling water for the presence of leaks.

Our technology review also identified one development in LDAR practices and processes for heat exchange systems: the use of the Modified El Paso Method [37] to monitor for leaks. The EPA identified the Modified El Paso Method, which is included in the HON, MON, EMACT standards, the Petroleum Refinery Sector rule, and in our review of the RACT/BACT/LAER clearinghouse database. The Texas Commission on Environmental Quality (TCEQ) also requires the method for facilities complying with TCEQ's highly reactive volatile organic compound (HRVOC) rule (*i.e.,* 30 Texas Administrative Code Chapter 115, Subchapter H, Division 3). The Modified El Paso Method measures a larger number of compounds than the current methods required in the CMAS NESHAP and is more effective in identifying leaks. For LDAR programs applied to heat exchange systems, the compliance monitoring option, leak definition, and frequency of monitoring for leaks are all important considerations affecting emission reductions by identifying when there is a leak and when to take corrective actions to repair the leak. Therefore, we evaluated the Modified El Paso Method for use at CMAS facilities as described below, including an assessment of appropriate leak definitions and monitoring frequencies.

To identify an appropriate Modified El Paso Method leak definition for facilities subject to the CMAS NESHAP, we identified five rules (*i.e.,* TCEQ HRVOC rule, the HON, the MON, the EMACT standards, and the Petroleum Refinery Sector rule) all of which incorporate this monitoring method and have leak definitions corresponding to the use of this methodology. We also reviewed data submitted in response to a CAA section 114 request for the Ethylene Production RTR where facilities performed sampling using the Modified El Paso Method.

The TCEQ HRVOC rule, the HON, the MON, EMACT standards, and the

[37] The Modified El Paso Method uses a dynamic or flow-through system for air stripping a sample of the water and analyzing the resultant off-gases for VOC using an FID analyzer. The method is described in detail in appendix P of the TCEQ's Sampling Procedures Manual: *The Air Stripping Method (Modified El Paso Method) for Determination of Volatile Organic Compound (VOC) Emissions from Water Sources.* Appendix P is included in the docket for this rulemaking.

Petroleum Refinery Sector rule have leak definitions of total strippable hydrocarbon concentration (as methane) in the stripping gas ranging from 3.1 ppmv to 6.2 ppmv. In addition, sources subject to the HON, the MON, EMACT standards, or the Petroleum Refinery Sector rule must repair a leak no later than 45 days after first identifying the leak, and also may not delay the repair of leaks for more than 30 days where, during subsequent monitoring, owners or operators find a total strippable hydrocarbon concentration (as methane) in the stripping gas of 62 ppmv or higher. In reviewing the Ethylene Production RTR CAA section 114 data, we identified a clear delineation in the hydrocarbon mass emissions data at 6.1 ppmv of total strippable hydrocarbon (as methane) in the stripping gas. Taking into account the range of actionable leak definitions in use by other rules that require use of the Modified El Paso Method currently (*i.e.,* 3.1 ppmv to 6.2 ppmv of total strippable hydrocarbon (as methane) in the stripping gas), and the magnitude of emissions for leaks as a result of total strippable hydrocarbon (as methane) in the stripping gas above 6.1 ppmv, we chose to evaluate a leak definition at the upper end of identified actionable leak definitions in our analysis. Thus, we evaluated the Modified El Paso Method leak definition of 6.2 ppmv of total strippable hydrocarbon concentration (as methane) in the stripping gas for both new and existing heat exchange systems, along with the requirement to repair a leak no later than 45 days after first identifying the leak, and not allowing delay of repair of leaks for more than 30 days where, during subsequent monitoring, a total strippable hydrocarbon concentration (as methane) in the stripping gas of 62 ppmv or higher is found.

We also considered more stringent monitoring frequencies. Both the Petroleum Refinery Sector rule, which includes monthly monitoring for existing sources under certain circumstances, and the TCEQ HRVOC rule, which includes continuous monitoring provisions for existing and new sources, have more stringent monitoring frequencies.

Based on this technology review, we identified the following two Control Options as developments in practices for heat exchanger systems at CMAS facilities:

• Control Option 1 (for heat exchange systems with a cooling water flow rate equal to or greater than 8,000 gpm): quarterly monitoring with the Modified El Paso Method, using a leak action level defined as a total strippable hydrocarbon concentration (as methane) in the stripping gas of 6.2 ppmv (with the requirement to repair a leak no later than 45 days after first identifying the leak, and allow delay of repair up to 120 days except no more than 30 days where a total strippable hydrocarbon concentration (as methane) in the stripping gas of 62 ppmv or higher is found). This option would also require re-monitoring at the monitoring location where the leak was identified to ensure that any leaks found are fixed.

• Control Option 2: same as Control Option 1, except monthly monitoring with the Modified El Paso Method instead of quarterly monitoring.

We then estimated the impacts of these Control Options. Using information from the original CMAS rulemaking,[38] we estimated 51 of 247 CMAS facilities would be affected by Control Options 1 and 2; and we assumed these facilities already conduct water sampling. For simplicity, we excluded 4 other CMAS facilities from our analysis that may have a heat exchange system in EtO service; and instead, we included them in our GACT analysis discussed in section IV.A.2 of this preamble. As part of our analysis, we also assumed all facilities monitoring quarterly for two or less heat exchange systems would elect to contract out the Modified El Paso monitoring (instead of purchasing a stripping column and FID analyzer and performing the monitoring in-house); however, facilities monitoring monthly would elect to purchase a stripping column and FID analyzer and perform in-house El Paso monitoring due to logistics. In addition, we assumed repairs could be performed by plugging a specific heat exchanger tube, and if a heat exchanger is leaking to the extent that it needs to be replaced, then it is effectively at the end of its useful life. Therefore, we determined that the cost of replacing a heat exchanger is an operational cost that would be incurred by the facility because of routine maintenance and equipment replacement, and it is not attributable to the Control Options.

Table 9 of this preamble presents the nationwide impacts for requiring owners and operators to use the Modified El Paso Method and repair leaks of total strippable hydrocarbon concentration (as methane) in accordance to Control Options 1 and 2. See the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Heat Exchange Systems that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Heat Exchange Systems Associated with Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, for details on the assumptions and methodologies used in this analysis. Based on the costs and emission reductions for the identified Control Options, we are proposing to revise the CMAS NESHAP for heat exchange systems to reflect Control Option 1 pursuant to CAA section 112(d)(6).

TABLE 9—NATIONWIDE EMISSIONS REDUCTIONS AND COST IMPACTS OF CONTROL OPTIONS 1 AND 2 FOR REQUIRING THE MODIFIED EL PASO METHOD FOR HEAT EXCHANGE SYSTEMS AT CMAS FACILITIES

Control option	Total capital investment ($)	Total annualized costs w/o recovery credits ($/yr)	VOC emission reductions (tpy)	HAP emission reductions (tpy)	HAP cost effectiveness w/o recovery credits ($/ton)	Total annualized costs with recovery credits ($/yr)	HAP cost effectiveness with recovery credits ($/ton)
1	0	57,100	44.6	4.46	12,800	16,900	3,800
2	1,046,400	214,200	46.1	4.61	46,500	172,700	37,500

[38] EPA, 2008. *Control Options and Impacts for Cooling Tower Control Measures Chemical Manufacturing Area Source Standards.* September 5, 2008. Docket ID No. EPA–HQ–OAR–2008–0334–0003; and EPA, 2009. *Update to the Control Options and Impacts for Heat Exchange System Control Measures for Promulgation Chemical Manufacturing Area Source Standards.* May 5, 2009. Docket ID No. EPA–HQ–OAR–2008–0334–0081.

We are proposing Control Option 1 at 40 CFR 63.11499(d) and item 1.c of table 8 to the CMAS NESHAP, by reference to the HON (40 CFR 63.104(a) and (f) through (l)), to specify quarterly monitoring for existing and new heat exchange systems (after an initial 6 months of monthly monitoring) using the Modified El Paso Method and a leak definition of 6.2 ppmv of total strippable hydrocarbon concentration (as methane) in the stripping gas. Owners and operators of new and existing affected sources would be required to repair the leak to reduce the concentration or mass emissions rate to below the leak action level as soon as practicable, but no later than 45 days after identifying the leak. We are also proposing at 40 CFR 63.11499(d) and item 1.c of table 8 to the CMAS NESHAP, by reference to the HON, a delay of repair action level of total strippable hydrocarbon concentration (as methane) in the stripping gas of 62 ppmv, that if exceeded during leak monitoring, would require immediate repair (*i.e.,* the leak found cannot be put on delay of repair and would be required to be repaired within 30 days of the monitoring event). This would apply to both monitoring heat exchange systems and individual heat exchangers by replacing the use of any 40 CFR part 136 water sampling method with the Modified El Paso Method and removing the option that allows for use of a surrogate indicator of leaks. We are also proposing at 40 CFR 63.11499(d) and item 1.c of table 8 to the CMAS NESHAP, by reference to the HON, that repair include re-monitoring at the monitoring location where a leak is identified to ensure that any leaks found are fixed. We are proposing that none of these proposed requirements would apply to heat exchange systems that have a maximum cooling water flow rate of less than 8,000 gallons per minute because owners and operators of smaller heat exchange systems would be disproportionally affected and forced to repair leaks with a much lower potential HAP emissions rate than owners and operators of heat exchange systems with larger recirculation rate systems.

3. Process Vents

A process vent is a gas stream that is discharged during the operation of a particular unit operation (*e.g.,* separation processes, purification processes, mixing processes, reaction processes). The gas stream(s) may be routed to other unit operations for additional processing (*e.g.,* a gas stream from a reactor that is routed to a distillation column for separation of products), sent to one or more recovery devices, sent to a process vent header collection system (*e.g.,* blowdown system) and APCD (*e.g.,* flare, thermal oxidizer, carbon adsorber), and/or vented to the atmosphere. Process vents may be generated from continuous and/or batch operations, as well as from other intermittent types of operations (*e.g.,* maintenance operations). If process vents are required to be controlled prior to discharge to the atmosphere to meet an applicable emissions standard, then they are typically collected and routed to an APCD through a closed vent system.

The CMAS NESHAP defines batch process vents as a vent from a CMPU or vents from multiple CMPUs within a process that are manifolded together into a common header, through which a HAP-containing gas stream is, or has the potential to be, released to the atmosphere. Batch process vents include vents from batch operations and vents with intermittent flow from continuous operations that are not combined with any stream that originated as a continuous gas stream from the same continuous process. Batch process vents at existing affected sources are subject to controls if the total organic HAP emissions from all batch process vents combined are greater than or equal to 10,000 lb/yr. Owners and operators have three options for controlling batch process vents meeting the criteria: (1) reduce collective uncontrolled total organic HAP emissions from the sum of all batch process vents by greater than or equal to 85 percent by weight or to less than or equal to 20 ppmv by routing emissions through a closed vent system to any combination of control devices (except a flare); (2) route emissions from batch process vents containing greater than or equal to 85 percent of the uncontrolled total organic HAP through a closed vent system to a flare; or (3) comply with the alternative standard specified in 40 CFR 63.2505, which requires owners and operators to achieve specified outlet concentrations for TOC and total hydrogen halides and halogens on a continuous basis (both emission limits are 20 ppmv for combustion devices, and 50 ppmv for non-combustion devices). The requirements for batch process vents at new affected sources are the same, except instead of 85 percent control, the CMAS NESHAP requires 90 percent control.

The CMAS NESHAP currently defines ‘‘continuous process vents’’ using the definition of ‘‘process vent’’ in the HON (40 CFR part 63, subpart F), but includes a few caveats that address any references to the HON. In other words, a ‘‘continuous process vent’’ is the point of discharge to the atmosphere (or the point of entry into a control device, if any) of a gas stream if the gas stream has the characteristics specified in 40 CFR 63.107(b) through (h), or meets the criteria specified in 40 CFR 63.107(i). Additionally, any references to ‘‘air oxidation reactors, distillation units, or reactors’’ in the HON process vent definition, instead mean ‘‘any continuous operation’’ within the context of the ‘‘continuous process vent’’ definition in the CMAS NESHAP. The definition of ‘‘continuous process vent’’ in the CMAS NESHAP also requires a separate determination for the emissions from each CMPU, even if emission streams from two or more CMPUs are combined prior to discharge to the atmosphere or to a control device. Continuous process vents at both existing and new affected sources with a total resource effectiveness (TRE) index value [39] less than or equal to 1.0 are subject to controls and have three options to meet this requirement. Owners and operators can either: (1) reduce emissions of total organic HAP by greater than or equal to 95 percent by weight (85 percent by weight for periods of startup or shutdown) or to less than or equal to 20 ppmv by routing emissions through a closed vent system to any combination of control devices (except a flare); (2) reduce emissions of total organic HAP by routing all emissions through a closed vent system to a flare; or (3) comply with the alternative standard specified in 40 CFR 63.2505. Continuous process vents at both existing and new affected sources with a TRE index value greater than 1.0 but less than or equal to 4.0 may comply with the operating, monitoring, recordkeeping, and reporting requirements of 40 CFR 63.982(e) if a recovery device is used to maintain a

[39] The TRE index value is a measure of the supplemental total resource requirement per unit VOC (or HAP) reduction. It takes into account all the resources which are expected to be used in VOC (or HAP) control by thermal oxidation and provides a dimensionless measure of resource burden based on cost effectiveness. Resources include supplemental natural gas, labor, and electricity. Additionally, if the off-gas contains halogenated compounds, resources will also include caustic and scrubbing and quench makeup water. For the CMAS NESHAP, the TRE index value is derived from the cost effectiveness associated with HAP control by a flare or thermal oxidation, and is a function of vent stream flowrate, vent stream net heating value, hourly emissions, and a set of coefficients. The TRE index value was first introduced in an EPA document titled: *Guideline Series for Control of Volatile Organic Compound (VOC) Emissions from Air Oxidation Processes in Synthetic Organic Chemical Manufacturing Industry (SOCMI),* which is available in the docket for this action (Docket ID No. EPA–HQ–OAR–2024–0303).

TRE greater than 1.0 but less than or equal to 4.0.

Additionally, both batch and continuous process vents have different requirements under the CMAS NESHAP if the process vent stream is halogenated. Halogenated batch and continuous process vent streams at new or existing sources that are controlled through combustion must also use halogen scrubbers to: (1) reduce overall emissions of hydrogen halide and halogen HAP after the combustion device by greater than or equal to 95-percent, to less than or equal to 0.45 kilogram per hour (kg/hr), or to a concentration less than or equal to 20 ppmv; or (2) reduce the halogen atom mass emission rate before the combustion device to less than or equal to 0.45 kg/hr or to a concentration less than or equal to 20 ppmv.

The CMAS NESHAP also defines metal HAP process vents as the point of discharge to the atmosphere (or inlet to a control device, if any) of a metal HAP-containing gas stream from any CMPU at an affected source containing at least 50 ppmv metal HAP (see 40 CFR 63.11502(b)). The metal HAP concentration may be determined using any of the following: process knowledge, an engineering assessment, or test data. For purposes of the CMAS NESHAP, metal HAP are the compounds containing metals listed as HAP in section 112(b) of the CAA. Metal HAP process vents at both existing and new affected sources with total metal HAP emissions greater than or equal to 400 lb/yr are subject to controls. Owners and operators must reduce collective uncontrolled emissions of total metal HAP emissions by greater than or equal to 95 percent by weight by routing emissions from a sufficient number of the metal process vents through a closed vent system to any combination of control devices.

