NESHAP: Group I Polymers and Resins

Key Issues with Proposed Revisions to CAA §112(d) Standards for Two Source Categories:

- Ethylene Propylene Rubber
- Butyl Rubber

OMB Meeting
MARCH 17, 2011

Why We Are Here

- **Requesting OMB review of EPA policy decisions and cost analysis that led to an unnecessary proposed rule with substantial costs and minimal/no benefits**
- **Actions not legally required**
- **Requesting EPA to separate the Ethylene Propylene Rubber and Butyl Rubber (EPR/BR) source categories from those subject to a consent decree deadline**
  - EPR: includes ExxonMobil Baton Rouge facilities
  - BR: only 2 sources in U.S. -- ExxonMobil Baton Rouge, LA (Halobutyl subcategory) and ExxonMobil Baytown, TX (Butyl Rubber subcategory)
  - Conduct careful analysis – no issuance in March/April 2011
- **Requesting EPA to reconsider the proposal for significant new controls**
  - Unnecessary since EPA found no cancer-causing emissions and low Hazard Index values; no further controls required under Section 112(f) risk review
  - Proposed controls not cost-effective: key deficiencies in EPA estimates; current capital cost estimate \$60-\$70 million for ExxonMobil facilities; > 10x EPA estimate
  - Any emission limits must reflect variability and consider startup/shutdowns

Proposal inconsistent with stated goals of regulatory review and reform

Business Background

Ethylene Propylene Rubber

- Rubber products: automotive (e.g., hoses, belts), construction (e.g., wire and cable insulation), durable goods (e.g., hoses, gaskets)
- U.S. producing sites has declined from 7 to 5 in recent years (4 major producers)
- Growth 3% year; majority in Asia
- New business investments primarily in Asia (Singapore, China, Korea)
- Cost-competitive assets in emerging regions creating supply cost competitive challenges for U.S./European suppliers

Butyl Rubber

- Synthetic rubber for tires
- Two U.S. manufacturing facilities (ExxonMobil)
- Growth 4% year; majority in Asia
- New business entrants (China) creating added supply cost competitive challenges for U.S/European suppliers

Timeline

1996

Final P&R 1 MACT

2007

Proposed Residual Risk and Technology Review (RTR)

- Included EPR and BR source categories
- 4 commenters; no ENGO comments

2008

Final RTR Rule

- No (f)(2) standard; no (d)(6) revision
- **Not challenged**
- EPR/BR found to emit "no HAP that are known, probable, or possible carcinogens."
- 0.5 or less Hazard Index

2009

Sierra Club filed deadline suit not covering EPR/BR (only addressed P&R 1 source categories not covered by 2008 final rule); 2010 settlement excluded EPR/BR rulemaking deadlines

2010

Proposed rule for multiple source categories subject to consent decree plus unprecedented reopening of existing standards to impose extensive new control requirements under CAA §§ 112(d)(2&3)

EPA Obligations: Consent Decree Final Rule Dates

Marine Tank Vessel Loading Operations

Pharmaceutical

Printing and Publishing

Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

Steel Pickling-HCl Process Facilities and Hydrochloric Acid Regeneration Plants

Group 1 Polymers and Resins

1. Epichlorohydrin Elastomers
2. Hypalon™
3. Nitrile Butadiene Rubber
4. Polybutadiene Rubber
5. Styrene Butadiene Rubber and Latex

6. **Ethylene Propylene Rubber**
7. **Butyl Rubber**
8. Polysulfide Rubber
9. Neoprene