We are proposing to make a change to the definition of ''metal HAP process vent'' at 40 CFR 63.11502(b). In 2012, as part of a response to a petition for reconsideration, the EPA added the 50 ppmv threshold to the definition of ''metal HAP process vent'' at 40 CFR 63.11502(b).[40] This threshold was included because two commenters argued it was necessary to better represent GACT, based on their sulfuric acid regeneration units already achieving over 95 percent reduction in metal HAP. However, the EPA did not conduct any analysis to justify this addition. We believe the threshold is inappropriate and has allowed process vents previously subject to control to freely emit metal HAP. We identified a facility through the emissions inventory (see section II.C of this preamble) that is currently subject to the CMAS NESHAP. This facility reported emitting 1.99 tpy of nickel compounds from process vents. Since the facility emits more than 400 lb/year of metal HAP, the provisions in table 4 of 40 CFR part 63, subpart VVVVVV should apply. However, if these standards were applied, it would suggest that the facility was emitting nearly 40 tpy of nickel compounds uncontrolled. This amount of nickel seems unrepresentative of the source. It is more likely that, due to the 50 ppmv threshold, the facility determined it was not required to control the metal HAP process vents. Additionally, we note that this facility was included in the original rulemaking's facility list, so the impacts of installing controls have already been considered.

We are now proposing to remove the 50 ppmv threshold from the definition of ''metal HAP process vent'' at 40 CFR 63.11502(b). We believe this concentration-based threshold is unnecessary because the CMAS NESHAP already has a mass-based metal HAP threshold. Specifically, if the total uncontrolled metal HAP emissions from all metal HAP process vents from a CMPU are less than 400 lb/yr, then owners and operators are only subject to recordkeeping requirements, not the metal HAP process vent standards in table 4 of the CMAS NESHAP.

In addition to being a necessary revision made as part of CAA section 112(d)(6), the standards were originally promulgated as part of the Area Source Program under the Urban Air Toxics Strategy to ensure greater than 90 percent of emissions of the 30 urban HAP were subject to regulation. In setting the 50 ppmv threshold, vents that were previously subject to regulation may have been improperly exempted from the standards that were established to address those emissions. By proposing to remove the 50 ppmv threshold and returning the definition to its originally promulgated state, the standards will once again apply to those metal HAP vents previously subject as part of the original rulemaking.

As part of our technology review, we also examined subsequent regulatory development efforts and found that the EPA recently evaluated emission reduction options for continuous process vents subject to the HON, including the removal of the TRE concept in its entirety from the NESHAP or revising the TRE index value threshold from 1.0 to 5.0. The EPA determined that removing the TRE concept in its entirety from the HON was cost effective and finalized this in that rule (see 89 FR 42932, May 16, 2024). It is reasonable to consider removing the TRE concept in its entirety from the CMAS NESHAP given that CMPU sources subject to the CMAS NESHAP are similar to CMPU sources that are subject to the HON; however, we do not have data representative of CMAS continuous process vents to evaluate this option. In other words, none of the continuous process vent data that the EPA used in the HON rulemaking are representative of an area source; and therefore, not representative of a CMAS facility. For further information, see the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Process Vents and Storage Tanks that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Process Vents and Storage Tanks Associated with Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking. We solicit comment and data on whether removing the TRE concept in its entirety is feasible for continuous process vents from CMAS CMPUs.

Except for the proposed change to the definition of 'metal HAP process vent' and the TRE options we could not evaluate due to insufficient data on CMAS continuous process vents, we found no additional practices, processes, or control technologies beyond those already required by the CMAS NESHAP for process vents. Our review did not reveal any other developments in emissions reduction practices for CMAS process vents that are any more stringent than the GACT standards in the CMAS NESHAP.

[40] On January 30, 2012, the EPA proposed revisions to several provisions of the CMAS NESHAP (see 77 FR 4522). The proposed revisions were made, in part, in response to a petition for reconsideration received by the Administrator following the original promulgation of the October 29, 2009, final rule. In the proposed rule revisions, the EPA solicited comment on whether the definition of ''metal HAP process vent'' was applicable to all types of equipment from which metal HAP are emitted. The original rule defined a metal HAP process vent as ''the point of discharge to the atmosphere (or inlet to a control device, if any) of a metal HAP containing gas stream from any CMPU at an affected source,'' regardless of the concentration of metal HAP in the stream. Based on two commenters' requests, the EPA revised the definition of ''metal HAP process vent'' in the final rule revisions (77 FR 75740, December 21, 2012), to include only those streams which contain at least 50 ppmv metal HAP. The EPA also revised the final rule to state that process vents from CMPUs that only contain metal HAP in a liquid solution or other form that will not result in particulate emissions of metal HAP (*e.g.,* metal HAP that is in ingot, paste, slurry or moist pellet form or other form) are not required to comply with the metal HAP process vent requirements.

Therefore, we are not proposing any other changes to the CMAS NESHAP for process vents pursuant to CAA section 112(d)(6).

4. Storage Tanks

Storage tanks are used to store liquid and gaseous feedstocks for use in a process, as well as to store liquid and gaseous products from a process. Most CMAS storage tanks are designed for operation at atmospheric or near atmospheric pressures; pressure vessels are used to store compressed gases and liquefied gases. Atmospheric storage tanks are typically cylindrical with a vertical orientation, and they are constructed with either a fixed roof or a floating roof. Some, generally small, atmospheric storage tanks are oriented horizontally. Pressure vessels are either spherical or horizontal cylinders. As discussed in section IV.B.1 of this preamble, we are proposing new GACT standards for pressure vessels.

The CMAS NESHAP requires owners and operators to control emissions from storage tanks with: (1) capacities greater than or equal to 40,000 gallons storing a liquid with a maximum true vapor pressure (MTVP) greater than or equal to 5.2 kPa but less than 76.6 kPa; (2) capacities greater than or equal to 20,000 gallons and less than 40,000 gallons storing a liquid with a MTVP greater than or equal to 27.6 kPa and less than 76.6 kPa; and (3) capacities greater than or equal to 20,000 gallons storing a liquid with a MTVP greater than or equal to 76.6 kPa. Owners and operators of storage tanks meeting any of these criteria are required to reduce total organic HAP emissions by greater than or equal to 95 percent by weight by operating and maintaining a closed vent system and control device (other than a flare), reduce total HAP emissions by operating and maintaining a closed vent system and a flare, vapor balance, or route emissions to a fuel gas system or process. Owners and operators of storage tanks meeting the first two sets of capacity and MTVP criterion can also comply with the requirements of 40 CFR part 63, subpart WW which requires owners and operators to operate and maintain an external floating roof (EFR) or internal floating roof (IFR) according to specific monitoring, recordkeeping, and reporting standards.

Additionally, storage tanks within the capacity and MTVP thresholds listed in the preceding paragraph have different requirements under the CMAS NESHAP if the storage tank emits a halogenated vent stream. Halogenated storage tank vent streams at new or existing sources that are controlled through a combustion device must also use a halogen reduction device to: (1) reduce emissions of hydrogen halide and halogen HAP after the combustion device by greater than or equal to 95-percent, to less than or equal to 0.45 kg/hr, or to a concentration less than or equal to 20 ppmv; or (2) reduce the halogen atom mass emission rate before the combustion device to less than or equal to 0.45 kg/hr or to a concentration less than or equal to 20 ppmv.

We did not identify any practices, processes, or control technologies beyond those already required by the CMAS NESHAP for storage tanks. Our review did not reveal any developments in emissions reduction practices for CMAS storage tanks that are any more stringent than the GACT standards in the CMAS NESHAP. Therefore, we are not proposing any changes to the CMAS NESHAP for storage tanks pursuant to CAA section 112(d)(6). As part of our technology review, we examined subsequent regulatory development efforts and found that the EPA recently evaluated emission reduction options for storage vessels [41] subject to the HON, including revising capacity and MTVP thresholds, requiring certain IFR controls pursuant to 40 CFR part 63, subpart WW, and requiring the conversion of EFRs to IFRs through use of geodesic domes. The EPA determined that revising capacity and MTVP thresholds and requiring certain IFR controls pursuant to 40 CFR part 63, subpart WW was cost effective for HON storage vessels and finalized this in the rule (see 89 FR 42932, May 16, 2024). It is reasonable to consider these Control Options for the CMAS NESHAP given that CMPU sources subject to the CMAS NESHAP are similar to CMPU sources that are subject to the HON; however, we do not have data representative of CMAS storage tanks to evaluate these options. In other words, none of the storage vessel data that the EPA used in the recent HON rulemaking are representative of an area source; and therefore, not representative of a CMAS facility. Even still, we note that the CMAS NESHAP already includes complying with 40 CFR part 63, subpart WW as an option. Additionally, the EPA found the option of converting EFRs to IFRs through the use of geodesic domes to not be cost effective for HON storage vessels; therefore, we anticipate this option would likewise not be cost effective for CMAS storage tanks. For further information, see the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Process Vents and Storage Tanks that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Process Vents and Storage Tanks Associated with Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking.

5. Wastewater

HAP are emitted into the air from wastewater collection, storage, and treatment systems that are uncovered or open to the atmosphere through volatilization of the compound at the liquid surface. Emissions occur by diffusive or convective means, or both. Diffusion occurs when organic pollutant concentrations at the water surface are much higher than ambient concentrations. The organic pollutants volatilize, or diffuse into the air, to reach equilibrium between the aqueous and vapor phases. Convection occurs when air flows over the water surface, sweeping organic vapors from the water surface into the air. The rate of volatilization is related directly to the speed of the air flow over the water surface.

The CMAS NESHAP defines wastewater to mean water that is discarded from a CMPU or control device and that contains at least 5 ppmw of any HAP listed in table 9 to 40 CFR part 63, subpart G and has an annual average flow rate of 0.02 liters per minute (lpm). Wastewater means both process wastewater [42] and maintenance wastewater [43] that is discarded from a CMPU or control device.

For each wastewater stream containing partially soluble HAP at a concentration greater than or equal to

[41] The HON uses the term ''storage vessel'' in lieu of ''storage tank'' like the CMAS NESHAP.

[42] Process wastewater means wastewater which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product. Examples are product tank drawdown or feed tank drawdown; water formed during a chemical reaction or used as a reactant; water used to wash impurities from organic products or reactants; water used to cool or quench organic vapor streams through direct contact; and condensed steam from jet ejector systems pulling vacuum on vessels containing organics.

[43] Maintenance wastewater means wastewater generated by the draining of process fluid from components in the CMPU into an individual drain system in preparation for or during maintenance activities. Maintenance wastewater can be generated during planned and unplanned shutdowns and during periods not associated with a shutdown. Examples of activities that can generate maintenance wastewater include descaling of heat exchanger tubing bundles, cleaning of distillation column traps, draining of pumps into an individual drain system, and draining of portions of the CMPU for repair. Wastewater from routine cleaning operations occurring as part of batch operations is not considered maintenance wastewater.

10,000 ppmw that also has separate organic and water phases, the CMAS NESHAP requires owners and operators to use a decanter, steam stripper, thin film evaporator, or distillation unit to separate the water phase from the organic phase(s); and the organic layer must be recycled to a process, used as a fuel, or disposed of as hazardous waste either onsite or offsite. The CMAS NESHAP also provides an alternative compliance option that allows owners and operators to hard-pipe the entire stream to onsite treatment as a hazardous waste or to a point of transfer to onsite or offsite hazardous waste treatment. For single phase wastewater streams and the aqueous phase for two phase streams, the CMAS NESHAP requires the wastewater streams be sent to a wastewater treatment process.

As part of our technology review, we found that many of the NESHAP for different chemical manufacturing source categories (*e.g.,* the HON, MON, and PEPO NESHAP) require treatment of wastewater streams that meet certain flow and HAP concentration levels. These standards require either the use of a treatment unit that meets specified design criteria or that achieves specified destruction efficiencies for the HAP in the wastewater. They also typically require the use of covers and other techniques to suppress emissions from the wastewater conveyance system and treatment units. During the original CMAS rulemaking (74 FR 56008, October 29, 2009), the EPA evaluated treating CMAS wastewater streams using controls that meet the HON requirements; however, the EPA found the option to not be cost effective.[44] We find no reason for the HON requirements to be any more cost effective today compared to the cost effectiveness that was determined in 2008. Therefore, we are not proposing any changes to the CMAS NESHAP for wastewater pursuant to CAA section 112(d)(6).

6. Flares

The CMAS NESHAP allows for the use of a flare to control emissions (except halogenated emissions) from batch process vents, continuous process vents, and/or storage tanks. The CMAS NESHAP points to the flare requirements specified in 40 CFR part 63, subpart SS which requires owners and operators to conduct a flare compliance assessment to demonstrate initial compliance, and continuously monitor applicable operating parameters in accordance with 40 CFR 63.11 to demonstrate continuous compliance. Although GACT for batch process vents is emission reductions of 85 percent by weight (for existing) and 90 percent by weight (for new); for continuous process vents is 95 percent by weight (except 85 percent by weight for startup and shutdown); and for storage tanks is 95 percent by weight, the available data at the time the CMAS NESHAP was promulgated suggested that flares meeting these design and operating requirements of 40 CFR 63.11 would achieve a minimum destruction efficiency of no less than 98 percent by weight emissions control. However, more recent studies on flare performance[45] indicate that the requirements in 40 CFR 63.11 are inadequate to ensure 98 percent by weight control. These studies compelled the EPA to finalize a suite of operational and monitoring requirements for refinery flares on December 1, 2015 (80 FR 75178–75354; see 40 CFR 63.670 and 40 CFR 63.671) including requirements addressing: (1) the presence of a pilot flame; (2) visible emissions; (3) flare tip velocity; (4) net heating value of flare combustion zone gas; and (5) net heating value dilution parameter (if the flare actively receives perimeter assist air). The EPA determined that this suite of operational and monitoring requirements for flares is necessary to ensure the level of destruction efficiency needed to conform with the petroleum refineries NESHAP. Importantly, given that the flare dataset that formed the underlying basis of the new standards for refinery flares also included flares at olefin and other petrochemical plants, the EPA also revised the suite of operational and monitoring requirements for flares in other chemical manufacturing source categories, including the EMACT standards (85 FR 40386, July 6, 2020; see 40 CFR 63.1103(e)(4)), the Organic Liquids Distribution (OLD) NESHAP (85 FR 40740, July 7, 2020; see 40 CFR 63.2380(a)), the MON (85 FR 49084, August 20, 2020; see 40 CFR 63.2450(e)(5)), and the HON and P&R I NESHAP (89 FR 42932, May 16, 2024; see 40 CFR 63.108 and 63.508, respectively). The EPA did this for the same reason as was done for the petroleum refineries NESHAP, to ensure the level of destruction efficiency needed to conform with each NESHAP.

We acknowledge that none of the performance standards in the CMAS NESHAP are as stringent as 98 percent by weight emissions control; however, under CAA section 112(d)(6), we still evaluated the option (*i.e.,* Control Option 1) to require all flares at CMAS facilities to comply with the same suite of flare operational and monitoring requirements included in the petroleum refineries NESHAP, EMACT standards, OLD NESHAP, MON, HON, and P&R I and Group II Polymers and Resins NESHAP. The monitoring equipment needed to comply with the suite of flare operational and monitoring requirements (*i.e.,* hydrogen analyzers, calorimeters, and flow monitors) were not identified or considered during development of the original GACT standards; therefore, we consider this a development under this technology review. Additionally, we believe the suite of flare operational and monitoring requirements could be relevant to the CMAS NESHAP due to the similarities between processes at chemical manufacturing plants, regardless of size.

Using information from the CMAS emissions inventory data (see section II.C.2 of this preamble), we estimated there are 22 flares at 20 CMAS facilities that would be affected by Control Option 1 (we did not identify any other flares in the CMAS emissions inventory). To avoid double counting, we excluded two of the 22 flares from our analysis that emit EtO; and instead, we included them in our GACT analysis discussed in section IV.A.6 of this preamble. We estimated costs for each flare for a given facility, considering current monitoring systems already installed on each individual flare. Given that the same type of equipment is used for flares in the CMAS categories and for the petroleum refinery sector, we estimated costs for any additional monitoring systems needed based on installed costs received from petroleum refineries and, if installed costs were unavailable, we estimated costs based on vendor-purchased equipment. The baseline emission estimate and the emission reductions achieved by Control Option 1 were estimated based on the CMAS emissions inventory data (see section II.C.2 of this preamble) and current vent gas and steam flow data submitted by industry representatives.[46]

[44] See 73 FR 58352, October 6, 2008. ''We are proposing that [wastewater] controls needed to meet more stringent emission limits like those required by the HON do not represent GACT for either subcategory because the costs are unreasonable.''

[45] For a list of studies, refer to the technical report titled *Parameters for Properly Designed and Operated Flares,* in Docket ID Item No. EPA–HQ–OAR–2010–0682–0191. This document can also be found at *https://www.epa.gov/stationary-sources-air-pollution/review-peer-review-parameters-properly-designed-and-operated-flares.*

[46] To estimate the baseline control efficiency of VOC and HAP anticipated by applying Control Option 1, we reviewed data submitted to the EPA in 2011 by the API, the ACC, and the NPRA, now known as the AFPM. This dataset includes detailed hourly operational information for 38 steam-assisted flares, characterizing different operating

The results of the impact estimates for Control Options 1 are summarized in table 10 of this preamble. See the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis for Flares that Emit Ethylene Oxide and Section 112(d)(6) Technology Review for Flares Associated with Chemical Manufacturing Process Units at Area Sources Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking, for details on the assumptions and methodologies used in this analysis. We determined that Control Option 1 is not cost effective and are not proposing to revise the CMAS NESHAP to reflect the requirements of this option pursuant to CAA section 112(d)(6).

TABLE 10—NATIONWIDE EMISSIONS REDUCTIONS AND COST IMPACTS OF CONTROL OPTION 1 FOR REQUIRING THE SUITE OF OPERATIONAL AND MONITORING REQUIREMENTS FOR FLARES AT CMAS FACILITIES

Control option	Total capital investment ($)	Total annualized costs ($/yr)	VOC emission reductions (tpy)	HAP emission reductions (tpy)	HAP cost effectiveness ($/ton)
1	26,000,000	6,160,000	1,114	89.4	68,200

7. Fenceline Monitoring

Fenceline monitoring refers to the placement of monitors along the perimeter of a facility to measure pollutant concentrations. Coupled with requirements for root cause analysis and corrective action upon triggering an actionable level, this management practice is a development in practices considered under CAA section 112(d)(6) for the purposes of managing fugitive emissions. The measurement of pollutant concentrations and comparison to concentrations estimated from mass emissions via dispersion modeling is used to verify emission estimates from a facility's emissions inventory. If concentrations at the fenceline are greater than expected, potential causes may include underreported or unknown emissions, leaking equipment, or other issues, usually related to ground-level fugitive emissions. Fenceline monitoring also provides information on the location of potential emissions sources because it provides complete spatial coverage of a facility. Further, when used with a mitigation strategy, such as root cause analysis and corrective action upon exceedance of an action level, fenceline monitoring can be effective in reducing emissions and reducing the uncertainty associated with emissions estimation and characterization. Finally, public reporting of fenceline monitoring data provides public transparency and greater visibility, leading to more focus and effort in reducing emissions.

The EPA has successfully applied fenceline monitoring 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. In 2015, the EPA promulgated the RTR for the petroleum refineries source category and required that refineries install and operate fenceline monitors following EPA Method 325 A/B to monitor benzene emissions. Additionally, the 2015 rule required that refineries conduct a root cause analysis to identify sources of high fenceline monitoring readings (*i.e.,* above an annual action level) and then develop a corrective action plan to address the sources and reduce emissions to a level that will bring fenceline monitoring concentrations below the action level.[47] To date, the EPA has received fenceline monitoring data from petroleum refineries for more than 5 years.[48] These data show that petroleum refinery fenceline concentrations have dropped by an average of 30 percent since the inception of the monitoring program requirements and illustrate that fenceline monitoring is an effective tool in reducing emissions and preserving emission reductions on an ongoing basis for these sources.

Additionally, in 2024, the EPA promulgated amendments to the HON (40 CFR part 63, subpart H) and the P&R I NESHAP (40 CFR part 63, subpart U) that included work practice standards requiring owners and operators to conduct fenceline monitoring for any of six specific HAP (*i.e.,* benzene; 1,3-butadiene; ethylene dichloride; vinyl chloride; EtO; and chloroprene) if their affected source uses, produces, stores, or emits any of them, and conduct root cause analysis and corrective action upon exceeding the annual average concentration action level established for each HAP. The final HON and P&R I NESHAP amendments require owners and operators to conduct passive diffusive tube fenceline monitoring for benzene, 1,3-butadiene, chloroprene, and ethylene dichloride in accordance with EPA Methods 325A/B of 40 CFR part 63, appendix A, and to use canister sampling in accordance with EPA Method 327 of 40 CFR part 63, appendix A, for EtO and vinyl chloride.[49]

Given the similarities between CMAS CMPUs and sources subject to the HON or P&R I NESHAP, we evaluated the application of fenceline monitoring as a development in practices, processes, and control technologies pursuant to CAA section 112(d)(6). Non-EtO pollutants for which there are established EPA Methods to measure fenceline concentrations and which are one of the fifteen urban HAP regulated as part of the CMAS NESHAP include 1,3-butadiene, 1,3-dichloropropene, ethylene dichloride, and chloroform. We reviewed the 2017 NEI to determine whether CMAS facilities reported emissions of 1,3-butadiene, chloroform 1,3-dichloropropene, and ethylene dichloride. Based on this review, we determined that at most CMAS facilities that emit 1,3-butadiene, chloroform, 1,3-dichloropropene, and ethylene dichloride, small amounts of these HAP are emitted from fugitive sources. Most of the reported emissions are attributed to non-source category emission sources. Based on this information, the EPA is not proposing to implement a fenceline monitoring program for non-EtO pollutants under CAA section 112(d)(6). However, we are proposing a

conditions by waste gas flow rate, steam flow rate, waste gas composition, and duration of that operating condition.

[47] 40 CFR 63.658(f)–(h).

[48] Quarterly fenceline monitoring reports are available through the EPA's WebFIRE database at *https://cfpub.epa.gov/webfire/.* The EPA has also developed a dashboard to improve public access to this data. The dashboard is available at *https://awsedap.epa.gov/public/extensions/Fenceline_Monitoring/Fenceline_Monitoring.html?sheet=MonitoringDashboard.*

[49] In the same action (see 89 FR 42932, May 16, 2024), the EPA also finalized EPA Method 327 of 40 CFR part 63, appendix A, as a canister sampling and analysis method that provides procedures for measuring trace levels of targeted VOC (including organic HAP) in ambient air.

fenceline monitoring program to limit fugitive EtO emissions under CAA section 112(d)(5), as discussed in section IV.A.7 of this preamble and in further detail in the document titled *Clean Air Act Section 112(d)(5) GACT Standard Analysis and CAA Section 112(d)(6) Technology Review for Fenceline Monitoring for Chemical Manufacturing Process Units Associated with the Chemical Manufacturing Area Sources NESHAP* available in the docket for this action.

D. What other actions are we proposing, and what is the rationale for those actions?

In addition to the proposed GACT standards pursuant to CAA 112(d)(5) (see sections IV.A and IV.B of this preamble) and our proposed actions on the CAA 112(d)(6) review (see section IV.C of this preamble), we are also proposing other changes to the CMAS NESHAP, including: revisions to the recordkeeping and reporting requirements to require the use of electronic reporting of certain reports; performance testing once every 5 years for batch and continuous process vents to demonstrate compliance with emission limits; and corrections to section reference errors and other minor editorial revisions. Our rationale and proposed changes related to these issues are discussed below.

1. Electronic Reporting

The EPA is proposing that owners and operators subject to the CMAS NESHAP submit electronic copies of required notification of compliance status reports, performance test reports, flare management plans, and periodic reports (including fenceline monitoring reports) through the EPA's Central Data Exchange using the Compliance and Emissions Data Reporting Interface (CEDRI) (see proposed edits to 40 CFR 63.11496(f)(3)(ii) for notification of compliance status reports associated with the HAP metals emissions limit, proposed 40 CFR 63.11501(b) for notification of compliance status reports, 40 CFR 63.11496(g)(1)(iv) for performance test reports, 40 CFR 63.11501(d) for semiannual compliance reports, and references to flare requirements which include flare management plans in proposed entries 4.a to tables 2 and 3 to subpart VVVVVV of part 63 and proposed entry 5.a to table 5 to subpart VVVVVV of part 63). A description of the electronic data submission process is provided in the document titled *Electronic Reporting Requirements for New Source Performance Standards* (NSPS) and N*ational Emission Standards for Hazardous Air Pollutants (NESHAP) Rules,* available in the docket for this action.

The proposed rule requires that performance test results collected using test methods that are supported by the EPA's Electronic Reporting Tool (ERT) as listed on the ERT website [50] at the time of the test be submitted in the format generated through the use of the ERT or an electronic file consistent with the xml schema on the ERT website, and other performance test results be submitted in portable document format (PDF) using the attachment module of the ERT. Flare management plans would be uploaded as a PDF file.

For semiannual compliance reports (including fenceline monitoring reports), the proposed rules require that owners and operators use an appropriate spreadsheet template to submit information to CEDRI. A draft version of the proposed templates for these reports is included in the docket for this action.[51] The EPA specifically requests comment on the content, layout, and overall design of the templates. We are proposing owners and operators begin using the templates for semiannual compliance reports other than fenceline reports within 3 years of the publication date of the final rule in the **Federal Register**, or after the reporting template for the subpart has been available on the CEDRI website for 1 year, whichever date is later. Owners and operators would begin using the templates for fenceline monitoring reports starting when the first fenceline monitoring report is due.

The electronic submittal of the reports addressed in these proposed rulemakings will increase the usefulness of the data contained in those reports, is in keeping with current trends in data availability and transparency, will further assist in the protection of public health and the environment, will improve compliance by facilitating the ability of regulated facilities to demonstrate compliance with requirements and by facilitating the ability of delegated state, local, Tribal, and territorial air agencies and the EPA to assess and determine compliance, and will ultimately reduce burden on regulated facilities, delegated air agencies, and the EPA.[52] Electronic reporting also eliminates paper-based, manual processes, thereby saving time and resources, simplifying data entry, eliminating redundancies, minimizing data reporting errors, and providing data quickly and accurately to the affected facilities, air agencies, the EPA, and the public. Moreover, electronic reporting is consistent with the EPA's plan [53] to implement Executive Order 13563 and is in keeping with the EPA's Agency-wide policy [54] developed in response to the White House's Digital Government Strategy.[55] For more information on the benefits of electronic reporting, see the document titled *Electronic Reporting Requirements for New Source Performance Standards (NSPS)* and *National Emission Standards for Hazardous Air Pollutants (NESHAP) Rules,* referenced earlier in this section.

2. Affirmative Defense

As part of the December 21, 2012, CMAS NESHAP final rule (see 77 FR 75740), the EPA included the ability to assert an affirmative defense to civil penalties for violations caused by malfunctions (see 40 CFR 63.11501(e)) in an effort to create a system that incorporated some flexibility, recognizing that there is a tension, inherent in many types of air regulation, to ensure adequate compliance while simultaneously recognizing that despite the most diligent of efforts, emission standards may be violated under circumstances entirely beyond the control of the source. Although the EPA recognized that its case-by-case enforcement discretion provides sufficient flexibility in these circumstances, it included the affirmative defense provision to provide a more formalized approach and more regulatory clarity. See *Weyerhaeuser Co.* v. *Costle,* 590 F.2d 1011, 1057–58 (D.C. Cir. 1978) (holding that an informal case-by-case enforcement discretion approach is adequate); but see *Marathon Oil Co.* v. *EPA,* 564 F.2d 1253, 1272–73 (9th Cir. 1977) (requiring a more formalized approach to consideration of ''upsets beyond the control of the permit holder.''). Under the EPA's regulatory

[50] *https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert.*

[51] See part_63_subpart_VVVVVV_63.11501(d)_semiannual_compliance.xlsx available in the docket for this action.

[52] We are proposing at 40 CFR 63.11503(b)(5) that the approval to an alternative to any electronic reporting to the EPA proposed for the CMAS NESHAP cannot be delegated to state, local, or Tribal agencies.

[53] EPA's Final Plan for Periodic Retrospective Reviews, August 2011. Available at: *https://www.regulations.gov/document?D=EPA-HQ-OA-2011-0156-0154.*

[54] E-Reporting Policy Statement for EPA Regulations, September 2013. Available at: *https://www.epa.gov/sites/production/files/2016-03/documents/epa-ereporting-policy-statement-2013-09-30.pdf.*

[55] Digital Government: Building a 21st Century Platform to Better Serve the American People, May 2012. Available at: *https://obamawhitehouse.archives.gov/sites/default/files/omb/egov/digital-government/digital-government.html.*

affirmative defense provisions, if a source could demonstrate in a judicial or administrative proceeding that it had met the requirements of the affirmative defense in the regulation, civil penalties would not be assessed. However, the court vacated the affirmative defense in one of the EPA's CAA section 112 regulations. *NRDC* v. *EPA,* 749 F.3d 1055 (D.C. Cir., 2014) (vacating affirmative defense provisions in the CAA section 112 rule establishing emission standards for Portland cement kilns). The court found that the EPA lacked authority to establish an affirmative defense for private civil suits and held that under the CAA, the authority to determine civil penalty amounts in such cases lies exclusively with the courts, not the EPA. Specifically, the court found: ''As the language of the statute makes clear, the courts determine, on a case-by-case basis, whether civil penalties are 'appropriate.' '' See *NRDC,* 749 F.3d at 1063 (''[U]nder this statute, deciding whether penalties are 'appropriate' in a given private civil suit is a job for the courts, not EPA.'').[56] In light of *NRDC,* the EPA is proposing to remove all of the regulatory affirmative defense provisions from the CMAS NESHAP at 40 CFR 63.11501(e) in its entirety and the definition of ''affirmative defense'' at 40 CFR 63.11502(b). As explained above, if a source is unable to comply with emissions standards as a result of a malfunction, the EPA may use its case-by-case enforcement discretion to provide flexibility, as appropriate. Further, as the court recognized, in an EPA or citizen enforcement action, the court has the discretion to consider any defense raised and determine whether penalties are appropriate. *Cf. NRDC,* 749 F.3d at 1064 (arguments that violation was caused by unavoidable technology failure can be made to the courts in future civil cases when the issue arises). The same is true for the presiding officer in EPA administrative enforcement actions.[57]

[56] The court's reasoning in *NRDC* focuses on civil judicial actions. The court noted that ''EPA's ability to determine whether penalties should be assessed for CAA violations extends only to administrative penalties, not to civil penalties imposed by a court.'' *Id.*

[57] Although the *NRDC* case does not address the EPA's authority to establish an affirmative defense to penalties that are available in administrative enforcement actions, we are not including such an affirmative defense in the proposed rule. As explained above, such an affirmative defense is not necessary. Moreover, assessment of penalties for violations caused by malfunctions in administrative proceedings and judicial proceedings should be consistent. *Cf.* CAA section 113(e) (requiring both the Administrator and the court to take specified criteria into account when assessing penalties).

The EPA previously proposed to remove the affirmative defense provisions from the CMAS NESHAP as part of the Removal of Affirmative Defense Provisions from Specified New Source Performance Standards and National Emissions Standards for Hazardous Air Pollutants action (see 89 FR 52425, June 24, 2024). We now propose the removal of these provisions as part of this action. We are soliciting comment on our proposal to remove the affirmative defense provisions from the CMAS NESHAP as part of this rulemaking. Comments previously submitted on the Removal of Affirmative Defense Provisions from Specified New Source Performance Standards and National Emissions Standards for Hazardous Air Pollutants proposal will not be considered as part of this action and must be submitted to the docket for this action (Docket ID No. EPA–HQ–OAR–2024–0303) in order to be considered.