← March 31, 2011 →

← June 30, 2011 →

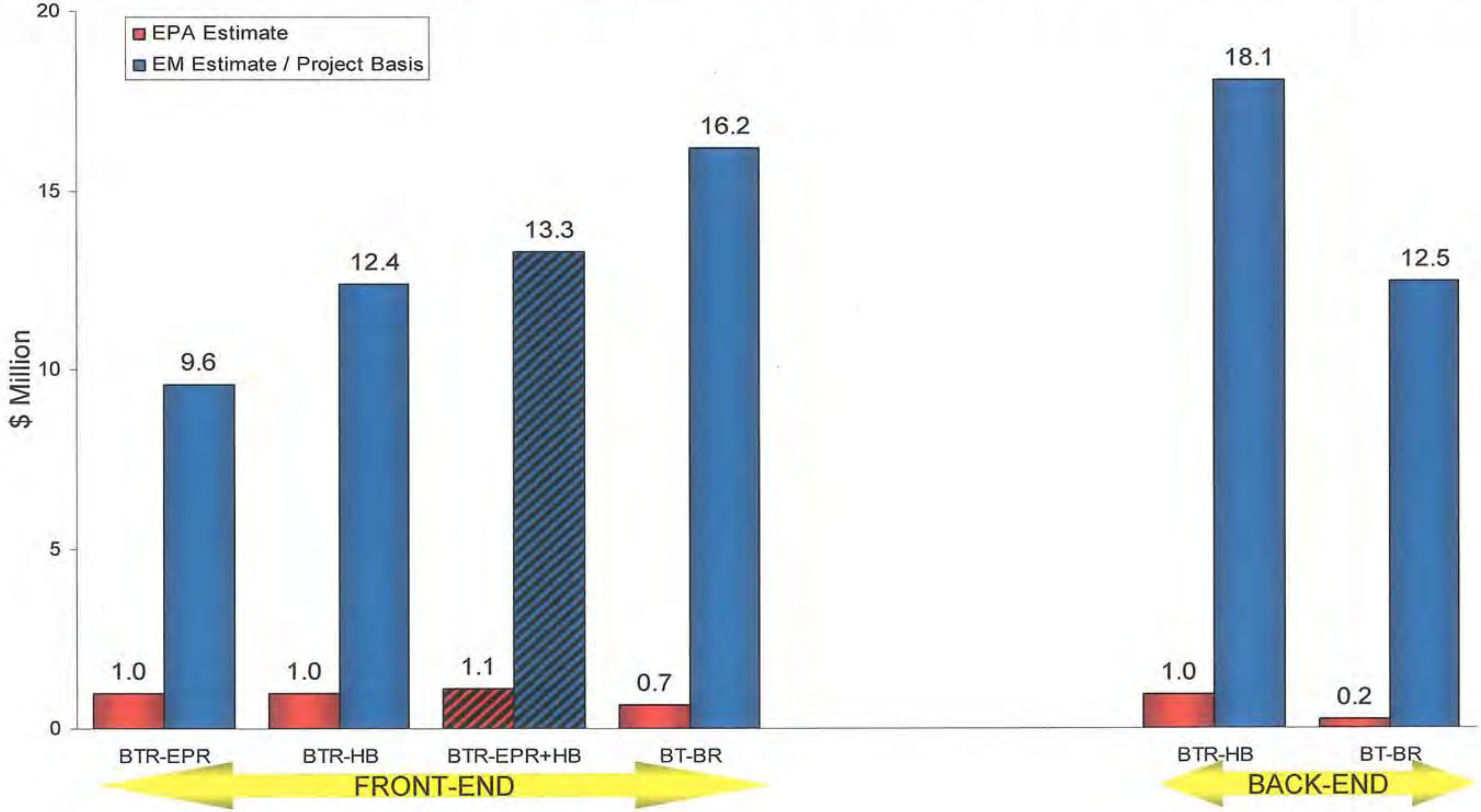
← **No Obligation** →

Consent Decree Final Rule Date

Proposed Revisions Not Required

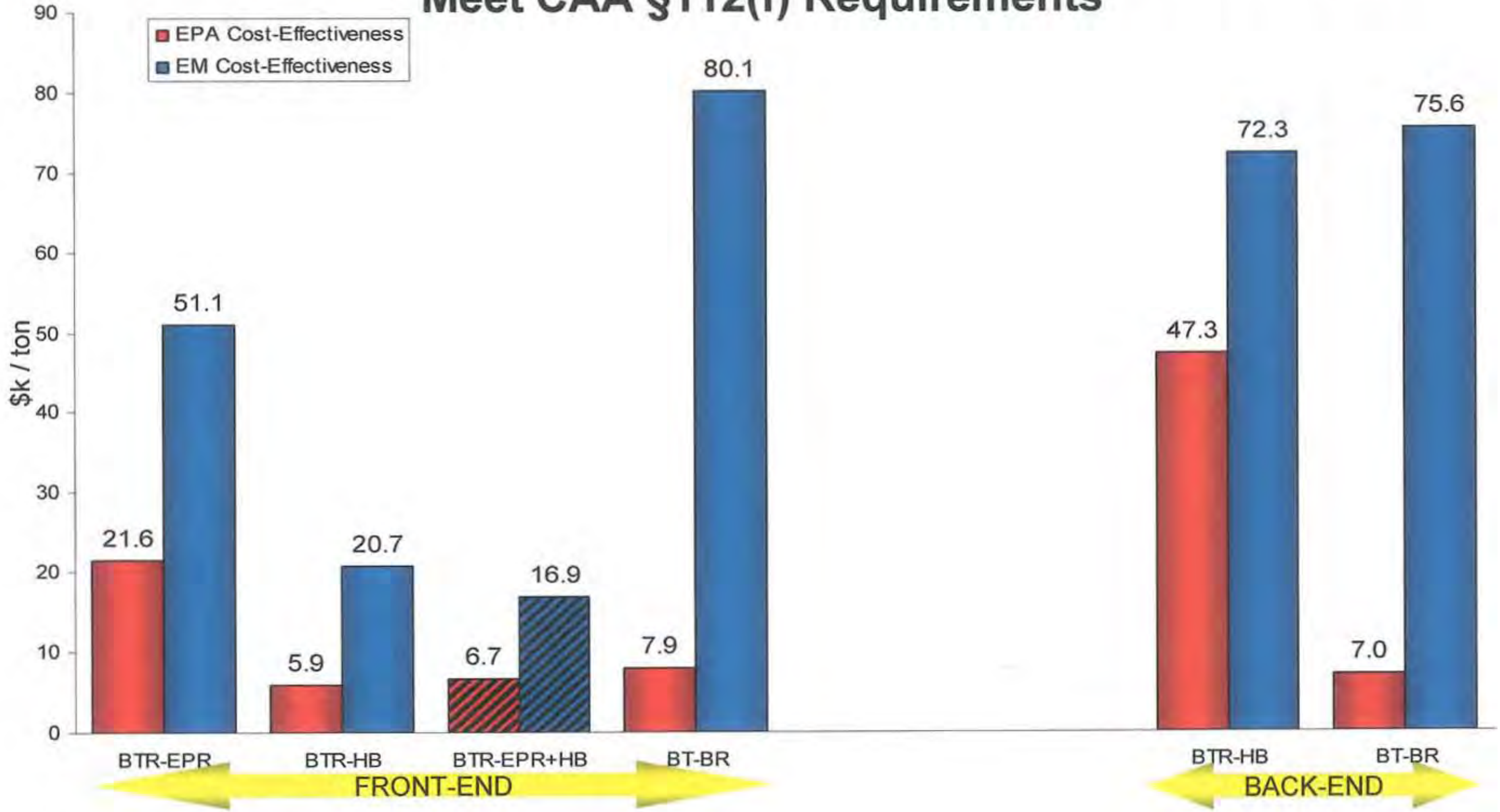
- EPR and BR standards not subject to court-ordered deadline
- EPR/BR MACT and RTR were not challenged
  - Cases regarding other MACTs (e.g., Brick MACT) do not require EPA to reopen this standard
    - Brick MACT decision issued nearly 2 years prior to EPA EPR/BR RTR decision
  - §§ 112(d)(2 & 3) don't authorize EPA to re-write standards for emission points actively reviewed when the original MACT was issued
  - In 1996, EPA decided beyond-the-floor controls were not cost-effective
- Section 112(d)(6) provides the only mechanism for revisiting standards
  - EPA completed a 112(d)(6) review in 2008 and determined that there were no new cost-effective controls
  - That review was not challenged; nothing has changed to support a different result
- Section 112(f) has been satisfied
  - Control for the sake of control not contemplated by the statute
- No legal/economic basis to combine source categories in order to justify control costs
- EPA must consider variability in establishing emission standards

$60 - $70 Million in Capital Costs for Controls/Equipment



Key:
BTR – Baton Rouge
BT – Baytown
EPR – Ethylene Propylene Rubber
HB – Halobutyl Rubber
BR – Butyl Rubber

Controls Not Cost-Effective, Particularly Considering Categories Meet CAA §112(f) Requirements



Key:
BTR – Baton Rouge
BT – Baytown
EPR – Ethylene Propylene Rubber
HB – Halobutyl Rubber
BR – Butyl Rubber

EPA's Cost Analysis Has Major Deficiencies

- Based on new plant; fails to include significant retrofit costs
  - Oxidizer location, associated ducting, structural steel supports for overhead locations
  - Inefficiencies/added costs associated with working in an operating unit/confined spaces
  - Minimizing process outages for tying-in, constructing new facilities
  - Dismantling of existing facilities to allow installation of new facilities
  - Limited utilities availability
  - Extensive additional detailed engineering associated with retrofits
- Fails to include extensive ducting, other auxiliary equipment (e.g., caustic storage drum, heat exchangers)
- Uses total capital investment factor of only 1.25-2.20 applied to purchased equipment; ExxonMobil experience indicates a ratio of 4 to 5 is appropriate
- Significantly understates indirect costs for engineering, construction supervision, construction equipment and other field expenses
- ExxonMobil estimate based on efficient regenerative thermal oxidizers for back-end vents; EPA-selected inefficient technology

Basis for ExxonMobil's Cost Estimates

- Invested significant resources to develop site-specific estimates using tools, methods and data continuously improved for over 30 years
  - Cost estimators worked closely with site technical contacts to develop project basis, including equipment location, stream characterizations, structural modifications, project scope
  - Cost analysis included site visits and review of support systems (e.g. wastewater, electricity) and access/congestion issues
  - Major equipment quotes received from third party contractors for control equipment and ductwork
  - Other direct cost items (e.g., pumps, piping, instrumentation, foundations) estimated using ExxonMobil estimating methods
  - Project management costs based on ExxonMobil experience; contingency added consistent with experience for projects in the development stage
  - ExxonMobil global cost databases are updated twice a year based on actual purchase orders, contracts, project experience and contractor and subcontractor surveys
- ExxonMobil has experience in the cost of installation and operation of regenerative thermal oxidizers at many locations
  - Past project costs for RTOs are in the $7M to $14M range (excluding project services costs)
- Invitation extended and pending for ExxonMobil and EPA cost estimators to meet and discuss differences

EPA cost estimate fundamentally deficient; must consider site-specific estimates with such small source categories

Proposal Factually and Legally Flawed

- **EPA failed to explain how its cost-effectiveness determination in 1996, which rejected these controls, should now be abandoned**
  - 1996 rule determined that beyond-the-floor halogen controls for continuous front-end process vents were not cost-effective; combustion (flare) is the floor
  - The proposed front-end and back-end beyond-the-floor controls are not cost-effective or justified under 112(f)
    - The cost-effectiveness for the proposed halogenated continuous front-end process vent control requirements ranges from $21,000/ton to $80,000/ton of HCl
    - The cost-effectiveness for the proposed back-end control requirements is over $70,000/ton of organic HAP

- **Source categories inappropriately combined at Baton Rouge to justify control costs**
  - Proposed beyond-the-floor determination for halogenated front-end process vents at the Baton Rouge EPR Unit inconsistent with Act since it is based on sharing controls with the co-located Halobutyl Unit from a different source category
  - Approach inconsistent with maintaining facility operating flexibility and how controls would be implemented
    - Sharing controls negatively affects business operation and maintenance of two distinct businesses

Any Emission Standards Must Reflect Actual Performance and Variability

- Proposed standards based on only 1 year of emission data; the D.C. Circuit acknowledged that data from more adverse operating conditions can inform the basis of a standard
  - Emissions for the year reported (for Halobutyl) were among lowest in the time period
  - Site could not have met proposed limit in 4 of the last 5 years
  - Proposed limit does not represent the current floor or the future capability of the unit
- Data show emissions per unit of production has varied by 43%
  - Factors impacting emissions include production, grade slate, operating and weather conditions, process reliability and control device/service factor.

Butyl Rubber Back-end Floor Analysis Summary
n-hexane, Tons

	Baytown Butyl	Baton Rouge Halobutyl
Basis for floor	43.01	59.98
Variability adjustment (43% minimum)	18.49	25.79
Floor emission limit	61.5	85.8