3. Technical and Editorial Changes

We are proposing several technical amendments and definition revisions to improve the clarity and enforceability of certain provisions in the CMAS NESHAP. This section of the preamble described these additional proposed revisions and our rationale.

a. Certain Definitions That Refer to the HON

We note that to remove redundancy and improve consistency, the EPA recently finalized moving all of the definitions from NESHAP subpart G (*i.e.,* 40 CFR 63.111) into the definition section of NESHAP subpart F (*i.e.,* 40 CFR 63.101) (see 89 FR 42932, May 16, 2024). Given that the CMAS NESHAP directly references these subparts for certain definitions (see 40 CFR 63.11502(a)), we are proposing to revise the phrasing used in 40 CFR 63.11502(a) to point to NESHAP subpart F in instances where a definition in the CMAS NESHAP points to NESHAP subpart G. We are also proposing editorial changes in 40 CFR 63.11502(b) that clarify references in the CMAS NESHAP definition of ''point of determination'' to properly cite the correct HON subpart.

b. Performance Testing

The EPA is proposing at 40 CFR 63.11496(g)(1)(iii) and 40 CFR 63.11497(g)(1)(iii) performance testing once every 5 years to demonstrate compliance with organic HAP emission limits for batch and continuous process vents and storage tanks (for owners and operators that route emissions to a control device other than a flare). Similarly, we are also proposing at 40 CFR 63.11496(f)(3)(iv), (4), and (5) performance testing once every 5 years to demonstrate compliance with the metal HAP emission limit for batch and continuous process vents. We determined that periodic emission testing should be required to help ensure continuous compliance. Currently, facilities conduct a one-time performance test, engineering assessment, or design evaluation and then monitor operating parameters. A design evaluation (in lieu of performance testing) is currently allowed at 40 CFR 63.11496(g)(2) for determining initial compliance with a percent reduction or outlet concentration process vent organic HAP emission limit. A design evaluation (in lieu of performance testing) is also currently allowed at 40 CFR 63.985(b)(1)(i) (via items 1.b, 2.a, and 3.a of table 5 to the CMAS NESHAP) for determining initial compliance with a percent reduction or outlet concentration storage tank organic HAP emission limit. An engineering assessment (in lieu of performance testing) is currently allowed at 40 CFR 63.11496(f)(3)(ii) for determining initial compliance with the percent reduction process vent metal HAP emission limit. However, we are proposing to remove the design evaluation option at 40 CFR 63.11496(g)(2) and table 5 to the CMAS NESHAP, and the engineering assessment option at 40 CFR 63.11496(f)(3)(ii), and instead, require on-going performance tests at proposed 40 CFR 63.11496(f)(3)(iv), (4), and (5), and 40 CFR 63.11496(g)(1)(iii) (for owners and operators using a control device other than a flare to comply with the emission limits and other requirements for batch and continuous process vents) and 40 CFR 63.11497(g)(1)(iii) (for owners and operators using a control device other than a flare to comply with the emission limits and other requirements for storage tanks). We are proposing that the on-going performance tests be conducted at a minimum frequency of once every 5 years to supplement the parameter monitoring and to ensure that emission controls continue to operate as demonstrated during the initial performance test. We are soliciting comment and data on whether design evaluations and engineering assessments are appropriate for demonstrating compliance for certain APCDs.

We are also proposing to add a performance testing requirement at 40 CFR 63.11496(g)(1)(iii) and 40 CFR 63.11497(g)(1)(iii) intended to replace a portion of the performance testing requirements of 40 CFR 63.997(e)(1)(i). The proposal does not include the language that precludes startup and shutdown periods from being considered ''representative'' for purposes of performance testing, and instead allows performance testing during periods of startup or shutdown if specified by the Administrator. In addition, as specified in 40 CFR 63.997(e)(1)(i), performance tests should not be conducted during malfunctions because conditions during malfunctions are often not representative of normal operating conditions. The EPA is also proposing to add language at 40 CFR 63.11496(g)(1)(iii) and 40 CFR 63.11497(g)(1)(iii) that requires the owner or operator maintain records of process information that is necessary to document operating conditions during the test and include in such record an explanation to support that such conditions represent the entire range of normal operation, including operational conditions for maximum emissions if such emissions are not expected during maximum production.

c. Other Editorial and Technical Corrections

The EPA is proposing additional changes that address technical and editorial corrections for the CMAS NESHAP. The most significant of these corrections are summarized in table 11 of this preamble. Please see the document *Proposed Regulation Edits for 40 CFR part 63 Subpart VVVVVV: National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources,* available in the docket for this rulemaking, to review all of the proposed technical and editorial corrections.

TABLE 11—PROPOSED TECHNICAL AND EDITORIAL CORRECTIONS FOR THE CMAS NESHAP (NOT DISCUSSED ELSEWHERE IN THIS PREAMBLE)

Provision	Issue summary	Proposed revision
40 CFR 63.11494(c)(2)(iv)	Provision refers to specific NAICS codes but does not specify which version (*i.e.,* year) to use.	The EPA is proposing to add language to specify the 2007 version of the NAICS code.
40 CFR 63.11495(d)	Provision does not include all language on the general duty to minimize emissions.	The EPA is proposing to add the sentence ''The general duty to minimize emissions does not require the owner or operator to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved.''
40 CFR 63.11496(g)(5)	Provision is redundant to the language at 40 CFR 63.11496(i).	The EPA is proposing to remove the provision to eliminate redundancy and reduce confusion with how the standards are applied.
40 CFR 63.11497(a)	Provision does not contain a heading; therefore, is inconsistent with other paragraphs within the section.	The EPA is proposing to add the heading: ''Organic HAP emissions from storage tanks'' for consistency with the rest of the paragraphs included in the section.
40 CFR 63.11497(c)	Provision does not contain a heading; therefore, is inconsistent with other paragraphs within the section.	The EPA is proposing to add the heading: ''SSM provisions'' for consistency with the rest of the paragraphs included in the section.
40 CFR 63.11498(b)	Provision provides an exemption for certain wastewater streams during periods of startup and shutdown.	Given that in the October 29, 2009, final rule the EPA removed the exemption from emissions standards for periods of SSM in accordance with a decision of the United States Court of Appeals for the District of Columbia Circuit, *Sierra Club* v. *EPA,* 551 F.3d 1019 (D.C. Cir. 2008), cert. denied, 130 S. Ct. 1735 (U.S. 2010), the EPA is proposing to remove the sentence ''The requirements in Item 2 of table 6 to this subpart do not apply during periods of startup or shutdown.''
40 CFR 63.11500(a)(2)	Provision contains a cross reference error to table 4 in 40 CFR part 63, subpart VVVVVV.	The EPA is proposing to correct the reference to table 4 with a reference to table 5.
40 CFR 63.11500(b)	Provision refers to certain NSPS but does not include the most recent promulgated versions of certain NSPS.	The EPA is proposing to add NSPS subparts VVa, VVb, IIIa, NNNa, and RRRa to allow owners and operators to comply with any of the requirements in these rules that are at least as stringent as the corresponding requirements in the CMAS NESHAP to constitute compliance with the CMAS NESHAP.
40 CFR 63.11501(c)(1)(vii) and (viii) and (d)(1) and (8).	Certain provisions are specific to malfunctions and are being clarified to include any deviation. Also, the deviation reporting provision does not specify all the information to be reported.	The EPA is proposing to revise the malfunction and deviation recordkeeping and reporting requirements to clarify what must be maintained as records and reported.
40 CFR 63.11501(d)	Provision does not specify how to report basic facility information.	The EPA is proposing to clarify that all semiannual compliance reports must contain the company name and address (including county), as well as the beginning and ending dates of the reporting period.
40 CFR 63.11501(d)	Provision allows facilities to skip semiannual reporting for periods where no events described by 40 CFR 63.11501(d)(1)–(8) occur.	The EPA is proposing to remove this exemption as it contradicts the General Provisions at 40 CFR 63.10(e)(3)(v) and revise the paragraph to include a reference to 40 CFR 63.10(e)(3)(v).
40 CFR 63.11501(d)(1)	Provision does not specify what information to collect when a deviation occurs.	The EPA is proposing to clarify that owners and operators must report the start date, start time, duration in hours, cause, a list of the affected sources or equipment, an estimate of the quantity of each regulated pollutant emitted over any emission limit, a description of the method used to estimate the emissions, actions taken to minimize emissions, and any corrective action taken to return the affected unit to its normal or usual manner of operation for each deviation from the standards.
40 CFR 63.11502(b)	The definition of ''batch process vent'' does not consider the impacts of the proposed EtO standards.	The EPA is proposing to update the definition to clarify that the exemption that ''emission streams from emission episodes that are undiluted and uncontrolled containing less than 50 ppmv HAP are not part of any batch process vent'' does not apply to batch process vents in EtO service.
40 CFR 63.11502(b)	The definition of ''continuous process vent'' does not consider the impacts of the proposed EtO standards.	The EPA is *proposing to clarify that* the 0.005 weight percent total organic HAP criteria at *40 CFR 63.107(d) does not apply for continuous process vents in EtO service.*

TABLE 11—PROPOSED TECHNICAL AND EDITORIAL CORRECTIONS FOR THE CMAS NESHAP (NOT DISCUSSED ELSEWHERE IN THIS PREAMBLE)—Continued

Provision	Issue summary	Proposed revision
40 CFR 63.11502(b)	The definition of "continuous process vent" improperly relies on the control criteria of the HON as detailed at 40 CFR 63.107(i).	The EPA is proposing to replace the references to 40 CFR 63.107(i) with a similar provision that relies on the requirements of table 3 in 40 CFR part 63, subpart VVVVVV.
40 CFR 63.11502(b)	The definition of "in organic HAP service" does not consider the impact of the proposed EtO standards for equipment leaks and the proposed LDAR program for all equipment leaks, nor does it consider that the proposed term for "heat exchange system" uses the phrase "in organic HAP service".	The EPA is proposing to revise the definition to specify that any piece of equipment in EtO service is also in organic HAP service and establish that, for the proposed LDAR programs associated with equipment and heat exchange systems, in organic HAP service means "that a piece of equipment or heat exchange system either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of total organic HAP's as determined according to the provisions of 40 CFR 63.180(d)." The EPA is also proposing to clarify that for purposes of the definition of "heat exchange system", the term "equipment" in § 63.180(d) includes heat exchange systems.
40 CFR 63.11502(b)	The definition of "process vessel" is contradictory with the definition of "continuous process vent."	The EPA is proposing to revise the definition of "process vessel" to remove reactors and distillation units from the list of provided examples given that reactors and distillation units are a source of continuous process vents (*i.e.,* some, or all, of a gas stream originates "as a continuous flow from an air oxidation reactor, distillation unit, or reactor during operation of the chemical manufacturing process unit").
40 CFR 63.11502(b)	The definition of "wastewater" does not consider the impact of the proposed EtO standards.	The EPA is proposing to specify that the phrase "and that contains at least 5 ppmw of any HAP listed in table 9 to subpart G of this part and has an annual average flow rate of 0.02 liters per minute" does not apply to wastewater in ethylene oxide service.
Table 9 to subpart VVVVVV of Part 63.	Entries include language specific to malfunctions.	The EPA is proposing to revise the entries for 63.10(b)(2)(ii), (c)(10), (c)(11), and (d)(5) to reflect the changes to the malfunction and deviation recordkeeping and reporting requirements.
Table 9 to subpart VVVVVV of Part 63.	Entries do not consider EtO specific monitoring requirements.	The EPA is proposing to update table 9 to the CMAS NESHAP to specify which General Provisions do not apply for EtO specific sources to be consistent with the proposed EtO standards.
Various	Rule contains incorrect phrases, does not contain certain phrases, or incorrectly cross references other provisions.	The EPA is proposing to make editorial corrections where necessary including, but not limited to, adding missing words, correcting errors, updating acronyms, and correcting cross references.

E. What compliance dates are we proposing, and what is the rationale for the proposed compliance dates?

The proposed amendments in this rulemaking for adoption under CAA section 112(d)(5) and (6) (see sections IV.A through IV.C of this preamble) are subject to the compliance deadlines outlined in the CAA under section 112(i). For all the EtO requirements we are proposing under CAA section 112(d)(5) (see section IV.A of this preamble), we are proposing at 40 CFR 63.11494(l) that existing affected sources and affected sources that were new sources under the current CMAS NESHAP (*i.e.,* they commenced construction or reconstruction after October 6, 2008 and on or before January 22, 2025) must comply with all of the amendments no later than 2 years after the effective date of the final rule or upon startup, whichever is later. For all the non-EtO requirements we are proposing under CAA section 112(d)(5) and all the requirements we are proposing under CAA section 112(d)(6) (see sections IV.B and IV.C of this preamble, respectively), we are proposing at 40 CFR 63.11494(k) that existing affected sources and affected sources that were new sources under the current CMAS NESHAP (*i.e.,* they commenced construction or reconstruction after October 6, 2008 and on or before January 22, 2025) must comply with all of the amendments no later than 3 years after the effective date of the final rule or upon startup, whichever is later.

For fenceline monitoring (see section IV.A.7 of this preamble), we are proposing at 40 CFR 63.11494(m) that owners and operators of all existing affected sources and all affected sources that were new under the current rule (*i.e.,* sources that commenced construction or reconstruction after October 6, 2008, and on or before January 22, 2025) must begin fenceline monitoring 2 years after the effective date of the final rule and, starting 3 years after the effective date of the final rule, perform root cause analysis and apply corrective action requirements upon exceedance of an annual average concentration action level.

For existing sources, CAA section 112(i) provides that the compliance date shall be as expeditious as practicable, but no later than 3 years after the effective date of the standard ("Section 112(i)(3)'s three-year maximum compliance period applies generally to any emission standard . . . promulgated under [section 112]." *Association of Battery Recyclers* v. *EPA,* 716 F.3d 667, 672 (D.C. Cir. 2013)). In determining what compliance period is as expeditious as practicable, we consider the amount of time needed to plan and construct projects and change operating procedures. As provided in CAA section 112(i) and 5 U.S.C. 801(3), all new affected sources that commenced construction or reconstruction after January 22, 2025 would be required to comply with these requirements upon the effective date of the final rule or upon startup, whichever is later (see proposed 40 CFR 63.11494(h) and (j)).

1. Rationale for Proposed Compliance Dates of Proposed CAA Section112(d)(5) and (6) Amendments

Many of the GACT requirements that we are proposing under CAA section 112(d)(5) address emissions of EtO from equipment leaks, heat exchange systems, process vents, storage tanks, and wastewater at CMAS processes (see sections IV.A.1 through IV.A.4 of this preamble). The proposed provisions will require time to plan, purchase, and install equipment for EtO control. For example, for CMAS process vents in EtO service (see section IV.A.3 of this preamble for additional details), if the affected source cannot demonstrate 99.9 percent control of EtO emissions, or reduce EtO emissions to less than 1 ppmv (from each process vent) or 5 lb/yr (for all combined process vents), then the owner or operator would need to install a new control system, improve their existing control system, or otherwise reduce emissions. In addition, we are proposing a suite of operational and monitoring requirements for flares that emit EtO (see section IV.A.6 of this preamble). We anticipate that the proposed provisions for flares that emit EtO (used to control EtO emissions from process vents and storage tanks) would require the installation of new monitoring equipment, and we project owners and operators would need to install new control systems to monitor and adjust assist gas (air or steam) addition rates. Similar to the addition of new monitoring equipment and control systems, these new monitoring requirements for flares that emit EtO would require engineering evaluations, solicitation and review of vendor quotes, contracting and installation of the equipment, and operator training. Installation of new monitoring and control equipment on flares will require the flare to be taken out of service. Depending on the configuration of the flares and flare header system, taking the flare out of service may also require a significant portion of the CMPU to be shutdown. Therefore, we are proposing a compliance date of 2 years after the publication date of the final rule, or upon startup, whichever is later, to comply with the proposed EtO requirements for all existing affected sources and all new affected sources under the current rules that commenced construction or reconstruction after October 6, 2008, and on or before January 22, 2025. For all new affected sources that commence construction or reconstruction after January 22, 2025, we are proposing owners or operators comply with the EtO requirements upon the effective date of the final rule or upon startup, whichever is later. We are soliciting comment on whether an alternate compliance timeframe (*i.e.,* shorter or longer than the proposed 2 years) would be more appropriate for the EtO requirements established pursuant to CAA section 112(d)(5).