Note: Final production-based limit should be based on production data provided

Conclusion

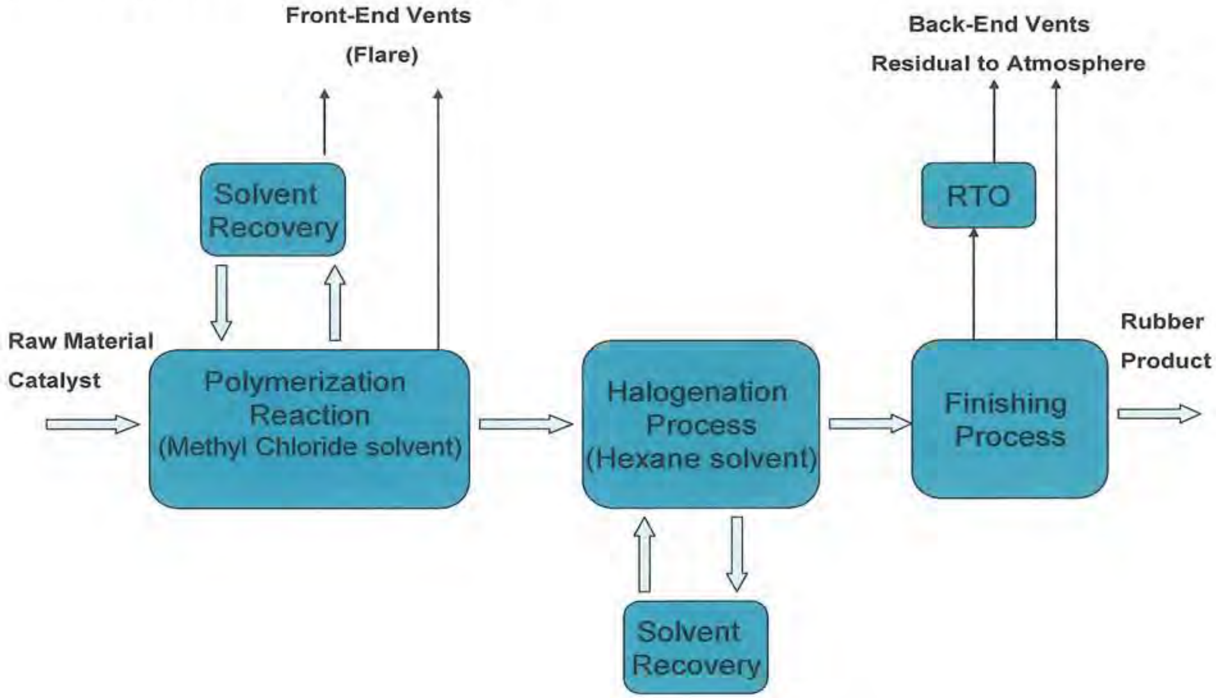
- **EPA should defer action on the EPR and BR source categories since there are so many significant issues to be addressed**
  - EPA has no legal obligation to act now
  - EPA should take time to perform a careful analysis of the cost, variability, and other data and comments
  - Meet with ExxonMobil cost estimators to review EPA cost estimate deficiencies in detail
  - Failing to do so will likely result in a rule that is not supported by the record
- **A careful analysis will yield a final decision that:**
  - No additional controls are justified under Section 112(d)
    - No developments under 112(d)(6) to justify new controls
    - Under Sections 112(d)(2 & 3) there are no additional cost-effective controls based on the data provided during the comment period
  - Any emission limits set must reflect variability and consider startup/shutdown periods

Appendix

- Overview of ExxonMobil Operations
- Other Key Issues

Overview of ExxonMobil Operations

- ExxonMobil facilities subject to the proposed rule:
  - Baton Rouge Chemical Plant Halobutyl and EPR units
  - Baton Rouge Plastics Plant "Line G" EPR unit
  - Baytown Chemical Plant Butyl unit
- Baton Rouge Halobutyl Unit



BRCP Halobutyl Production Facility

Other Key Issues

- The Butyl Rubber source category subcategories should be redefined to reflect current process differences
  - The Baytown unit is now also in the Halobutyl Rubber subcategory
  - Basic process and emission differences warrant continuing segregation into two separate subcategories; alternatively the rule necessitates reproprosal and new beyond-the floor analysis
- EPA should propose a separate standard for periods of startup and shutdown
- Regular maintenance of Regenerative Thermal Oxidizers (RTOs) is required to achieve 98% organic HAP destruction (the removal percentage assumed by the proposal)
- A front-end control device maintenance allowance should also be addressed

Note: Detailed comments on these, and numerous other technical and regulatory issues, are included in the ExxonMobil comment package

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Chemical

December 6, 2010

Comments on EPA's Proposed Rule:
NESHAP for Group I Polymers and Resins;
Residual Risk and Technology Reviews
75 Fed. Reg. 65068 (October 21, 2010)

Via Electronic Filing: a-and-r-docket@epa.gov

EPA Docket Center, EPA West (Air Docket)
U.S. Environmental Protection Agency
Mailcode: 2822T
1200 Pennsylvania Ave., NW
Washington, DC 20460

Attention: Docket ID No. EPA-HQ-OAR-2010-0600

Dear Sir or Madam:

ExxonMobil appreciates the opportunity to submit comments on the Environmental Protection Agency's (EPA or the Agency) October 21, 2010 proposed rule on "National Emission Standards for Hazardous Air Pollutant Emissions: Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks; Group I Polymers and Resins; Marine Tank Vessel Loading Operations: Pharmaceuticals Production; The Printing and Publishing Industry; and Steel Pickling-HCl Process Facilities and Hydrochloric Acid Regeneration Plants". Our comments focus on the Group I Polymers and Resins NESHAP (P&R1) source category requirements as well as the policy issues relating to residual risk and technology reviews that were included in the preamble.

ExxonMobil is a major integrated energy company with exploration, production, refining, transportation, marketing and chemical operations. The proposed rule will apply to four ExxonMobil units at three facilities in Louisiana and Texas and will have a potentially substantive impact on three of the units. These facilities are in the Butyl Rubber and Ethylene Propylene Rubber (EPR) source categories. In addition, the policy issues included in the preamble will impact other ExxonMobil facilities that will be affected by future rulemakings related to the residual risk and technology reviews.

ExxonMobil has also been involved in the development of comments from other trade organizations, including:

- International Institute of Synthetic Rubber Producers, Inc. (IISRP)
- Residual Risk Coalition
- American Petroleum Institute (including comments on the Marine Tank Vessel Loading Operations NESHAP)

We incorporate comments from these organizations into ExxonMobil comments by reference.

Our key comments on the proposed rule are summarized as follows:

Basis for rulemaking

- Requiring the installation of additional emission controls, where the Agency has already determined that source emissions are at an acceptable risk level, is not sound regulatory policy.

- EPA is without authority to impose new standards under Clean Air Act §§ 112(d)(2) and (d)(3) for emission sources in source categories for which a MACT standard already has been promulgated – § 112(d)(6) provides the Agency's only authority to adjust existing MACT standards.

- EPA already made the decision that beyond-the-floor controls were not cost-effective in the 1996 rulemaking. EPA has no authority and no grounds to perform a second § 112(d)(2) analysis and has provided no rationale as to why that analysis is deficient or no longer applicable.

- EPA does not have the legal authority to justify beyond-the-floor controls in one source category by combining the source category with controls that are calculated to be cost-effective for another source category. Decisions are made on a source category by source category basis.

- EPA's analysis, based on combining the Butyl Rubber (Halobutyl subcategory) and EPR source categories to justify beyond-the- floor front-end controls, is inconsistent with maintaining facility operating flexibility and how controls would be implemented.

Establishing emission standards

- EPA's proposed emission limits for back-end Baton Rouge Halobutyl Rubber and Baytown Butyl Rubber process vents require further modification to reflect actual emissions performance and variability.

- EPA must recognize that maintenance of regenerative thermal oxidizers (RTOs) is required to achieve 98% organic HAP destruction.

- The proposed front-end beyond-the-floor controls for Baton Rouge Halobutyl Rubber, Baton Rouge EPR, and Baytown Butyl Rubber are not cost-effective and should not be finalized. EPA significantly underestimated the cost of controls.

- The proposed back-end beyond-the-floor controls for Baytown Butyl Rubber are not cost-effective, and a further analysis of back-end beyond-the-floor controls for Baton Rouge Halobutyl Rubber confirms EPA's decision to not require additional controls. EPA significantly underestimated the cost of controls.

- The Butyl Rubber source category subcategories should be redefined to reflect the current process differences.

- EPA needs to clarify the definition of back-end process vents to avoid confusion and to remove operations that are already regulated under P&R1 (40 CFR part 63 subpart U).

- EPA should revise the proposed rule to remove the requirement for halogen control for Group 2 continuous front-end process vents.

Compliance/other

- EPA should provide 4 years to comply with emission limits that require capital investment to install controls; the automatic one-year extension should be incorporated into the final rule. EPA should also allow four years for compliance even when the emission limit for the floor is based on current operation and no beyond-the floor controls were proposed.

- EPA should clarify, in the absence of allowing four years as recommended above, that for emission limits not requiring controls the first compliance demonstration is 2 years (24 months) following the date of the final rule.

- Since there is no consent decree deadline for finalizing any rule related to the Butyl Rubber and EPR source categories, EPA should take the appropriate time to thoroughly review the comments submitted and reassess the cost-effectiveness determinations.

Startup/Shutdown/Malfunction (SSM) provisions

- EPA has misread the *Sierra Club v. EPA* court decision, which does not require the imposition of a single emission standard to all emissions; the decision merely requires that some standard to limit emissions applies at all times.

- EPA should propose a separate emission limit or apply work practice standards during periods of SSM to appropriately recognize the operating and emission differences during these periods.

- The proposed affirmative defense is not a substitute for setting emission standards for SSM periods.

- The proposed affirmative defense as written is unreasonable and impracticable.

Residual Risk and Technology Reviews

- ExxonMobil supports EPA's conclusion that no further residual risk (§ 112(f)) or technology review (§ 112(d)(6)) is required for the Butyl Rubber and EPR source categories; the previously finalized analysis reached the appropriate conclusion.

- EPA's risk analysis for the Butyl Rubber and EPR source categories indicates that all facilities are low risk; EPA should delist the Butyl Rubber and EPR source categories under § 112(c)(9) and has the legal authority to do so.