Compliance dates for the fenceline monitoring provisions proposed under CAA section 112(d)(5) consider the amount of time that it will take owners and operators to develop their siting plans and secure the capabilities to conduct the monitoring and analyze the results. For fenceline monitoring, the compliance timeline also must consider time to allow commercial labs to conduct the needed method development, expand capacity, and develop the logistics needed to meet the requirements in the final rule. In addition, time is needed to read and assess the new fenceline monitoring requirements; prepare sampling and analysis plans; develop and submit site-specific monitoring plans; identify representative, accessible, and secure monitoring locations for offsite monitors and obtain permission from the property owner to both place and routinely access the monitors; make any necessary physical improvements to fencelines to be able to site monitors, including construction of access roads, physical fencing, and potential drainage improvements; and obtain approval of any necessary capital expenditures. Therefore, we are proposing that owners and operators of all existing sources and all new affected sources under the current rules that commenced construction or reconstruction after October 6, 2008, and on or before January 22, 2025 must begin fenceline monitoring 2 years after the publication date of the final rule and must perform root cause analysis and apply corrective action requirements upon exceedance of an annual average concentration action level starting 3 years after the publication date of the final rule. For all new affected sources that commence construction or reconstruction after January 22, 2025, we are proposing that owners or operators begin fenceline monitoring upon the effective date of the final rule or upon startup, whichever is later. We are also proposing to require quarterly reporting of fenceline results beginning 1 year after monitoring begins for such sources.

For PRDs, we are establishing management practices in the CMAS NESHAP under CAA section 112(d)(5) that require a process hazard analysis and implementation of a minimum of three redundant measures to prevent atmospheric releases (see section IV.B.2 of this preamble). Alternately, owners or operators may elect to install closed vent systems to route these PRDs to a flare, drain (for liquid thermal relief valves), or other control system. We anticipate that sources will need to 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. Therefore, for all existing affected sources, and all new affected sources under the current CMAS NESHAP that commenced construction or reconstruction after October 6, 2008, and on or before January 22, 2025, we are proposing a compliance date of 3 years from the publication date of the final rule (or upon startup, whichever is later) for owners or operators to comply with the management practices for atmospheric PRD releases. For all new affected sources that commence construction or reconstruction after January 22, 2025, we are proposing owners or operators comply with the management practices for atmospheric PRD releases upon the effective date of the final rule or upon startup, whichever is later.

Other amendments we are proposing under CAA section 112(d)(5) include LDAR requirements for pressure vessels (see section IV.B.1 of this preamble). We are also proposing new LDAR requirements under CAA section 112(d)(6) for equipment leaks in organic HAP service and heat exchange systems with cooling water flow rates greater than 8,000 gpm (see section IV.C.1 of this preamble). We project some owners and operators would require engineering evaluations, solicitation and review of vendor quotes, contracting and installation of monitoring equipment, and operator training. In addition, facilities will need time to read and understand the amended rule requirements and update standard operating procedures. Also, any of these proposed provisions may require additional time to plan, purchase, and install equipment for emissions control; and even if not, the EPA recognizes the confusion that multiple different compliance dates for individual requirements would create and the additional burden such an assortment of dates would impose. Lastly, other recent rulemakings are requiring updates to LDAR provisions for hundreds of sources not previously required to do EPA Method 21 monitoring (see the Gasoline Distribution NESHAP, 89 FR 39304 May 8, 2024). As such, the demand on contractor support may be greater than can be immediately accommodated. Therefore, for all existing affected sources, and all new affected sources under the current rules that commenced construction or reconstruction after October 6, 2008, and on or before January 22, 2025, we are proposing a compliance date of 3 years from the publication date of the final rule (or upon startup, whichever is later) for owners or operators to comply with these other proposed amendments. For all new affected sources that commence construction or reconstruction after January 22, 2025, we are proposing owners or operators comply with these other proposed amendments upon the effective date of the final rule or upon startup, whichever is later.

2. Rationale for Proposed Compliance Dates of Other Proposed Amendments

We are proposing electronic reporting requirements (see section IV.D.1 of this preamble), and we anticipate that facilities would need some time to successfully accomplish these reporting revisions including time to read and understand the amended rule requirements, to make any necessary adjustments (including adjusting standard operating procedures), and to convert reporting mechanisms and install necessary hardware and software. From our assessment of the timeframe needed for compliance with the new proposed electronic reporting requirements for flare management plans and periodic reports, the EPA considers a period of 3 years after the publication date of the final rule to be the most expeditious compliance period practicable. Thus, we are proposing that all existing affected sources, and all new affected sources under the current rule that commenced construction or reconstruction after October 6, 2008, and on or before January 22, 2025 be in compliance with these revised requirements upon initial startup or within 3 years of the publication date of the final rule, whichever is later. For all new affected sources that commence construction or reconstruction after January 22, 2025, we are proposing owners or operators comply with these revised requirements upon the effective date of the final rule or upon startup, whichever is later. However, we are proposing at 40 CFR 63.11496(g)(1)(iv) to provide 60 days after the publication date of the final rule (or upon startup, whichever is later) for owners or operators of all affected sources to comply with the requirement to submit performance test reports electronically following the procedure specified in 40 CFR 63.9(k). We are also proposing at 40 CFR 63.11501(b) to provide 60 days after the publication date of the final rule (or upon startup, whichever is later) for owners or operators of all affected sources to submit all subsequent Notification of Compliance Status reports in PDF format electronically following the procedure specified in 40 CFR 63.9(k).

V. Summary of Cost, Environmental, and Economic Impacts

A. What are the affected sources?

We estimate that there are 251 facilities subject to the CMAS NESHAP. There are another 29 facilities that would become subject to the rule if EtO were to be added to table 1 to 40 CFR part 63, subpart VVVVVV, as proposed. The list of facilities is available in the document titled *List of Facilities Subject to the CMAS NESHAP,* which is available in the docket for this rulemaking.

B. What are the air quality impacts?

This proposed action would reduce HAP and VOC emissions from CMAS emission sources. We estimate that the proposed amendments to the NESHAP would reduce overall HAP emissions, not including EtO emission reductions, from CMAS by approximately 158 tpy. In addition, the EPA estimates reductions of approximately 4.6 tpy of EtO emissions based on the emissions inventories. With respect to secondary impacts on non-HAP pollutants, the EPA estimates that the proposed amendments would reduce VOC emissions by 1,557 tpy and on net would reduce emissions of methane by 251 tpy.

The EPA also estimates that the proposed action would result in secondary impacts for greenhouse gas emissions and criteria air pollutant emissions. The increased electricity and natural gas use to power some of the proposed controls would increase emissions of several pollutants, including an estimated increase of 36 tpy of carbon monoxide (CO), 57,000 tpy of carbon dioxide (CO_2), 43 tpy of nitrogen oxides (NO_X) (including 0.97 tpy of nitrous oxide (N_2O)), 3 tpy of particulate matter ($PM_{2.5}$), and 0.26 tpy of sulfur dioxide (SO_2). On net, after accounting for the methane emission reductions and the increases in CO_2 and N_2O emissions, this proposed rule would increase GHG emissions on a CO_2-equivalent basis (CO_2e) by an estimated 50,000 tpy. More information about the estimated emission reductions and secondary impacts of this proposed action for the CMAS NESHAP can be found in the documents titled *Economic Impact Analysis* and *Secondary Impacts for Flares, Thermal Oxidizers, and Wastewater Controls for the CMAS NESHAP,* which are available in the docket for this action; and in documents referenced in sections IV.A through IV.C of this preamble. The EPA solicits comments on the quantitative aspects of the emissions reductions and secondary impacts of this proposed action.

C. What are the cost impacts?

The EPA estimates the cost of the requirements in this proposed action would be approximately $37.6 million (in 2022 dollars for the entire period of analysis) in total capital costs and $36.4 million in total annual costs (including product recovery), based on our analyses of the proposed actions described in sections IV.A through IV.C of this preamble. The 'total annual costs' are the sum of the annualized capital costs and other annual costs (*e.g.,* operating and maintenance costs, recordkeeping and reporting costs). To obtain annualized capital costs, a capital recovery factor is multiplied by the capital costs. The capital recovery factor is based on the lifetime of the capital equipment as well as the interest rate. The total annual cost of the proposed action without including the value of product recovery is estimated to be about $38 million. Thus, product recovery accounts for about $1.6 million in annual cost savings, or about four percent of the total annual costs without product recovery.

D. What are the economic impacts?

The economic impacts of this proposal, including the small entity impact analysis, are discussed in greater detail in the document titled *Economic Impact Analysis,* which is available in the docket for this action.

As part of fulfilling the analytical requirements of Executive Orders 12866 as amended by Executive Order 14094, the EPA presents estimates of the present value (PV) of the costs over the 15-year analytical period from 2027 to 2041. Costs are in 2022 dollars and discounted to 2027 at a two percent discount rate per the recommendation in OMB Circular A–4. The EPA also presents the equivalent annualized value (EAV) at a two percent discount rate. The EAV takes the non-uniform stream of costs (*i.e.,* different costs in different years) and converts them into a single annual value that, if paid each year from 2027 to 2041, would equal the original stream of values in PV terms.

The PV of the costs over the 15-year period from 2027 to 2041 without including the value of product recovery is estimated to be $495 million at a two percent discount rate and the EAV is $38.5 million. The PV of the costs including the value of product recovery is estimated to be $474 million at a two percent discount rate and the EAV is $37 million.

This proposed action impacts 58 small entities, which own a total of 64 CMAS facilities. The EPA evaluates economic impacts of rulemakings on small entities by examining total annual cost estimates compared to the annual revenues of the companies (*i.e.,* entities) that are the ultimate owners of the facilities affected by the rule. The EPA estimates cost-to-sales ratios, which are the total annual costs estimated for each entity divided by the entity's annual revenues. This ratio provides a measure of the direct economic impact to ultimate owners of CMAS facilities.

The EPA estimates the average cost-to-sales ratio for small entities impacted by the proposal will be 0.3 percent with a maximum cost-to-sales ratio estimated at 5.5 percent, not considering the value of product recovery due to compliance (*i.e.,* the cost savings). With product recovery, the EPA estimates that the average cost-to-sales ratio for small entities impacted by the proposal will be 0.3 percent with a maximum cost-to-sales ratio of 5.4 percent. We estimate that about nine percent of impacted small entities (five small entities out of a total of 58) will incur total annual costs greater than one percent of their annual revenue, and two percent of small entities (one small entity in total) will incur total annual costs greater than three percent of their annual revenue. The number of entities with a one percent or greater cost-to-sales ratio falls to three entities, or five percent of all small entities, when the total annual cost estimates include the value of product recovery, and one entity has a cost-to-sales ratio that remains above three percent. The EPA does not anticipate that this proposed action will have a substantial impact on a significant number of small entities. The EPA also does not expect this proposed action to have significant market impacts or employment impacts.

It is important to note that the small entities that own facilities affected by the proposed EtO standards have relatively higher estimated cost-to-sales ratios, with an average cost-to-sales ratio of 3 percent for the three EtO facilities that are owned by small entities. The small entity with the maximum cost-to-sales ratio of 5.5 percent owns a facility affected by the proposed EtO standards. These three small entities also have smaller average annual revenues compared to the whole population of small entities, averaging $47 million in annual revenues compared to $230 million for all small entities. For additional details on the costs of this proposed rulemaking, please see the document titled *Economic Impact Analysis,* available in the docket for this action.

E. What are the benefits?

The EPA did not monetize the benefits from the estimated emission reductions of HAP associated with this proposed action. The EPA currently does not have sufficient methods to monetize benefits associated with HAP reductions and risk reductions for this rulemaking. However, we estimate that the final rule amendments would reduce EtO emissions by 4.6 tpy and expect that these reductions will lower the risk of adverse health effects, including cancer, for individuals in communities near CMAS facilities. For additional information on the nonmonetized benefits of this rulemaking and a qualitative discussion of the health risks associated with exposure to EtO and several other HAP, please see the document titled *Economic Impact Analysis,* available in the docket for this action. The EPA solicits comments on the benefits of HAP reductions discussed in this section.

The secondary emissions impacts estimated for this proposed action include net reductions in VOC and methane emissions, and increases in emissions of $PM_{2.5}$, SO_2, NO_X (including N_2O), CO_2, and CO. The EPA was not able to monetize the health and environmental impacts associated with the estimated changes in criteria air pollutant emissions for this proposed rule, which include increased $PM_{2.5}$ and $PM_{2.5}$ precursor emissions and changes in VOC and NO_X emissions, which impact the formation of ground-level ozone.

The EPA provided monetized estimates of the impacts associated with the methane emissions reductions and the net increases in CO_2 and N_2O emissions using the EPA's social cost of greenhouse gas (SC–GHG) estimates. The estimated climate benefits are negative on net. The PV of the climate benefits for the 15-year period from 2027 to 2041 is estimated to be negative $195 million in 2022 dollars discounted at a two percent rate, and the EAV is estimated to be negative $15 million.

F. What analysis of environmental justice did we conduct?

For purposes of analyzing regulatory impacts, the EPA relies upon its June 2016 ''Technical Guidance for Assessing Environmental Justice in Regulatory Analysis,'' which provides recommendations that encourage analysts to conduct the highest quality analysis feasible, recognizing that data limitations, time, resource constraints, and analytical challenges will vary by media and circumstance. The Technical Guidance states that a regulatory action may involve potential environmental justice (EJ) concerns if it could: (1) create new disproportionate impacts on communities with EJ concerns; (2) exacerbate existing disproportionate impacts on communities with EJ concerns; or (3) present opportunities to address existing disproportionate impacts on communities with EJ concerns through this action under development.

The EPA's EJ technical guidance states that ''[t]he analysis of potential EJ concerns for regulatory actions should address three questions: (1) Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern in the baseline? (2) Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern for the regulatory option(s) under consideration? (3) For the regulatory option(s) under consideration, are potential EJ concerns created or mitigated compared to the baseline?'' [58]

The EJ analysis is presented for the purpose of providing the public with as full as possible an understanding of the potential impacts of this proposed action. The EPA notes that analysis of such impacts is distinct from the determinations proposed in this action under CAA section 112, which are based solely on the statutory factors the EPA is required to consider under that section.

To examine the potential for EJ concerns, the EPA conducted three different demographic analyses: a proximity analysis, a baseline cancer risk-based analysis (*i.e.,* before implementation of any controls required by this proposed action), and a post-control cancer risk-based analysis (*i.e.,* after implementation of the controls required by this proposed action). The proximity demographic analysis is an assessment of individual demographic groups in the total population living within 10 km (~6.2 miles) and 50 km (~31 miles) of the facilities. The baseline risk-based demographic analysis is an assessment of risks to individual demographic groups in the population living within 10 km and 50 km of the facilities prior to the implementation of any controls required by this proposed action (''baseline''). The post-control risk-based demographic analysis is an assessment of risks to individual

[58] ''*Technical Guidance for Assessing Environmental Justice in Regulatory Analysis*'', U.S. EPA, June 2016. Quote is from Section 3—Key Analytic Considerations, page 11.

demographic groups in the population living within 10 km and 50 km of the facilities after implementation of the controls required by this proposed action (''post-control''). The risk-based demographic analyses were performed for the following three different HAP emissions scenarios (described in sections V.F.1 through V.F.3 of this preamble): CMAS categories HAP emissions (10 km and 50 km), CMAS whole-facility HAP emissions (10 km and 50 km), and CMAS community HAP emissions (10 km only).