- On residual risk and technology review policy and future rulemaking:

  - Continuing implementation of residual risk and technology reviews should be consistent with the HON court decision.
  - Risk assessments should be based on source category actual emissions.
  - EPA should not expand the health information metrics beyond those already evaluated.
  - In addition to the health risk metrics already established, EPA should include central tendency or most expected risk to better communicate the conservative nature of EPA risk assessments.
  - Residual risk under § 112(f)(2) should inform the § 112(d)(6) technology review decision; a review under § 112(d)(6) is not required if the post-MACT emission levels result in risks that are deemed to be protective of public health with an ample margin of safety.

Attached are our detailed comments. In addition, ExxonMobil is separately submitting additional process and cost information under a claim of Confidential Business Information. This information provides additional support to the attached comments and is referenced as the "CBI letter".

Respectfully submitted,

Robert J. Morehouse
Downstream and Chemical SH&E

Attachment

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Mr. Randy McDonald
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Table of Contents

ExxonMobil Comments on EPA's Proposed Rule on National Emission Standards for Hazardous Air Pollutants - Group I Polymers and Resins; Residual Risk and Technology Reviews

I. Background On ExxonMobil Businesses Impacted By The Proposed Rule 1

II. Source Category And Subcategory Issues 3

III. Applicability Issues 5

IV. Basis for Establishing the Floor and the Proposed Emission Limitations 8

V. Basis for Beyond-The-Floor Decisions 16

VI. Emission Control Cost 28

VII. Compliance Time 39

VIII. Startup/Shutdown/Malfunction and Affirmative Defense 41

IX. Other Comments and Edits 54

X. Residual Risk and Technology Review: Butyl Rubber And EPR Source Categories 58

XI. EPA Policy On Residual Risk And Technology Reviews 62

ExxonMobil Comments on EPA's Proposed Rule on National Emission Standards for Hazardous Air Pollutants - Group I Polymers and Resins; Residual Risk and Technology Reviews

October 21, 2010
75 Fed. Reg. 65068

I. Background on ExxonMobil Businesses Impacted by the Proposed Rule

ExxonMobil Chemical is a major petrochemical company with manufacturing, technology and marketing operations around the world. The company's broad range of petrochemical and polymer products provide the building blocks for a wide range of products, ranging from packaging materials and plastic bottles to automobile bumpers, synthetic rubber, solvents and countless consumer goods. Major petrochemical products include: polyethylene, polypropylene, Butyl polymers, polymer modifiers, specialty elastomers, tackifying resins, hydrocarbon and oxygenated fluids, plasticizers, synthetic fluids and lubricant basestocks, chemical intermediates, and films.

ExxonMobil, like other companies, manages product lines as separate businesses. The individual businesses develop strategies, product plans, and investment plans, and each business is responsible for the financial stewardship of costs and profitability. A key activity is to assess cost-competitiveness as our major businesses have worldwide competition. Adding significant capital cost to U.S. businesses, with no investment return, reduces international competitiveness.

A. Butyl Rubber

ExxonMobil Chemical has been at the forefront of technology and innovation in the rubber industry since inventing and patenting Butyl rubber in 1937. The company markets high-quality synthetic rubber worldwide and is a global leader in Butyl technology, services and products for tires and other rubber products.

Butyl rubber is a worldwide business. ExxonMobil has manufacturing facilities in the U.S. (Baton Rouge, Louisiana and Baytown, Texas), Europe (Fawley, England and Notre-Dame-de-Gravenchon, France) and recently completed an expansion at an affiliate in Kawasaki, Japan. Major industry competitors include: Lanxess (Sarnia, Canada and Antwerp, Belgium) and Yanshan, an affiliate of Sinopec. Butyl rubber demand is driven by growth in tire demand, which in turn is driven by growth in personal and commercial vehicles, primarily in the developing economies of the world. Growth has been, and is expected to continue, in excess of 4% per year, with the majority of the growth in Asia and in particular China. This has led to the emergence of new entrants into the Butyl business located in China, placing added cost competitiveness challenges to suppliers located in the U.S. and Europe.

B. Ethylene Propylene Rubber (EPR)

ExxonMobil is a major producer of ethylene propylene rubber products, including Vistalon™ ethylene propylene diene (EPDM) rubber manufactured in Baton Rouge, Louisiana, based on proprietary Ziegler-Natta catalysis technology. Since 2004 ExxonMobil has been producing Vistalon™ EPDM rubber at an additional location in Baton Rouge in a flexible asset based on proprietary Exxpol™ metallocene technology, together with Vistamaxx™ propylene-based elastomers (for use in compounding and polymer modification, films and non-woven applications), and Exact™ Plastomers (for use in compounding and polymer modification applications). Vistalon™ EPDM rubber is used in a wide variety of applications including: automotive (hoses, belts, weatherseals, gaskets), construction (roof sheeting, glazing seals, and wire and cable insulation), and durable goods (hoses and gaskets).

EPR is also a worldwide business. Product demand is driven by the growth in automotive, construction and durable goods, primarily in the developing economies of the world. Growth has been, and is expected to continue, in excess of 3% per year, with the majority of the growth in Asia and in particular China. This has led to significant new business investments, primarily in Asia (Singapore, China, Korea). Geographic changes in the automotive and durable goods industries have also led to a significant increase of inter-regional trade for EPR.

Demand in the Americas is not projected to meet the 2007 level until 2013, and in Europe until 2015, requiring U.S and Europe-based producers to be cost-competitive in the fast growing markets in Asia. Recent and announced future cost-competitive assets in emerging regions are expected to make significant inroads in the more mature regions of Europe and North America, placing added cost competitiveness challenges to supply sources located in the U.S. and Europe, and particularly those based on older non-metallocene technology. Over the last ten years industry has faced significant restructuring resulting from the deployment of cost-competitive metallocene-based technology and the emergence of new players, particularly in Asia.

Other U.S. producers include Dow Chemical (Louisiana), Lion Copolymer (Louisiana) and Lanxess (Texas). In recent years, the number of U.S. producing sites has declined from 7 to 5 with the closure of assets by DSM (Louisiana) and Dow Chemical (Texas).

Outside the U.S., ExxonMobil has EPR facilities in France. Worldwide competitors include: DSM (Brazil and the Netherlands), Lanxess (Germany), Polimeri Europa (Italy), Mitsui Chemicals (Japan, Singapore), JSR Corporation (Japan), Kumho Polychem Co and SK Energy Co. (Korea), Nizhnekamskneftekhim (Russia) and Jilin (China). In recent years, assets were shutdown by DSM (Japan), Mitsui Chemicals (Japan) and Herdillia (India).

II. Source Category and Subcategory Issues

A. ExxonMobil has an EPR facility at the Baton Rouge Plastics Plant.

As noted in our comments dated February 8, 2008 on the December 12, 2007 residual risk and technology review proposed rule covering the Polymer and Resins 1 (P&R1) source category, and other communications to EPA, ExxonMobil started up an EPR facility in 2004 at the ExxonMobil Baton Rouge Plastics Plant. 72 Fed. Reg. 70543. This EPR unit, identified as Line G, is a new source under the Polymers and Resins 1 NESHAP (P&R1), 40 CFR part 63, subpart U. The current proposal reports that there are three existing sources in the EPR source category, including the ExxonMobil Chemical unit at the Baton Rouge Chemical Plant, but the ExxonMobil Baton Rouge Plastics Plant unit is not included in that count.

As for the two non-ExxonMobil EPR processes identified as being in the EPR source category, Line G does not have halogenated front-end process vents that result in HCl emissions. Thus, the current proposal and the supporting analyses are not impacted by the inclusion of Line G in the EPR source category.

B. The Butyl Rubber source category subcategories have changed since subpart U was promulgated.

In the original 1996 subpart U rulemaking, EPA recognized the significant differences between the ExxonMobil Baton Rouge and Baytown Butyl Rubber facilities and therefore subdivided the Butyl Rubber source category into "Butyl" and "Halobutyl" subcategories. EPA explained the decision to establish separate subcategories as follows:

> The Butyl rubber source category was divided into subcategories for production of Butyl rubber and production of Halobutyl rubber, because of variations in both the production process and the HAP emitted. While the initial portion of the production processes are similar, the Halobutyl rubber process contains two additional unique production steps. In these additional steps additional HAP are used and are also, therefore, emitted. [Hazardous Air Pollutant Emissions from Process Units in the Elastomer Manufacturing Industry, Basis and Purpose Document for Proposed Standards, EPA 453/R-95-006a, May 1995, p. 4-1]

In the last 15 years there have been a number of projects at the Baton Rouge and Baytown facilities to adjust product mix, increase capacity, provide operating flexibility, and improve process efficiency. As a net result of these changes, the Baytown Butyl Unit now produces more Halobutyl elastomers than Butyl elastomers. There remain, however, basic differences between the processes at the two sites that warrant continuing segregation into two separate subcategories. We discuss the process differences in our CBI letter.

C. **The Butyl Rubber source category subcategories should be redefined to reflect the current process differences.**

The proposal and the supporting analyses treat the Baytown Butyl unit as belonging to the "Butyl" subcategory and the Baton Rouge Butyl unit as belonging to the "Halobutyl" subcategory. While these were the appropriate assignments when the P&R1 rule was originally finalized, the Baytown unit now produces three major products with the primary elastomer product (as defined in subpart U) being Halobutyl Rubber, both on a mass of elastomer produced basis and an operating time basis. Thus, under the current Butyl Rubber source category subcategory definitions in subpart U, both units would be considered part of the Halobutyl subcategory and there would be no units in the Butyl subcategory. However, there are significant differences between the two units, making it clear that they should remain in separate subcategories.

EPA should modify the subpart U criteria for determining subcategory applicability under the Butyl Rubber source category. Currently, subcategory assignment is based on the primary product of the Elastomer Unit. However, it is the process flexibility, even if the flexibility is applied to products that are not the primary product which drives process and emission differences. For instance, back-end hazardous air pollutant (HAP) emissions on a pounds per ton of product basis for our Baton Rouge Butyl Unit are significantly lower than the HAP emissions for our Baytown Butyl Unit because the latter unit is a flexible operations unit and its HAP emissions are set by the conditions associated with a product that is not the primary product. We would therefore recommend that the Butyl subcategory descriptions be modified to distinguish Halobutyl-only production and flexible product production and that the primary product determination only be applied to facilities at the source category level, not at the subcategory level.

D. **Combining the two ExxonMobil Butyl units into the same subcategory is not a logical outgrowth of the proposal and would require new beyond the floor analyses and a new proposal.**

If these two units were considered part of the same subcategory, the current proposal and its supporting analyses would not be applicable and new analyses and a new proposal would be required. On the other hand, minor revision of the subcategory definitions would be a logical outgrowth of the proposal and the comments received and thus the Agency could proceed with evaluating the comments and promulgating a final rule.

Under the current proposal, halogen control of the halogenated continuous front-end process vents for both the Butyl and Halobutyl subcategories would be required[1]. Having the two units in the same subcategory would preclude reaching

[1] As EPA explains in the proposal, the floor for front-end process vents for both subcategories and, thus both Butyl units, was established in the 1996 rulemaking as 98% control of organic HAP. Thus, new floor analyses are not needed whether or not the two Butyl source category subcategories are combined.

different beyond-the-floor decisions for each unit, a possibility given the cost-effectiveness differences of controlling the HCl emissions from each site.

For back-end process operations, it is proposed to require control of the currently uncontrolled process vents at the Baytown Butyl unit and not to require control of the currently uncontrolled process vents at the Baton Rouge Butyl unit, as beyond-the-floor steps, based on the calculated cost-effectiveness for these operations. With these units in the same subcategory, the Agency would need to consider cost-effectiveness on a total subcategory basis. Using the EPA emission and cost-effectiveness estimates for each unit provided in the proposal and combining them on an emissions-weighted basis yields a combined cost effectiveness of approximately $30,000/ton of organic HAP. The Agency has clearly indicated in this[2] and previous rulemakings[3] that they do not consider $30,000 per ton to be cost-effective for beyond-the-floor HAP reduction options and we certainly concur. A further discussion of cost-effectiveness is included in Section V.

III. Applicability Issues

A. EPA needs to clarify the definition of back-end process to avoid confusion and to remove operations that are already regulated under subpart U.

It is proposed to establish numeric emission limits for Butyl and Halobutyl back-end operations. Compliance is to be demonstrated by estimating emissions from those operations on a rolling 12-month basis. The definition of "back-end" in subpart U is "the unit operations in an EPPU following the stripping operations. Back-end process operations include, but are not limited to, filtering, coagulation, blending, concentration, drying, separating, and other finishing operations, as well as latex and crumb storage." 40 CFR 63.482. This definition is broad and would appear to include operations that have no HAP emissions potential and/or which are usually remote from the process operation (e.g., bale warehousing and truck and rail loading). Since there are no HAP emissions from handling finished product (Butyl and Halobutyl elastomers are gas impermeable and, if there is any small amount of residual HAP present in the finished product, that HAP would not diffuse through the elastomer and would not be released during final product handling) it would be helpful for the Agency to clarify that such operations need not be considered when estimating emissions for compliance purposes. This would also make the back-end definition and compliance requirements consistent with the data collected on these emissions during the information collection request (ICR) process.

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[2] At 75 Fed. Reg. 65099 (October 21, 2010), relative to controlling back-end Epichlorohydrin vents for organic HAPs (a parallel situation to the Halobutyl proposal), it is stated that "We estimate that an incinerator would achieve an emissions reduction of 98 percent, resulting in a HAP decrease of approximately 35 TPY, with a cost effectiveness of approximately $31,000/ton. ... We believe that the costs and other impacts of this beyond-the-floor option are not reasonable, given the level of emission reduction. Therefore, we are proposing an emission standard that reflects the MACT floor option. We are requesting comment on this analysis and these options."

[3] e.g., At 75 Fed. Reg. 9648 (March 3, 2010) EPA finalized its conclusion that beyond the floor controls of organic HAP from reciprocating internal combustion engines were not justified, based on cost effectiveness values in the range of $20-33,000/ton, as outlined in the proposal (74 Fed. Reg. 9698 (March 5, 2009)).

The current subpart U definition of back-end would also appear to include operations that are already regulated under other subpart U provisions. Those emissions were fully evaluated in the original rulemaking, the floor was established, and control requirements promulgated. Thus, such emissions are not "Significant Emission Points Not Previously Regulated" and thus cannot be the subject of a new § 112(d)(2) standard. The primary types of such emissions from Butyl Rubber source category units are from surge control vessels, a type of equipment leak emission regulated by § 63.502 of subpart U, equipment leaks from some piping components, also regulated under § 63.502, storage vessels regulated by § 63.484 of subpart U, and wastewater, regulated under § 63.501 of subpart U. While these emission sources were reported in the ICR submissions, they were, rightfully, not included in EPA's back-end emissions calculations and the subpart U definition needs to be made consistent with the development of the back-end emission limits.

For the above reasons, we suggest the definition of back-end in § 63.481 (or at least as it applies to the Butyl subcategories) be revised as follows:

> *Back-end* refers to the unit operations in an EPPU following the stripping operations. Back-end process operations include, but are not limited to, filtering, coagulation, blending, concentration, drying, separating, and other finishing operations, as well as latex and crumb storage. Back-end does not include storage and loading of finished product or emission points that are regulated under §§ 63.484, 63.501 or 63.502 of this subpart.

B. EPA should revise proposed § 63.483(q)(1) to remove the requirement for halogen control for Group 2 continuous front-end process vents.

Proposed § 63.483(q)(1) includes Group 2 halogenated continuous front end process vents from Butyl, Halobutyl and EPR sources in the halogen control requirements along with Group 1 vents. No discussion supporting this unprecedented requirement is provided in the proposal preamble or in the supporting documents, nor are Group 2 vents proposed to be made subject to the organic HAP control requirements. This proposal is illogical and, since it lacks supporting documentation or explanation, unlawful and should not be finalized.

For front-end process vents, subpart U follows the typical procedure used in process industry rules of identifying each process vent as either Group 1 or Group 2 on the basis of the vent's properties. The criteria used for distinguishing between Group 1 and Group 2 are the criteria established as the MACT floor or beyond-the-floor level that the supporting analysis demonstrated requires control. That is, Group 1 process vents meet the § 112(d) requirements for control and Group 2 vents do not. In the case of subpart U, the definitions of Group 1 and 2 front-end continuous process vents reflect this conclusion from the original rulemaking MACT analysis, which EPA has not proposed to change. Nor has the Agency proposed requiring control of the organic HAPs in these Group 2 streams, a critical step, since the halogen removal requirements are associated with process vents that are combusted to comply with an organic HAP removal requirement.

As explained in the preamble to this proposal, the Agency is proposing requiring halogen control of Group 1 halogenated front-end continuous process vents where a facility opts to meet the existing 98% organic HAP control requirement by combustion. The logic for this proposal as presented in the preamble is that 1) the halogen emissions are "significant emissions not previously regulated," 2) such control is required under other rules, and 3) this proposed requirement is cost-effective as a beyond-the-floor step. Requiring halogen control of Group 2 halogenated continuous front-end process vents is not mentioned in the preamble discussions and meets none of these three criteria. In fact, such a requirement would discourage sources from voluntarily reducing organic HAP in these Group 2 vents and would cause sources to reroute Group 2 halogenated continuous front-end process vents currently routed to the flare to the atmosphere. The original MACT analyses found that the vents meeting the Group 2 criteria are not significant, since the top 12% of sources were not controlling vents with Group 2 characteristics. No rule of which we are aware requires halogen or organic HAP control for Group 2 process vents since the purpose of the Group 2 designation is to distinguish those vents that do not require control. EPA's own analysis for Group 1 continuous front-end process vents indicates control of these vents is only marginally cost-effective and thus it certainly would not be cost effective to control Group 2 vents.

The Agency has provided nothing in the record to support this proposed regulatory language. There is no preamble discussion and no analyses that would overturn the original MACT floor determination. Thus, requirements of the Clean Air Act (CAA) and Administrative Procedures Act (APA) have not been met relative to requiring control of halogens generated by the combustion of Group 2 halogenated continuous front-end process vents.