1. CMAS Categories Demographics

For the CMAS categories, the EPA examined the potential for the 247 CMAS facilities (for which the EPA had HAP emissions inventories for emissions from the CMAS categories) to pose concerns to communities living in proximity to facilities, both in the baseline and under the control option established in this proposed action. Specifically, to examine the potential for EJ concerns, the EPA conducted three different demographic analyses of the populations living within 10 km and 50 km of the CMAS facilities: a proximity analysis, baseline cancer and noncancer risk-based analyses (*i.e.,* before implementation of any controls required by this proposed action), and post-control cancer and noncancer risk-based analyses (*i.e.,* after implementation of the controls required by this proposed action). In this preamble, we focus on the results from the demographic analyses using a 10 km radius because this area captures the majority of the population with higher cancer risks due to HAP emissions from CMAS facilities. Specifically, 100 percent of the population with baseline cancer risks greater than or equal to 50-in-1 million and with noncancer hazard indices greater than 1 from emissions associated with the CMAS categories live within 10 km of the CMAS facilities. The methodology and detailed results of the demographic analysis, including the demographic analyses for populations living within 10 km and 50 km of facilities, are presented in the document titled *Analysis of Demographic Factors for Populations Living Near Chemical Manufacturing Area Source (CMAS) Facilities—Source Category Analysis of Proposed Amendments,* which is available in the docket for this rulemaking. The following paragraphs briefly summarize the results of these demographic analyses.

For all three demographic analyses, the affected populations (*i.e.,* those living within 10 km of the facilities) are compared to the national population. The total population, population percentages, and population count for each demographic group for the entire U.S. population are shown in the column titled ''Nationwide Average for Reference'' in tables 11 through 13 of this preamble. These national data are provided as a frame of reference to compare the results of the proximity analysis, the baseline cancer and noncancer risk-based analyses, and the post-control cancer and noncancer risk-based analysis. The column titled ''Proximity Analysis for Population living within 10 km of CMAS Facilities'' in tables 11 through 13 of this preamble shows the share and count of people for each of the demographic categories for the total population living within 10 km (~6.2 miles) of CMAS facilities. These are the results of the proximity analysis and are repeated in tables 11 through 13 of this preamble for ease of comparison to the risk-based analyses discussed later.

The results of the proximity analysis indicate that a total of 33.7 million people live within 10 km of the 247 CMAS facilities analyzed.[59] The percent of the population living within 10 km of the CMAS facilities is above the corresponding national average for the following demographic groups: Black, Hispanic or Latino, Other/Multiracial, people living below the poverty level, people living below two times the poverty level, people over the age of 25 without a high school diploma, and linguistic isolation. The results of the proximity analysis indicate that the proportion of other demographic groups living within 10 km of CMAS facilities is similar to or below the national average.

The baseline cancer risk-based demographic analysis focuses on populations that have higher cancer risks. The baseline risk-based demographic analysis results are shown in the ''baseline'' column of tables 11 through 13 of this preamble. This analysis focused on the populations living within 10 km (~6.2 miles) of the CMAS facilities with estimated cancer risks greater than or equal to 1-in-1 million resulting from emissions from CMAS categories (table 11 of this preamble), greater than or equal to 50-in-1 million (table 12 of this preamble), and greater than 100-in-1 million (table 13 of this preamble).

The results of the cancer risk-based demographic analysis indicate that a total of 2 million people living within 10 km of 76 of the CMAS facilities analyzed have a cancer risk greater than or equal to 1-in-1 million from CMAS HAP emissions. The percent of the population living within 10 km of these CMAS facilities with cancer risks greater than or equal to 1-in-1 million is above the corresponding national average for the following demographic groups: Black, Hispanic or Latino, people living below the poverty level, people living below two times the poverty level, people over 25 without a high school diploma, and linguistic isolation. The percent of the population with cancer risks greater than or equal to 1-in-1 million that are Black (25 percent) is higher than in the proximity analysis (19 percent) and is approximately two times higher than the national average (12 percent). The percent of the population with cancer risks greater than or equal to 1-in-1 million that are Hispanic/Latino (25 percent) is higher than in the proximity analysis (21 percent) and the national average (19 percent).

The results of the cancer risk-based demographic analysis indicate that a total of 36,100 people living within 10 km of 15 of the CMAS facilities analyzed have cancer risks greater than or equal to 50-in-1 million from CMAS HAP emissions. The percent of the population living within 10 km of these CMAS facilities with cancer risks greater than or equal to 50-in-1 million is above the corresponding national average for the following demographic groups: Hispanic or Latino, people living below the poverty level, people living below two times the poverty level, people over 25 without a high school diploma, and linguistic isolation. The percent of the population with cancer risks greater than or equal to 50-in-1 million that are Black is at the national average (12 percent), which is a lower percentage than for the proximity analysis (19 percent). The percent of the population with cancer risks greater than or equal to 50-in-1 million that are Hispanic/Latino (40 percent) is about two times that in the proximity analysis (21 percent) and the national average (19 percent).

The results of the cancer risk-based demographic analysis indicate that a total of 3,600 people living within 10 km of 4 of the CMAS facilities analyzed have a cancer risk greater than 100-in-1 million from CMAS HAP emissions. The percent of the population living within 10 km of these CMAS facilities with cancer risks greater than 100-in-1 million is above the corresponding national average for the following demographic groups: Hispanic or Latino, people living below the poverty

[59] There are 248 CMAS facilities with emissions data specific to the categories, however, one facility has no population living within 10 km and thus was not included in the EJ analysis.

level, people living below two times the poverty level, and people over 25 without a high school diploma. The percent of the population with cancer risks greater than 100-in-1 million that are Black (5 percent) is well below the national average (12 percent). The percent of the population with cancer risks greater than 100-in-1 million that are Hispanic/Latino (34 percent) is over 1.5 times greater than in the proximity analysis (21 percent) and nearly double the national average (19 percent).

The results of the noncancer risk-based demographic analysis indicate that a total of 1,500 people living within 10 km of 2 CMAS facilities analyzed have a respiratory hazard index greater than 1 from CMAS HAP emissions. The percent of the population living within 10 km of these CMAS facilities with respiratory hazard index greater than 1 is above the corresponding national average for the following demographic groups: Hispanic or Latino (90 percent for the source categories compared to 19 percent nationwide), people living in linguistic isolation (15 percent for the source categories compared to 5 percent nationwide), people 25 years old and older without a high school diploma (33 percent for the source categories compared to 12 percent nationwide), people living below twice the poverty level (44 percent for the source categories compared to 29 percent nationwide), and people living below the poverty level (24 percent for the source categories compared to 13 percent nationwide).

The results of the noncancer risk-based demographic analysis indicate that a total of 1,300 people living within 10 km of 2 CMAS facilities analyzed have an immunological hazard index greater than 1 from CMAS HAP emissions. The demographic results indicate that the percentage of the population potentially impacted by CMAS emissions is greater than its corresponding nationwide percentage for the following demographic groups: Hispanic or Latino (90 percent for the source category compared to 19 percent nationwide), people living in linguistic isolation (16 percent for the source category compared to 5 percent nationwide), people 25 years old and older without a high school diploma (33 percent for the source category compared to 12 percent nationwide), people living below twice the poverty level (44 percent for the source category compared to 29 percent nationwide), and people living below the poverty level (24 percent for the source category compared to 13 percent nationwide).

The post-control risk-based demographic analysis shows that the controls required by this proposed action will notably reduce the number of people who are exposed to cancer risks resulting from emissions from the CMAS categories at all risk levels. The results of the post-control risk-based demographics analysis are in the columns titled ''Post-Control'' of tables 11 through 13 of this preamble. At greater than or equal to a cancer risk of 1-in-1 million, the number of individuals exposed will decrease from 2.1 million to 1.4 million. The demographic composition of those individuals exposed to cancer risk greater than or equal to 1-in-1 million post-control is similar to the demographic composition of the individuals exposed to a cancer risk of 1-in-1 million at baseline. The number of individuals exposed to cancer risk greater than or equal to 50-in-1 million will decrease from 36,100 to 4,400.

The percent of the population living within 10 km of these CMAS facilities with post-control cancer risks greater than or equal to 50-in-1 million is above the corresponding national average for the following demographic groups: Hispanic or Latino, Age 0–17, people living below poverty, people living below two times poverty, those over 25 without a high school diploma, and linguistic isolation. The percent of the population with post-control cancer risks greater than or equal to 50-in-1 million that are Hispanic or Latino (66 percent) is over three times the national average (19 percent), with 98 percent of this Hispanic or Latino population living around two CMAS facilities (one in Illinois and one in Kansas).

After control is implemented, the number of people who are exposed to cancer risks greater than 100-in-1 million resulting from emissions from the CMAS categories will decrease from 3,600 to zero. Therefore, there are no disparities among demographic groups at this risk level. The actions of this proposed rulemaking will improve human health of current and future populations that live near these facilities.

The post-control noncancer risk demographic results are the same as those for the baseline scenario because the controls being proposed in this action do not directly reduce the nickel emissions that drive the noncancer risk.

TABLE 11—SOURCE CATEGORIES: COMPARISON OF BASELINE AND POST-CONTROL DEMOGRAPHICS OF POPULATIONS WITH CANCER RISK GREATER THAN OR EQUAL TO 1-IN-1 MILLION LIVING WITHIN 10 KM OF CMAS FACILITIES TO THE NATIONAL AVERAGE AND THE PROXIMITY DEMOGRAPHICS

Demographic group	Nationwide average for reference	Proximity analysis for total population living within 10 km of CMAS facilities	Cancer risk ≥1-in-1 million within 10 km of CMAS facilities	
			Baseline	Post-control
Total Population	330M	33.7M	2.1M	1.4M
Number of Facilities	....	247	76	71
Race and Ethnicity by Percent [Number of People]				
White	60% [196M]	49% [16.7M]	45% [925K]	40% [564K]
Black	12% [40M]	19% [6.5M]	25% [513K]	26% [377K]
American Indian and Alaskan Native	0.6% [2.1M]	0.2% [75K]	0.2% [4.1K]	0.2% [2.5K]
Hispanic or Latino (white and nonwhite)	19% [63M]	21% [7.1M]	25% [514K]	28% [404K]
Other and Multiracial	9% [29M]	10% [3.4M]	6% [119K]	5% [78K]

TABLE 11—SOURCE CATEGORIES: COMPARISON OF BASELINE AND POST-CONTROL DEMOGRAPHICS OF POPULATIONS WITH CANCER RISK GREATER THAN OR EQUAL TO 1-IN-1 MILLION LIVING WITHIN 10 KM OF CMAS FACILITIES TO THE NATIONAL AVERAGE AND THE PROXIMITY DEMOGRAPHICS—Continued

Demographic group	Nationwide average for reference	Proximity analysis for total population living within 10 km of CMAS facilities	Cancer risk ≥1-in-1 million within 10 km of CMAS facilities	
			Baseline	Post-control
Age By Percent [Number of People]				
Age 0 to 17 years	22% [74M]	22% [7.4M]	24% [492K]	24% [339K]
Age 18 to 64 years	62% [203M]	63% [21.3M]	62% [1.3M]	62% [881K]
Age ≥65 years	16% [53M]	15% [5M]	14% [301K]	14% [205K]
Income by Percent [Number of People]				
Below Poverty Level	13% [42M]	14% [4.7M]	15% [318K]	17% [240K]
Below 2x Poverty Level	30% [100M]	31% [10.4M]	36% [750K]	39% [554K]
Education by Percent [Number of People]				
Over 25 and without a High School Diploma	12% [38M]	13% [4.3M]	15% [306K]	16% [232K]
Linguistically Isolated by Percent [Number of People]				
Linguistically Isolated	5% [17M]	6% [2.1M]	6% [123K]	7% [102K]

Notes:

• Nationwide population and demographic percentages are based on Census' 2016–2020 American Community Survey (ACS) 5-year block group averages. Total population count is based on 2020 Decennial Census block population.

• To avoid double counting, the ''Hispanic or Latino'' category is treated as a distinct demographic category. A person who identifies as Hispanic or Latino is counted as Hispanic or Latino, regardless of race.

• The number of facilities represents facilities with a cancer MIR above level indicated. When the MIR was located at a user assigned receptor at an individual residence and not at a census block centroid, we were unable to estimate population and demographics for that facility.

• The sum of individual populations with a demographic category may not add up to total due to rounding. K = Thousands, M = Millions.

TABLE 12—SOURCE CATEGORIES: COMPARISON OF BASELINE AND POST-CONTROL DEMOGRAPHICS OF POPULATIONS WITH CANCER RISK GREATER THAN OR EQUAL TO 50-IN-1 MILLION LIVING WITHIN 10 KM OF CMAS FACILITIES TO THE NATIONAL AVERAGE AND THE PROXIMITY DEMOGRAPHICS

Demographic group	Nationwide average for reference	Proximity analysis for total population living within 10 km of CMAS facilities	Cancer risk ≥50-in-1 million within 10 km of CMAS facilities	
			Baseline	Post-control
Total Population	330M	33.7M	36K	4.4K
Number of Facilities	....	247	15	8
Race and Ethnicity by Percent [Number of People]				
White	60% [196M]	49% [16.7M]	39% [14K]	28% [1.2K]
Black	12% [40M]	19% [6.5M]	12% [4.5K]	4% [200]
American Indian and Alaskan Native	0.6% [2.1M]	0.2% [75K]	0.1% [<100]	0.0% [<100]
Hispanic or Latino (white and nonwhite)	19% [63M]	21% [7.1M]	40% [14.4K]	66% [2.9K]
Other and Multiracial	9% [29M]	10% [3.4M]	8% [2.9K]	2% [<100]
Age By Percent [Number of People]				
Age 0 to 17 years	22% [74M]	22% [7.4M]	30% [11K]	34% [1.5K]

TABLE 12—SOURCE CATEGORIES: COMPARISON OF BASELINE AND POST-CONTROL DEMOGRAPHICS OF POPULATIONS WITH CANCER RISK GREATER THAN OR EQUAL TO 50-IN-1 MILLION LIVING WITHIN 10 KM OF CMAS FACILITIES TO THE NATIONAL AVERAGE AND THE PROXIMITY DEMOGRAPHICS—Continued

Demographic group	Nationwide average for reference	Proximity analysis for total population living within 10 km of CMAS facilities	Cancer risk ≥50-in-1 million within 10 km of CMAS facilities	
			Baseline	Post-control
Age 18 to 64 years	62% [203M]	63% [21.3M]	60% [22K]	59% [2.6K]
Age ≥65 years	16% [53M]	15% [5M]	10% [3.7K]	7% [300]
Income by Percent [Number of People]				
Below Poverty Level	13% [42M]	14% [4.7M]	21% [7.5K]	23% [1K]
Below 2x Poverty Level	30% [100M]	31% [10.4M]	49% [18K]	47% [2.1K]
Education by Percent [Number of People]				
Over 25 and without a High School Diploma	12% [38M]	13% [4.3M]	27% [10K]	30% [1.3K]
Linguistically Isolated by Percent [Number of People]				
Linguistically Isolated	5% [17M]	6% [2.1M]	13% [4.5K]	11% [500]

Notes:

- Nationwide population and demographic percentages are based on Census' 2016–2020 ACS 5-year block group averages. Total population count is based on 2020 Decennial Census block population.
- To avoid double counting, the ''Hispanic or Latino'' category is treated as a distinct demographic category. A person who identifies as Hispanic or Latino is counted as Hispanic or Latino, regardless of race.
- The number of facilities represents facilities with a cancer MIR above level indicated. When the MIR was located at a user assigned receptor at an individual residence and not at a census block centroid, we were unable to estimate population and demographics for that facility.
- The sum of individual populations with a demographic category may not add up to total due to rounding. K = Thousands, M = Millions.