Finally, we point out that proposed § 63.485(q) indicates that paragraph (q)(1) contains exemptions to the requirements of (q), but the proposed new language for (q)(1), in fact, adds the halogen control requirement instead. Thus, the proposed language of (q)(1) and the existing language of (q) are inconsistent. As we discuss separately, we do not believe requiring halogen control of Group 1 halogenated continuous front-end process vent is justified as a beyond-the-floor step, but if the Agency decides to finalize that requirement it should revise proposed §§ 63.483(q) and (q)(1) as follows to eliminate the Group 2 requirement and to clarify the confusing language of the proposal:

1. If the Agency decides not to finalize the proposed halogen control requirements for any of the three subcategories, as we recommend, it should leave the existing § 63.485(q) language unchanged.

2. If the Agency decides to require control of only Group 1 halogenated continuous front-end process vents from all three subcategories it should simply reserve § 63.485(q)(1).

3. If the Agency decides to require halogen control of some of the subcategories, but not all, it should maintain the existing §§ 63.485(q) and (q)(1) language

and delete the name of the subcategory for which it is adding the halogen control requirement from the existing §63.485(q)(1).

C. The proposed emission limit, and compliance demonstrations, should be based on the mass of material going to the back-end.

Proposed. § 63.494(a)(4) would establish back-end HAP emission limits for the Butyl and Halobutyl subcategories, among others. These limits are proposed to be expressed in units of Mg organic HAP emissions per Mg of Butyl or Halobutyl rubber produced. However, the "mass of rubber produced" is an ambiguous term as these units produce more than one product. We recommend the divisor of this term be clarified by using more precise terminology. The "mass of rubber produced" can be the mass of rubber produced in the polymerization reactor (reactor product), the mass of rubber leaving the strippers, or the mass of rubber that is shipped to customers or storage (final product or "boxed" production). The mass of the latter is somewhat different than the mass of the former two, since some off-specification product is discarded as waste, some small amount of reactor product is lost through coating out on equipment or being removed when equipment is cleared for maintenance, and some finished rubber is reprocessed.

The definition of back-end in § 63.481 of subpart U is clear on where the back-end starts.

> *Back-end* refers to the unit operations in an EPPU following the stripping operations. Back-end process operations include, but are not limited to, filtering, coagulation, blending, concentration, drying, separating, and other finishing operations, as well as latex and crumb storage.

With clarity on where the back-end starts, we recommend that the divisor for the back-end limit be clearly defined as the "mass of rubber leaving the stripper (stripper product)." This is also consistent with the way production is reported in the ICR data that served as the basis for this proposal and the CBI letter.

IV. Basis for Establishing the Floor and the Proposed Emission Limitations

A. EPA does not have legal authority in this rulemaking to establish new limits for process vents.

1. EPA is without authority to impose new standards under §§ 112(d)(2) and (d)(3) for the P&R1 source categories since a MACT standard already has been promulgated – § 112(d)(6) provides the Agency's only authority to adjust existing MACT standards.

Once EPA establishes a MACT standard for a particular source category, the Agency has the authority under § 112(d)(6) to "review and revise as necessary (taking into account developments in practices, processes, and control technologies), emissions standards promulgated under this section no less often than every 8 years." In other words, EPA does not have unfettered discretion to revisit a prior MACT determination once that determination has been issued. Rather, EPA may revise a prior determination only "as necessary" according to explicit statutory criteria. *Cf. New Jersey v. EPA*, 517 F.3d 574, 582 (D.C. Cir. 2008) ("Thus, EPA can point to no persuasive evidence suggesting that section 112(c)(9)'s plain text is ambiguous. It is therefore bound by section 112(c)(9) because 'for EPA to avoid a literal interpretation at *Chevron* step one, it must show either that, as a matter of historical fact, Congress did not mean what it appears to have said, or that, as a matter of logic and statutory structure, it almost surely could not have meant it,' *Engine Mfrs. Ass'n v. EPA*, 88 F.3d 1075, 1089 (D.C. Cir. 1996), showings EPA has failed to make.").

In this proposal, EPA explains that, "For eight source categories subject to three of the MACT standards, we identified significant emission sources within the categories for which standards were not previously developed" and that, "We are proposing MACT standards for these emission sources pursuant to CAA section 112(d)(2) and (3)." 75 Fed. Reg. at 65074. This explanation makes it clear that EPA is not invoking § 112(d)(6) as the authority for the new proposed standards – indeed, the preamble provides no analysis of "developments in practices, processes, and control technologies" to justify the proposed standards, as would be required if EPA were relying on § 112(d)(6). And, there is no mention of § 112(d)(6) in relation to the proposed new standards. Instead, the Agency is invoking §§ 112(d)(2) and (d)(3) directly, as if a MACT standard for these sources categories does not already exist.

As explained above, once EPA makes a MACT determination for a particular category, § 112(d)(6) provides the only authority for the Agency to later review and possibly revise the determination. Section 112(d)(6) expressly authorizes EPA to review existing determinations and provides specific criteria to guide and constrain the review. The existence of this express authority forecloses the Agency's ability to directly invoke §§ 112(d)(2) and (d)(3) for a given source category when a MACT determination has already been issued for the source category.

Notably, even if the Agency had invoked § 112(d)(6) as authority for revising the existing P&R1 rule, it still would not have authority to regulate emissions points for which standards were not established in the original rulemaking. The original MACT determinations may be revised only "as necessary (taking into account developments in practices, processes, and control technologies)...." Perceived "gaps" in the original MACT determinations are not "practices, processes, and control technologies" that are properly within the scope of a § 112(d)(6) review.

2. **In any event, it is not a reasonable exercise of authority to establish new emissions limitations under an existing NESHAP standard when there is no significant risk associated with emissions from sources in the given source category.**

EPA asserts in the proposed rule the proposition that standards must be established for "significant emissions points" not currently regulated under existing NESHAP standards – even in circumstances where the Agency has determined that the existing NESHAP standard protects health and the environment with an ample margin of safety. Establishing new standards under these circumstances is patently unreasonable and cannot be justified under § 112(d)(6).

In the case of the P&R1 NESHAP, EPA explains that for the Epichlorohydrin source category and based on a detailed assessment of risk to health and the environment due to HAP emissions from these source categories, "we continue to propose that the current MACT standard provides an ample margin of safety to protect public health and the environment, and we are proposing to re-adopt the existing MACT standard to satisfy section 112(f) of the CAA." 75 Fed. Reg. at 65098. EPA previously had made this determination for both the Butyl Rubber and EPR source categories and yet in this rulemaking the Agency proposes new emission limitations/controls for Butyl Rubber and EPR front-end process vents and Butyl Rubber back-end process vents. 73 Fed. Reg. 76620 (Dec. 16, 2008).

As explained above, EPA has no direct authority under §§ 112(d)(2) and (d)(3) to create new limits in source categories for which a MACT standard already has been promulgated. But, even if EPA had invoked § 112(d)(6) as authority for adopting the proposed new standard for back-end process operations, such a standard would not be justified because EPA's own analysis demonstrates that the existing MACT standard provides an ample margin of safety to health and the environment. In fact, EPA plainly admits for the Epichlorohydrin source category that "the MACT standard, prior to the implementation of the proposed emission limitation to the back-end process operations discussed in this section, provides an ample margin of safety to protect public health." 75 Fed. Reg. at 65099.

In the case of the Butyl Rubber and EPR source categories, EPA's residual risk evaluation, 73 Fed. Reg. 76220, not only found that the public is protected with an ample margin of safety, but that the risks are so low that they would not meet EPA's criteria for population risk reduction (i.e., reducing the number of people exposed to an above one in one million cancer risk). In fact, as EPA states in the residual risk no further action notice, for these source categories "No HAP that are known, probable, or possible human carcinogens are emitted from sources in the category." *Id.* at 76225, Table 4, Note 6. A similar finding is reported relative to EPA hazard index of concern (HI 1.0). EPA concluded the maximum hazard index for the EPR source category is 0.5 (due to n-hexane) and 0.2 for the butyl source category (due to methyl chloride). *Id.* at 76225, Table 4.

In these circumstances, it is patently unreasonable for EPA to regulate beyond the point that the standard has been found to already provide an ample margin of safety. This is regulation for the sake of regulation and, as such, contradicts

Congress's clear intent that an ample margin of safety is an appropriate stopping point for emissions limitations under § 112.[4]

B. Back-end Butyl and Halobutyl emissions potentially available for additional control.

The following tables identify the n-hexane emissions that comprise the current floor for the back-end and the n-hexane emissions that are potentially available for control from the ExxonMobil Baytown Butyl Rubber and Baton Rouge Halobutyl Rubber units, based on the information provided to EPA in response to the ICR.

[4] EPA also explains in the context of the proposed new limit for back-end process operations that, because the existing MACT standard already provides an ample margin of safety, "we do not believe it will be necessary to conduct another residual risk review under CAA section 112(f) for this source category 8 years following promulgation of new front-end process vent and back-end process limitations, merely due to the addition of these new MACT requirements." 75 Fed. Reg. at 65111. Implicit in this statement is the suggestion that a residual risk review under § 112(f) may be needed for new emissions limits that are established for existing MACT standards. As with setting MACT standards in the first instance, § 112(f) provides a one-time opportunity for conducting a residual risk review of a MACT standard. There is no basis under the law for the suggestion that a revision to an existing MACT standard triggers the need for another § 112(f) residual risk review. Indeed, the proposal provides no explanation whatsoever as to why such a subsequent review could be required under the law.

Baytown Butyl Rubber Unit (Butyl Subcategory)

2009 Back-end Emissions, n-hexane

Emission ID/Description	Emissions Tons/Year	Comments
RGTO	28.09	Partially controlled; reported to EPA in ICR; includes maintenance bypasses of existing RTO
BPBFinish	26.19	Uncontrolled; reported to EPA in ICR
Subtotal	54.28	
Less equipment leaks (including surge control vessel emissions) in BPBFinish and RGTO	11.27	Emission limit should be based on emissions not already subject to subpart U requirements
Basis for floor	43.01	Prior to including variability
Less emissions already controlled	17.24	Emissions from existing RTO
Emissions basis for beyond-the-floor analysis (Note 1)	25.77	

Note 1: This item includes emissions not routed to the RTO and emissions associated with maintaining the existing RTO, as discussed in item E of this section and in our discussion of the beyond-the-floor analysis in Section V.

Baton Rouge Butyl Rubber Unit (Halobutyl Subcategory)

2006 Back-end Emissions, n-hexane

Emission ID/Description	Emissions, Tons/Year	Comments
S-88, TTU	18.32	Controlled: reported to EPA in ICR
M-53, M-58, V-127, V-131	41.66	Uncontrolled; reported to EPA in ICR; continuous process vents and maintenance bypasses of existing RTO
Basis for floor	59.98	Prior to including variability
Less emissions already controlled	18.32	Emissions from existing RTO
Emissions basis for beyond-the-floor analysis (Note 1)	41.66	

Note 1: This item includes emissions not routed to the RTO and emissions associated with maintaining the existing RTO, as discussed in item E of this section and in our discussion of the beyond-the-floor analysis in Section V.

C. EPA must include variability in establishing back-end emission limitations for the floor or for the proposed new requirements.

In establishing the back-end emission limits for the Butyl and Halobutyl subcategories. EPA did not consider variability, which is appropriate in setting emission standards. It is acceptable and expected for EPA to consider emission levels associated with normally anticipated and recurring operating conditions, and decisions of the D.C. Circuit acknowledge that data from more adverse operating conditions can inform the basis of the standard. Thus, EPA should establish a standard that MACT floor units can meet if operating "under the most adverse circumstances which can reasonably be expected to recur." *Sierra Club v. EPA,* 167 F.3d 658, 665 (D.C. Cir. 1999), *quoting National Lime Ass'n v. EPA,* 627 F.2d 416, 431 n.46 (D.C. Cir. 1980).

Indeed, in that 1999 *Sierra Club* decision, the court emphasized:

> "EPA would be justified in setting the floors at a level that is a reasonable estimate of the performance of the 'best controlled similar unit' under the worst reasonably foreseeable circumstances ...."

167 F.3d at 665. *Accord Cement Kiln Recycling Coalition v. EPA,* 255 F.3d 855, 863 (D.C. Cir. 2001).

In the *Cement Kiln* case, EPA argued that it is acceptable for it to consider the range of emissions from the best performing sources and that test results at more adverse conditions "'are more helpful than normal operating data would be in estimating performance under a variety of conditions and thus in helping to assure that properly designed and operated sources can achieve the standard.'" *Cement Kiln,* 255 F.3d at 867 (quoting EPA). The court affirmed this interpretation. *Id.* Furthermore, the D.C. Circuit in its 2004 decision in *Mossville Environmental Action Now v. EPA* "held that floors may legitimately account for variability because "'each [source] must meet the [specified] standard every day and under all operating conditions.'" 370 F.3d 1232, 1242 (D.C. Cir. 2004), *as quoted in Sierra Club v. EPA,* 479 F.3d 875, 882 (D.C. Cir. 2007).

In this proposal, EPA only used one data point, the emissions level for one year for the units in the Butyl Rubber source category, and did not look at statistical variation over time. And if EPA revisits the Butyl Rubber subcategories then EPA should also consider other factors such as the variability in source design and operation within a subcategory.

D. The emission limitation for the back-end process in the Butyl Rubber subcategories should reflect several variability factors that impact emissions.

For the Butyl Rubber subcategories, there are a number of factors that contribute to the variability of organic HAP emissions on an emissions per unit of production basis. These factors include production itself, as not all emissions (e.g., surge control vessels) are a function of production. Other factors include grade slate changes, operating and weather conditions, process reliability and control device reliability/service factor. As an example, several pieces of equipment (primarily the flash drums and strippers) are used to remove hexane from the polymer slurry fed to the back-end. Through normal process variations in temperature, pressure, liquid level, and fouling rates in the flash drum/stripper equipment, the amount of hexane fed to the back-end can vary. Also, the current RTOs require maintenance on a variable frequency, oftentimes several multi-day instances per year. This is impacted by equipment age and service life.

In determining annual emissions variability our focus was on the Baton Rouge Halobutyl unit. The significant investments and modifications at the Baytown unit over the last ten years results in a more difficult analysis to differentiate variability from the impact of process changes. The table included in the CBI letter summarizes annual emissions per unit of production at the Baton Rouge facility for the last ten years.

As detailed in our CBI letter, over the last ten years the n-hexane back-end emissions per unit of production varied by 43% from 2006 at Baton Rouge, with 2006, the year reported in the ICR, among the lowest years in the time period. In order to appropriately capture the variability in emissions, with 2006 as the base year, the floor emission limit or the post new control emission limit should be increased by at least 43%. Using only the 2006 data would mean that the site could not have met the limit in four of the last five years, which clearly would not represent the current floor or future capability under the existing subpart U.

A variability adjustment of at least 43% is also a reasonable adjustment for the ExxonMobil Baytown Butyl Unit, because the factors it represents (i.e., proportion of emissions that vary with production, grade slate changes, operating conditions, process reliability and control device reliability/service factor) are similar to those for the ExxonMobil Baton Rouge Halobutyl Unit.

E. EPA must recognize that maintenance of the existing regenerative thermal oxidizers (RTOs) is required to achieve maximum organic HAP destruction.

As also discussed in section VI, RTOs are the preferred control devices for controlling back-end emissions because of their energy efficiency (and thus much lower energy consumption and secondary emissions) when combusting large streams of air containing only low concentrations of hydrocarbon. However, in exchange for their efficiency in handling dilute air streams with a reasonable energy demand, RTOs require regular maintenance. RTOs operate by having two packed bed reactors, one that is hot and handling the hydrocarbon destruction and one that is being heated up by the exhaust gas from the first bed. These beds switch regularly as the bed temperature of the in-service reactor drops to a preset point. Large, automated valves make the bed switches quickly and efficiently. However, this is a difficult service and valve leakage is a predictable problem. Such leakage allows some hydrocarbon to bypass the hot reactor and the desired overall 98% organic HAP removal could quickly be unachievable. Thus, it is critical that these valves be well-maintained, which also is required by the general duty requirement in proposed § 63.483(a)(1) to maintain control equipment. In order to do this maintenance, the RTO must sometimes be bypassed while the back-end continues to operate. In addition to valve maintenance, these systems have other moving parts and packed beds in demanding services that sometimes must be maintained with the RTO out-of-service. For instance, corrosion is an ongoing problem in the collection system and repair of that system sometimes requires an RTO outage. The timing of RTO maintenance cannot always be set with back-end outages.

It appears that EPA's proposed emission limit did not account for the need to bypass the back-end control devices to allow this maintenance, though these emissions are reported in our ICR submissions. The existing Butyl back-end sources at Baytown are currently permitted to allow bypass emissions during maintenance work on the control device up to the permitted limit, and with the use of purchased Emission Reduction Credits, the bypass is allowed under the State 30 TAC 115 VOC rules. At Baton Rouge an allowance for bypass emissions is included in the unit operating permit.

This issue can be addressed by establishing a back-end emission limit that recognizes the bypassing that currently occurs for the current RTO-controlled emissions and by allowing for it for any additional emissions that will be controlled by an RTO. We have indicated this in our tables of emissions in Section V.

F. Summary of Butyl Rubber back-end floor.

The following table summarizes the recommended emissions basis for the floor level of emissions for the ExxonMobil Baytown Butyl and Baton Rouge Halobutyl units:

Floor Analysis Summary

n-hexane, Tons

	Baytown Butyl	Baton Rouge Halobutyl
Basis for floor	43.01	59.98
Variability adjustment (43% minimum)	18.49	25.79
Floor emission limit	61.50	85.77

Should the Agency impose back-end emission limits, those limits should include at least a 43% adjustment for variability and include an equivalent maintenance allowance to that demonstrated to be needed for the existing RTOs for any additional emissions that will require new control.

V. Basis for Beyond-the-Floor Decisions

As explained above, EPA has no direct authority under §§ 112(d)(2) and (3) to create new limits in source categories for which a MACT standard already has been promulgated. Furthermore, as explained below, EPA has no authority or factual basis to re-visit the beyond-the-floor analyses conducted in 1996.