TABLE 13—SOURCE CATEGORIES: COMPARISON OF BASELINE AND POST-CONTROL DEMOGRAPHICS OF POPULATIONS WITH CANCER RISK GREATER THAN 100-IN-1 MILLION LIVING WITHIN 10 KM OF CMAS FACILITIES TO THE NATIONAL AVERAGE AND THE PROXIMITY DEMOGRAPHICS

Demographic group	Nationwide average for reference	Proximity analysis for total population living within 10 km of CMAS facilities	Cancer risk >100-in-1 million within 10 km of CMAS facilities	
			Baseline	Post-control
Total Population	330M	33.7M	3.6K	0
Number of Facilities	....	247	4	0
Race and Ethnicity by Percent [Number of People]				
White	60% [196M]	49% [16.7M]	58% [2.1K]	0% 0
Black	12% [40M]	19% [6.5M]	5% [200]	0% 0
American Indian and Alaskan Native	0.6% [2.1M]	0.2% [75K]	0.1% [<100]	0.0% 0
Hispanic or Latino (white and nonwhite)	19% [63M]	21% [7.1M]	34% [1.2K]	0% 0
Other and Multiracial	9% [29M]	10% [3.4M]	3% [100]	0% 0
Age By Percent [Number of People]				
Age 0 to 17 years	22% [74M]	22% [7.4M]	34% [1.2K]	0% 0
Age 18 to 64 years	62% [203M]	63% [21.3M]	55% [2K]	0% 0
Age ≥65 years	16% [53M]	15% [5M]	11% [400]	0% 0

TABLE 13—SOURCE CATEGORIES: COMPARISON OF BASELINE AND POST-CONTROL DEMOGRAPHICS OF POPULATIONS WITH CANCER RISK GREATER THAN 100-IN-1 MILLION LIVING WITHIN 10 KM OF CMAS FACILITIES TO THE NATIONAL AVERAGE AND THE PROXIMITY DEMOGRAPHICS—Continued

Demographic group	Nationwide average for reference	Proximity analysis for total population living within 10 km of CMAS facilities	Cancer risk >100-in-1 million within 10 km of CMAS facilities	
			Baseline	Post-control
Income by Percent [Number of People]				
Below Poverty Level	13% [42M]	14% [4.7M]	15% [500]	0% 0
Below 2x Poverty Level	30% [100M]	31% [10.4M]	42% [1.5K]	0% 0
Education by Percent [Number of People]				
* * * *		* *		*
Over 25 and without a High School Diploma	12% [38M]	13% [4.3M]	23% [800]	0% 0
Linguistically Isolated by Percent [Number of People]				
Linguistically Isolated	5% [17M]	6% [2.1M]	5% [200]	0% 0

Notes:

• Nationwide population and demographic percentages are based on Census' 2016–2020 ACS 5-year block group averages. Total population count is based on 2020 Decennial Census block population.

• To avoid double counting, the ''Hispanic or Latino'' category is treated as a distinct demographic category. A person who identifies as Hispanic or Latino is counted as Hispanic or Latino, regardless of race.

• The number of facilities represents facilities with a cancer MIR above level indicated. When the MIR was located at a user assigned receptor at an individual residence and not at a census block centroid, we were unable to estimate population and demographics for that facility.

• The sum of individual populations with a demographic category may not add up to total due to rounding. K = Thousands, M = Millions.

2. CMAS NESHAP Whole-Facility Demographics

As described in section II.E of this preamble and the document titled *Risk Assessment for the Chemical Manufacturing Area Source (CMAS) Source Categories in Support of the 2025 Technology Review for the Proposed Rule,* which is available in the docket for this rulemaking, we assessed the facility-wide (or ''whole-facility'') risks as part of a risk assessment for 278 CMAS facilities, accounting for HAP emissions from the entire facility and not just those resulting from CMAS categories as discussed in the section V.F.1 of this preamble.[60] The whole-facility risk analysis includes all sources of HAP emissions at each facility as reported in the emissions inventory developed using the NEI (described in section II.C.2 of this proposed rule). The following discussion of the whole-facility demographic analysis is focused on post-control risks.

The whole-facility demographic analysis is an assessment of individual demographic groups in the total population living within 10 km (~6.2 miles) and 50 km (~31 miles) of the facilities. In this preamble, we focus on the results from the demographic analyses using a 10 km radius because this area captures the majority of the population with higher cancer and noncancer risks due to HAP emissions from CMAS facilities. Specifically, 100 percent of the population with baseline cancer risks greater than or equal to 50-in-1 million and with noncancer hazard indices greater than 1 from emissions from the CMAS categories live within 10 km of the CMAS facilities. The results of the whole-facility demographic analysis for populations living within 10 km and 50 km of CMAS facilities are included in the document titled *Analysis of Demographic Factors for Populations Living Near Chemical Manufacturing Area Source (CMAS) Facilities: Whole Facility Analysis of Proposed Amendments* which is available in the docket for this rulemaking.

The whole-facility demographic analysis post-control results are shown in table 14 of this preamble. This analysis focused on the populations living within 10 km of the CMAS facilities with estimated whole-facility post-control cancer risks greater than or equal to 1-in-1 million, greater than or equal to 50-in-1 million, and greater than 100-in-1 million, as well as with estimated whole-facility post-control noncancer hazard indices greater than 1. The risk analysis indicated that all emissions from the CMAS facilities, after the reductions imposed by the proposed rule, expose a total of about 1.65 million people living around 80 facilities to a cancer risk greater than or equal to 1-in-1 million, 5,600 people living around 10 facilities to a cancer risk greater than or equal to 50-in-1 million, and zero people to a cancer risk greater than 100-in-1 million. The risk analysis indicated that all emissions from the CMAS facilities, after the reductions imposed by the proposed rule, expose a total of about 1,700 people to a respiratory hazard index greater than 1 and about 1,700 people to an immunological hazard index greater than 1 (both values unchanged from baseline).

When the CMAS whole-facility populations are compared to the CMAS categories populations in the post-control scenarios, we see 250,000 additional people with risks greater than or equal to 1-in-1 million, 1,200 additional people with risks greater than or equal to 50-in-1 million, zero additional people with risks greater than 100-in-1 million, 200 additional people with respiratory hazard indices greater than 1, and 200 additional people with immunological hazard indices greater than 1.

[60] See footnote 60.

The demographic distribution of the whole-facility population with post-control cancer risks greater than or equal to 1-in-1 million is almost identical to the distribution of the source category population with post-control cancer risks greater than or equal to 1-in-1 million. Therefore, the whole-facility population with post-control cancer risks greater than or equal to 1-in-1 million has disproportionately high representation from Blacks, Hispanics and Latinos, people living below the poverty level, people living below two times the poverty level, those over 25 without a high school diploma, and those that are linguistically isolated.

The population with post-control cancer risks greater than or equal to 50-in-1 million in the whole-facility analysis is almost identical to the distribution of the source category population with post-control cancer risks greater than or equal to 50-in-1 million. Therefore, the whole-facility population with post-control cancer risks greater than or equal to 50-in-1 million has disproportionately high representation from Hispanics and Latinos, people living below the poverty level, people living below two times the poverty level, those over 25 without a high school diploma, and those that are linguistically isolated. As such, the Hispanic and Latino population is still disproportionately represented at 69 percent, which is well above the national average of 19 percent.

Based on results from the whole-facility emissions analysis, there are zero people with post-control risks greater than 100-in-1 million.

The population with post-control respiratory hazard indices greater than 1 in the whole-facility analysis is almost identical to the distribution of the source category population with baseline and post-control respiratory hazard indices greater than 1. Therefore, the whole-facility population with post-control respiratory hazard indices greater than 1 has disproportionately high representation from Hispanics or Latinos, people living below the poverty level, people living below two times the poverty level, those over 25 without a high school diploma, and those who are linguistically isolated. As such, the Hispanic and Latino population is disproportionately represented at 90 percent, which is well above the national average of 19 percent, and people living below the poverty level are disproportionately represented at 24 percent, which is nearly twice the national average of 13 percent.

The population with post-control immunological hazard indices greater than 1 in the whole-facility analysis is almost identical to the distribution of the source category population with baseline and post-control immunological hazard indices greater than 1. Therefore, the whole-facility population with post-control immunological hazard indices greater than 1 has disproportionately high representation from Hispanics or Latinos, people living below the poverty level, people living below two times the poverty level, those over 25 without a high school diploma, and those who are linguistically isolated. As such, the Hispanic and Latino population is disproportionately represented at 90 percent, which is well above the national average of 19 percent, and people living below the poverty level are disproportionately represented at 24 percent, which is nearly twice the national average of 13 percent.

TABLE 14—WHOLE-FACILITY: WHOLE-FACILITY POST-CONTROL DEMOGRAPHICS FOR CMAS FACILITIES BY RISK LEVEL FOR POPULATIONS LIVING WITHIN 10 KM OF FACILITIES

Demographic group	Nationwide average for reference	Whole-facility post-control cancer risk for populations within 10 km of CMAS facilities		
		≥1-in-1 million	≥50-in-1 million	>100-in-1 million
Total Population	330M	1,651,083	5,625	0
Number of Facilities		80	10	0
Race and Ethnicity by Percent [Number of People]				
White	60% [196M]	41% [670K]	24% [1.4K]	0% 0
Black	12% [40M]	26% [436K]	5% [300]	0% 0
American Indian and Alaskan Native	0.6% [2.1M]	0.2% [3K]	0.0% [<100]	0.0% 0
Hispanic or Latino (white and nonwhite)	19% [63M]	27% [450K]	69% [4K]	0% 0
Other and Multiracial	9% [29M]	6% [91K]	1% [<100]	0% 0
Age By Percent [Number of People]				
Age 0 to 17 years	22% [74M]	24% [393K]	33% [2K]	0% 0
Age 18 to 64 years	62% [203M]	62% [1M]	58% [3.3K]	0% 0
Age ≥65 years	16% [53M]	14% [234K]	8% [500]	0% 0
Income by Percent [Number of People]				
Below Poverty Level	13% [42M]	17% [281K]	24% [1.3K]	0% 0

TABLE 14—WHOLE-FACILITY: WHOLE-FACILITY POST-CONTROL DEMOGRAPHICS FOR CMAS FACILITIES BY RISK LEVEL FOR POPULATIONS LIVING WITHIN 10 KM OF FACILITIES—Continued

Demographic group	Nationwide average for reference	Whole-facility post-control cancer risk for populations within 10 km of CMAS facilities		
		≥1-in-1 million	≥50-in-1 million	>100-in-1 million
Below 2x Poverty Level	30% [100M]	39% [637K]	45% [2.6K]	0% 0
Education by Percent [Number of People]				
Over 25 and without a High School Diploma	12% [38M]	16% [262K]	28% [1.6K]	0% 0
Linguistically Isolated by Percent [Number of People]				
Linguistically Isolated	5% [17M]	7% [109K]	11% [600]	0% 0

Notes:
- Nationwide population and demographic percentages are based on Census' 2016–2020 ACS 5-year block group averages. Total population count is based on 2020 Decennial Census block population.
- To avoid double counting, the ''Hispanic or Latino'' category is treated as a distinct demographic category. A person who identifies as Hispanic or Latino is counted as Hispanic or Latino, regardless of race.
- The number of facilities represents facilities with a cancer MIR above level indicated. When the MIR was located at a user assigned receptor at an individual residence and not at a census block centroid, we were unable to estimate population and demographics for that facility.
- The sum of individual populations with a demographic category may not add up to total due to rounding. K = Thousands, M = Millions.

3. CMAS NESHAP Community Demographics

As described in section II.E of this preamble and the document titled *Risk Assessment for the Chemical Manufacturing Area Source (CMAS) Source Categories in Support of the 2025 Technology Review for the Proposed Rule,* which is available in the docket for this rulemaking, we assessed the community risks as part of a discretionary risk assessment for 278 CMAS facilities.[61] The community risks include HAP emissions from all stationary point sources for which we have emissions data within 10 km of the CMAS facilities identified in section II.C.1 of this preamble. The following discussion of the community risk analysis is focused on post-control risks. This community demographic analysis characterizes the remaining risks communities face after implementation of the controls required in this proposal.

The community demographic analysis is an assessment of individual demographic groups in the total population living within 10 km (~6.2 miles) of the CMAS facilities. The community risk assessment and demographics were only conducted at the 10 km radius because, based on emissions from the CMAS categories, this distance includes 100 percent of the population with cancer risks greater than or equal to 50-in-1 million. The full results of the community demographic analysis are in the document titled *Analysis of Demographic Factors for Populations Living Near Chemical Manufacturing Area Source (CMAS) Facilities: Community-Based Assessment* which is available in the docket for this rulemaking.

The community demographic analysis post-control results are shown in table 15 of this preamble. The following discussion of the community demographic analysis is focused on the populations living within 10 km of the CMAS facilities with estimated community post-control cancer risks greater than or equal to 1-in-1 million, greater than or equal to 50-in-1 million, and greater than 100-in-1 million. The risk analysis indicated that all emissions from all facilities within 10 km of the CMAS facilities, after the reductions imposed by the proposed rule, expose a total of about 8 million people living around 242 facilities to a cancer risk greater than or equal to 1-in-1 million, 65,000 people living around 66 facilities to a cancer risk greater than or equal to 50-in-1 million, and about 1,900 people living around nine facilities to a cancer risk greater than 100-in-1 million.

When the CMAS community populations are compared to the CMAS categories populations in the post-control scenarios, we see 6.6 million additional people with cancer risks greater than or equal to 1-in-1 million, 61,000 additional people with cancer risks greater than or equal to 50-in-1 million, and 1,900 additional people with cancer risks greater than 100-in-1 million.

The demographic distribution of the community population with cancer risks greater than or equal to 1-in-1 million is similar to the category population and the whole-facility population with cancer risks greater than or equal to 1-in-1 million in the post-control scenario. Therefore, the community population with post-control cancer risks greater than or equal to 1-in-1 million has disproportionately high representation from Blacks, Hispanics and Latinos, people living below the poverty level, people living below two times the poverty level, those over 25 without a high school diploma, and those living in linguistic isolation.

The population with cancer risks greater than or equal to 50-in-1 million in the community analysis has a different demographic distribution than the source category population with cancer risks greater than or equal to 50-in-1 million in the post-control scenario. The percent of the population that is Black with risks greater than or equal to 50-in-1 million is lower for the community post-control analysis (19 percent) versus the category and whole-facility post-control analyses (26 percent). For the community post-control assessment, the percentage of the population with cancer risks greater than or equal to 50-in-1 million that is below the poverty level (13 percent) and below two times the poverty level (27 percent) is equal to or below their corresponding national averages (13 percent and 30 percent, respectively).

[61] See footnote 60.

The percentage of the population that is over 25 years old without a high school diploma (14 percent) is above the national average (12 percent) for community post-control population.

Based on results from the community emissions analysis, there are about 1,900 people with post-control cancer risks greater than 100-in-1 million. The CMAS categories emissions analysis indicated that there are no people with post-control cancer risks greater than 100-in-1 million. The increased cancer risk for most of these 1,900 people is driven largely by emissions of chromium VI from non-CMAS facilities within 10 km of CMAS facilities.

The percent of the population in the community analysis with post-control cancer risks greater than 100-in-1 million that is Black (15 percent) and Hispanic or Latino (21 percent) are above their corresponding national averages (12 percent and 19 percent, respectively). The percent of the population in the community analysis with a post control cancer risk greater than 100-in-1 million that is below the poverty level (14 percent) and below two times the poverty level (36 percent) are above their corresponding national averages (13 percent and 30 percent, respectively). The percent of the population in the community analysis with a post control cancer risk greater than 100-in-1 million that is over 25 years old without a high school diploma (21 percent) is above the national average (12 percent).

TABLE 15—COMMUNITY: COMMUNITY POST-CONTROL DEMOGRAPHICS FOR CMAS FACILITIES BY RISK LEVEL FOR POPULATIONS LIVING WITHIN 10 KM OF FACILITIES

Demographic group	Nationwide average for reference	Whole-facility post-control cancer risk for populations within 10 km of CMAS facilities		
		≥1-in-1 million	≥50-in-1 million	>100-in-1 million
Total Population	330M	8M	65K	2K
Number of Facilities		242	66	9
Race and Ethnicity by Percent [Number of People]				
White	60% [196M]	40% [3.2M]	49% [32K]	64% [1.2K]
Black	12% [40M]	22% [1.8M]	19% [12K]	15% [300]
American Indian and Alaskan Native	0.6% [2.1M]	0.2% [16K]	0.3% [200]	0.1% [<100]
Hispanic or Latino (white and nonwhite)	19% [63M]	30% [2.4M]	29% [19K]	21% [400]
Other and Multiracial	9% [29M]	8% [654K]	4% [2.5K]	1% [<100]
Age By Percent [Number of People]				
Age 0 to 17 years	22% [74M]	23% [1.9M]	25% [16K]	25% [500]
Age 18 to 64 years	62% [203M]	63% [5M]	64% [42K]	62% [1.2K]
Age ≥ 65 years	16% [53M]	14% [1.1M]	11% [7.4K]	13% [300]
Income by Percent [Number of People]				
Below Poverty Level	13% [42M]	18% [1.4M]	13% [8.6K]	14% [300]
Below 2x Poverty Level	30% [100M]	38% [3.1M]	27% [18K]	36% [700]
Education by Percent [Number of People]				
Over 25 and without a High School Diploma	12% [38M]	18% [1.4M]	14% [9.1K]	21% [400]
Linguistically Isolated by Percent [Number of People]				
Linguistically Isolated	5% [17M]	8% [598K]	5% [3.3K]	3% [<100]

Notes:

• Nationwide population and demographic percentages are based on Census' 2016–2020 ACS 5-year block group averages. Total population count is based on 2020 Decennial Census block population.

• To avoid double counting, the "Hispanic or Latino" category is treated as a distinct demographic category. A person who identifies as Hispanic or Latino is counted as Hispanic or Latino, regardless of race.

• The number of facilities represents facilities with a cancer MIR above level indicated. When the MIR was located at a user assigned receptor at an individual residence and not at a census block centroid, we were unable to estimate population and demographics for that facility.

• The sum of individual populations with a demographic category may not add up to total due to rounding. K = Thousands, M = Millions.

G. What analysis of children's environmental health did we conduct?

This action proposes to reduce HAP emissions including those emissions from EtO. In addition, the EPA's policy on Children's Health [62] also applies to this action. Accordingly, we have evaluated the environmental health or safety effects of EtO emissions and exposures on children.

Because EtO is mutagenic (*i.e.,* it can act directly on deoxyribonucleic acid and cause chromosome damage), children are expected to be more susceptible to its harmful effects. To take this into account, as part of the risk assessment performed in supported of this rulemaking, the EPA followed its guidelines [63] and applied age-dependent adjustment factors (ADAFs) to the inhalation unit risk estimate for childhood exposures (from birth up to 16 years of age). With the ADAF applied to account for greater susceptibility of children, the adjusted EtO inhalation unit risk estimate is 5×10^{-3} per µg/m³. It should be noted that because EtO is mutagenic, the associated emission reductions proposed in this preamble will be particularly beneficial to children. The results of the risk assessment are contained in section II.E of this preamble and further documented in the risk report *Risk Assessment for the Chemical Manufacturing Area Source (CMAS) Source Category in Support of the 2025 Technology Review for the Proposed Rule* which is available in the docket for this rulemaking.

VI. Request for Comments

We solicit comments on all aspects of this proposed action. In addition to general comments on this proposed action, we are also interested in additional data that may improve the risk assessments, economic impact analysis, and other analyses including our assumptions and estimates discussed in sections IV.A through IV.C of this preamble. We are specifically interested in receiving any information and data regarding developments, limitations, or related general considerations in practices, processes, and control technologies that reduce HAP emissions. We solicit comment on the effectiveness of these proposed requirements on reducing ethylene oxide emissions, any capital and annual costs that we did not account for, the time that is needed to come into compliance with the proposed requirements, or any other potential barriers to or impacts of imposing these requirements. We request comment on additional information on costs, emissions, product recovery, and potential broader impacts to markets including impacts small businesses and entities. We request comment on how to address the non-monetized costs and benefits of the proposed rule. We request estimates of any potential loss of production while bringing facilities into compliance and forgone returns due to displaced investment.

We are requesting comments and data on risks and impacts (both direct and indirect) of these proposed requirements on specific critical industries such as production of active pharmaceutical ingredients. We are interested in comments and data around the extent of the costs of compliance with the proposed rule to manufacturers of pharmaceuticals or other critical medical products, including any potential impacts to the public health industrial base, drug shortages, or other supply chain issues. We are also interested in proposals for alternative mitigation strategies or technologies.

We request comment on data, methods, and approaches to monetize non-fatal cancer, non-cancer health effects, and other benefits of reducing exposure to ethylene oxide and other table 1 HAP.

In addition, we are requesting comment and data on if more frequent heat exchange system monitoring periods, namely continued monthly monitoring and/or weekly monitoring, are appropriate for CMAS (see section IV.A.2 of this preamble). As mentioned in section IV.C.3 of this preamble, we also request comment and data on whether the removal of the TRE concept is feasible for CMAS facilities. With respect to design evaluations and engineering assessments, we are soliciting comment and data on whether they are appropriate for demonstrating compliance for certain APCDs. Also, we are soliciting comment on whether an alternative compliance timeline for the EtO requirements, as discussed in section IV.E.1 of this preamble is appropriate.

VII. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *https://www.epa.gov/laws-regulations/laws-and-executive-orders.*

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 14094: Modernizing Regulatory Review

This action is a ''significant regulatory action'' as defined in Executive Order 12866, as amended by Executive Order 14094. Accordingly, the EPA submitted this action to the OMB for Executive Order 12866 review. Documentation of any changes made in response to the Executive Order 12866 review is available in the docket. The EPA conducted an economic impact analysis for this proposal in a document titled *Economic Impact Analysis,* which is available in the docket for this action.

B. Paperwork Reduction Act (PRA)

The information collection activities in this proposed rule have been submitted for approval to the OMB under the PRA. The Information Collection Request (ICR) document that the EPA prepared has been assigned EPA ICR number 2323.09. You can find a copy of the ICR in the docket for this rulemaking, and it is briefly summarized here.

The EPA is proposing amendments to the CMAS NESHAP that revise provisions pertaining to emissions from PRDs, pressure vessels, heat exchange systems, and equipment leaks. The EPA is also proposing requirements pertaining to EtO emissions from process vents, storage vessels, heat exchange systems, equipment leaks, and wastewater. In addition, the EPA is proposing amendments to the NESHAP for CMAS that revise provisions pertaining to emissions during periods of SSM, add requirements for electronic reporting of periodic reports and performance test results, fenceline monitoring, and make other minor clarifications and corrections. This information will be collected to ensure compliance with the CMAS NESHAP.

Respondents/affected entities: Owners or operators of CMAS facilities.

Respondent's obligation to respond: Mandatory (40 CFR part 63, subpart VVVVVV).

Estimated number of respondents: 280.

Frequency of response: Initially, quarterly, and semiannually.

Total estimated burden: Average annual recordkeeping and reporting burden is 25,300 hours (per year) to comply with the proposed amendments in the CMAS NESHAP. Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: Average annual cost is $25,500,000 (per year) which includes $23,000,000 annualized capital and operations and maintenance costs,

[62] Children's Health Policy available at: *https://www.epa.gov/children/childrens-health-policy-and-plan.*

[63] U.S. EPA. 2005. *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens.* U.S. EPA, Washington, DC, EPA/630/R–03/003F. *https://www.epa.gov/sites/default/files/201309/documents/childrens_supplement_final.pdf.*

to comply with the proposed amendments in the CMAS NESHAP.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9.

Submit your comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden to the EPA using the docket identified at the beginning of this rulemaking. The EPA will respond to any ICR-related comments in the final rule. You may also send your ICR-related comments to OMB's Office of Information and Regulatory Affairs using the interface at *https://www.reginfo.gov/public/do/PRAMain.* Find this particular information collection by selecting ''Currently under Review—Open for Public Comments'' or by using the search function. OMB must receive comments no later than February 21, 2025.

C. Regulatory Flexibility Act (RFA)

I certify that the proposed rule in this action will not have a significant economic impact on a substantial number of small entities under the RFA. The small entities subject to the requirements of this action are small businesses within the CMAS categories. The Agency has determined that the 58 small entities affected by this action may experience an average impact of total annual costs being 0.32 percent of their annual revenues, not including product recovery, or 0.29 percent on average when product recovery from compliance is included. Five of these 58 small entities are estimated to experience total annual costs above one percent of annual revenues when not including product recovery (three small entities when product recovery is included), and one small entity had estimated annual costs exceeding three percent of annual revenues regardless of whether product recovery is included. The percentage of impacted small entities estimated to experience total annual costs greater than one or three percent of their annual revenues is small and therefore this action will not have significant impacts on a substantial number of small entities. Details of the analysis for the proposed rule are presented in the document titled *Economic Impact Analysis,* which is available in the docket for this action.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. The costs involved in this action are estimated not to exceed $183 million in 2023$ ($100 million in 1995$ adjusted for inflation using the GDP implicit price deflator) or more in any one year.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the National Government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Tribal Governments

This action has tribal implications. However, it will neither impose substantial direct compliance costs on federally recognized Tribal governments, nor preempt tribal law. We have identified two facilities located on Tribal lands that will potentially be impacted by this rulemaking, one of which emits EtO. Consistent with the EPA Policy on Coordination and Consultation with Indian Tribes, the EPA will provide tribal officials the opportunity to provide meaningful and timely input early in the development of this action through multiple outreach activities such as Tribal partnership calls, webinars, and offers for government-to-government consultation with potentially impacted Tribes and other Tribes as requested.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045 directs federal agencies to include an evaluation of the health and safety effects of the planned regulation on children in federal health and safety standards and explain why the regulation is preferable to potentially effective and reasonably feasible alternatives. This action is not subject to Executive Order 13045 because it is not a significant regulatory action under section 3(f)(1) of Executive Order 12866, though the EPA believes the safety risks addressed by this action do present a disproportionate risk to children. This action's assessments of potential impacts to human health are contained in section II.E of this preamble and in greater detail in the document titled *Risk Assessment for the Chemical Manufacturing Area Source (CMAS) Source Categories in Support of the 2025 Technology Review for the Proposed Rule,* which is available in the docket for this rulemaking. In addition, the EPA's *Policy on Children's Health* applies to this action. Information on how the Policy was applied is available in section V.G of this preamble.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not a ''significant energy action'' because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The overall economic impact of this proposed rule should be minimal for CMAS and their parent companies (which are engaged in the energy sector).

I. National Technology Transfer and Advancement Act (NTTAA) and 1 CFR Part 51

This proposed action involves technical standards. Therefore, the EPA conducted searches for the CMAS NESHAP through the Enhanced National Standards Systems Network Database managed by the American National Standards Institute. We also conducted a review of voluntary consensus standards (VCS) organizations and accessed and searched their databases. We conducted searches for EPA Methods 5, 5D, 21, and 29 of 40 CFR part 60, appendix A. During the EPA's VCS search, if the title or abstract (if provided) of the VCS described technical sampling and analytical procedures that are similar to the EPA's reference method, the EPA ordered a copy of the standard and reviewed it as a potential equivalent method. We reviewed all potential standards to determine the practicality of the VCS for this rulemaking. This review requires significant method validation data that meet the requirements of EPA Method 301 for accepting alternative methods or scientific, engineering, and policy equivalence to procedures in the EPA reference methods. The EPA may reconsider determinations of impracticality when additional information is available for particular VCS.

We did not identify any applicable voluntary consensus standards for EPA Methods 5D and 21. However, the EPA proposes to incorporate by reference VCS ASTM D6784–24, ''Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury Gas Generated from Coal-Fired Stationary

Sources (Ontario Hydro Method)'' as an acceptable alternative to EPA Method 29 (referenced in the CMAS NESHAP at 40 CFR 63.11496(f)(3)(iii)) with the following caveats. This ASTM procedure has been approved by the EPA as an alternative to EPA Method 29 only when the target compound is mercury; and applies to concentrations approximately 0.5 to 100 μg/m^3. This test method was developed initially for the measurement of mercury in coal-fired power plants; however, it has also been extensively used on other stationary combustion sources including sources having a flue gas composition with high levels of hydrochloric acid and low levels of sulfur dioxide. The test method includes equipment and procedures for obtaining samples from effluent ducts and stacks, equipment and procedures for laboratory analysis, and procedures for calculating results of elemental, oxidized, particle-bound, and total mercury emissions. ASTM D6784–24 is available at ASTM International, 1850 M Street NW, Suite 1030, Washington, DC 20036. See *https://www.astm.org/.* The standard is available to everyone at a cost determined by the ASTM ($90). The ASTM also offers memberships or subscriptions that allow unlimited access to their methods. The cost of obtaining these methods is not a significant financial burden, making the methods reasonably available to stakeholders.

While the EPA identified 7 other VCS as being potentially applicable, the Agency decided not to use them because these methods are impractical as alternatives because of the lack of equivalency, documentation, validation data and other important technical and policy considerations. The EPA documented the search and review results in the document titled *Voluntary Consensus Standard Results for Technology Review of the National Emissions Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources,* which is available in the docket for this rulemaking. Additional information for the VCS search and determinations can be found in this document. The EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially applicable VCS and to explain why such standards should be used in this regulation.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations and Executive Order 14096: Revitalizing Our Nation's Commitment to Environmental Justice for All

The EPA believes that the human health or environmental conditions that exist prior to this action result in or have the potential to result in disproportionate and adverse human health or environmental effects on communities with EJ concerns. For this rulemaking, we conducted a proximity demographic analysis as well as baseline and post-control demographic risk analyses for the source category and whole facility. The analysis identified that 33.7 million people live within 10 km of the 247 CMAS facilities analyzed. The percent of the population living within 10 km of the CMAS facilities is above the corresponding national average for the following demographic groups: Black, Hispanic or Latino, Other/Multiracial, people living below the poverty level, people living below two times the poverty level, people over the age of 25 without a high school diploma, and linguistic isolation. More details on this analysis are provided in section V.F.1 of this preamble.

For existing sources, the EPA believes that this action is likely to reduce existing disproportionate and adverse effects on communities with EJ concerns. Groups experiencing baseline disparities are expected to see reduced exposures due to the proposed level of control for those processes emitting EtO and proposed management practices to control fugitive emissions from sources of HAP. In addition, this action proposes fenceline monitoring for EtO to ensure proper function of those management practices. If the proposed changes are implemented, we expect no people would be exposed to cancer risk levels greater than 100-in-1 million due to emissions from the CMAS categories. However, for individuals exposed to cancer risk less than 100-in-1 million, disparities remain in the proportion of different groups facing elevated risk. The controls proposed for this action do not reduce the risk of noncancer health impacts and thus the disparities remain the same. For more information on the controls proposed in this action, please refer to sections IV.A through IV.D of this preamble.

For new sources, the EPA believes that it is not practicable to assess whether this action is likely to result in new disproportionate and adverse effects on communities with EJ concerns, because it is not possible to know the location of any future new sources.

The information supporting this Executive Order review is contained in section V.F of this preamble.

List of Subjects in 40 CFR Part 63

Environmental protection, Air pollution control, Hazardous substances, Incorporation by reference, Reporting and recordkeeping requirements.

Jane Nishida,

Acting Administrator.

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