A. EPA already made the decision that beyond the floor controls for continuous front-end process vents were not cost-effective in the 1996 rulemaking. EPA has no authority and no grounds to perform a second § 112(d)(2) analysis for these emission points.

In the 1996 final rule, EPA was aware that halogenated vent streams were vented to a flare or boiler at Butyl Rubber, Halobutyl Rubber, and EPR facilities. While the flare or boiler provided control for the organic HAP, methyl chloride, it was well-known that hydrogen chloride would be generated by the combustion process. After considering this information, EPA determined that the floor for control of this organic HAP was combustion in a flare or boiler and that beyond-the-floor control of the HCl generated in the combustion was not cost-effective and not justified. EPA explained:

> Only one existing facility was identified in each of the Halobutyl and the Butyl rubber subcategories. At both of these facilities, halogenated vent streams were vented to a flare and/or boiler. Since both of these subcategories were single-facility subcategories, the MACT floor was determined to be the existing level of control. The EPA examined the impacts of requiring halogenated vent streams at the Halobutyl and Butyl rubber facilities to comply with the proposed requirements for all other elastomer subcategories (i.e., the HON-level of control). The EPA concluded that the costs associated with this level of control were not reasonable, given the associated emission reduction. Therefore, the proposed regulation allowed halogenated streams at Halobutyl and Butyl rubber facilities that were routed to a flare or boiler prior to proposal to continue to be controlled with these combustion devices, without additional control for the resulting halides. ...
>
> ...[T]he EPA concluded that four of the five EPR facilities have halogenated streams that are routed to either a boiler or flare. For this reason, the EPA has determined that the floor for EPR is the existing level of control for these halogenated vent streams. In addition, as with Halobutyl and Butyl rubber, the EPA does not believe that it would be cost-effective to require new incinerators and scrubbers to be installed at these facilities, when the only net emission reduction would be the reduction of the hydrochloric acid, since the reduction of the halogenated organic compound in the incinerator would be the same as was already being achieved in the boiler or flare. However, as noted above, sufficient stream-specific information was not available to conduct this analysis. Therefore, the final rule has been changed to extend the exemption for existing halogenated streams routed to a boiler or flare to EPR producers. Further, the final rule specifies that this exemption does not apply to new sources.

61 Fed. Reg. at 46919.

This passage from the 1996 rulemaking clearly demonstrates that EPA has conducted a complete analysis under §§ 112(d)(2) and (d)(3). Therefore, EPA met its obligation to set a technology-based emissions standard for these HAPs in these categories and subcategories. EPA's only authority to revisit the rulemaking, in the absence of a timely legal challenge to this particular standard in the P&R1 rule, which was not lodged, are the 8-year technology review and the one-time residual risk review. Those reviews, too, were completed and final action noticed at 73 Fed. Reg. 76220, again without challenge. Even as part of a periodic technology review, EPA is not required, and we believe not allowed, to "start from scratch." *NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008).

The 1996 rulemaking also undercuts EPA's claimed basis for revisiting the standard – the "absence of a standard for a significant emissions source." 75 Fed. Reg. at 65108-65109. EPA performed the required standard-setting analysis under § 112(d)(2) consistent with D.C. Circuit precedent. This is not a case of "no control floors" or source "exemptions," which the D.C. Circuit has held to be unlawful under section 112. *Nat'l Lime Ass'n v. EPA*, 233 F.3d 625 (D.C. Cir. 2000); *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008) *cert. denied*, 130 S. Ct.

1735 (2010). In this case, EPA determined that the existing level of control for the halogenated compounds – a flare or boiler – was all that was required, and the reduction in HCl was not the floor and not cost-effective. The "exemption" in the 1996 rule is from "HON-level" controls, not all control.

We are not aware of any prior MACT rule where EPA, in the absence of a court decision, rule vacatur, or settlement agreement, revisited a beyond-the-floor analysis. EPA should not do so in this rule.

B. EPA's beyond-the-floor determination for halogenated front-end process vents at the ExxonMobil Baton Rouge EPR Unit that is based on sharing controls with the co-located Halobutyl Unit exceeds EPA's legal authority and is technically and operationally impractical.

1. EPA does not have the legal authority to justify beyond-the-floor controls in one source category by combining the source category with controls for another source category. Decisions must be made on a source category by source category basis.

Section 112(d) directs EPA to establish emission standards for each category or subcategory of major sources of listed HAPs. In considering whether to impose a standard "beyond the MACT floor" on a category or subcategory, EPA must consider among other factors "the cost of achieving such emission reduction." § 112(d)(2). To meet this directive, EPA performs a cost-effectiveness analysis using the cost of potential beyond-the-floor controls and the resulting tons per year emission reduction.

Although EPA has discretion in considering costs in setting emission standards under CAA programs, e.g. *Husqvarna AB v. EPA*, 254 F.3d 195 (D.C. Cir. 2001), EPA's discretion is not unlimited. *Arteva Specialties v. EPA*, 323 F.3d 1088 (D.C. Cir. 2003) (remanding LDAR provisions of Group IV Polymers & Resins NESHAP to EPA based on fact that record did not support that EPA's cost-effectiveness analysis was reasonable). EPA's basis and methodology for analyzing costs must be reasonable and comport with the underlying statutory provisions. Section 112 is structured to impose emissions standards on individual source categories, and EPA is required to conduct a separate analysis for each category or subcategory. § 112(d)(1). While EPA grouped nine source categories, and several subcategories, under subpart U based on similarities in emission points and types of controls, EPA originally considered each category and subcategory on its own merits, including the cost of achieving emission reductions. 61 Fed. Reg. at 46908.

In the current proposed rule, EPA found that one of three EPR existing units (the ExxonMobil Baton Rouge EPR Unit) combusted halogenated continuous front-end process vents in a flare, resulting in some byproduct HCl emissions. 75 Fed. Reg. at 65108. EPA similarly determined that the one unit in each of the subcategories Butyl Rubber and Halobutyl Rubber combusted halogenated continuous front-end process vents in a flare. *Id.* at 65109. As discussed, this was also the case during the 1996 rulemaking and was considered at that time.

Hazardous Air Pollutant Emissions from Process Units in the Elastomer Manufacturing Industry, Basis and purpose Document for Proposed Standards, EPA 453/R-95-006a, May 1995, section 6. After conducting a new beyond-the-floor analysis, EPA is proposing beyond-the-floor requirements for halogenated continuous front-end process vents for all three source categories. Under this new set of requirements, these vents could not be sent to a flare and, if combustion is used to control the organic HAP, the HCl produced by the combustion would have to be removed. The most practical control alternate, and the one evaluated in the beyond-the-floor analysis, is installation of a new thermal oxidizer followed by a halogen scrubber. *Id.* at 65108-65110.

For the Butyl Rubber and Halobutyl Rubber units, EPA's cost analysis concluded that the additional controls would be reasonable and cost-effective. However, for the EPR unit, EPA found that the additional control was not cost-effective. The Agency then re-evaluated controls for that EPR facility on the basis that it would share the additional controls with the Halobutyl Rubber unit, with which it is co-located. For this shared control case, EPA concluded that the additional controls are cost-effective. *Id.* at 65109-65110. More specifically, in the "Regulatory Alternative Impacts for Group 1 Polymers and Resins Source Categories", dated July 19, 2010, EPA notes that the cost-effectiveness for halogenated continuous front-end process vent beyond-the-floor controls on the ExxonMobil Baton Rouge EPR Unit is $21,600/ton, for the ExxonMobil Baton Rouge Halobutyl Rubber Unit it is $5,800/ton, and if you combine the vents from the two units the cost effectiveness is $6,700/ton.

EPA is, however, required to perform the beyond-the-floor analysis, including cost consideration, separately for each source category or subcategory. EPA recognized as much during the original subpart U rulemaking when EPA determined that beyond-the-floor controls were not cost-effective for the Butyl Rubber and Halobutyl Rubber facilities. 61 Fed. Reg. 66919. Furthermore, in litigation over the Group IV P & R rule, 40 CFR Part 63, Subpart JJJ, EPA clearly explained that it conducted a separate cost-effectiveness analysis for each subcategory. EPA told the court:

> EPA then determined, with one exception, that the rule was achievable considering costs, based on cost effectiveness *for each subcategory ....* FN5. Within the PET manufacturing category, plants use different feedstocks (dimethyl terephthalate ("DMT") or terephthalic acid ("TPA")) and different processes (batch or continuous), which may affect emission characteristics and controllability. 60 Fed. Reg. at 16,092 (March 29, 1995). Based on these factors, EPA created five subcategories: DMT-batch, DMT-continuous, TPA-batch, TPA-continuous and TPA-continuous multiple end finisher. *Id. Any one facility may have multiple process units that fall under different subcategories. In determining whether to adopt beyond-the-floor leak detection and repair standards for each subcategory, EPA conducted separate analyses for each subcategory.*

Brief of Respondent EPA, *Arteva Specialties*, 323 F.3d 1088 (emphasis added).

Thus, EPA understood and represented to the court that it must conduct a separate cost analysis for each subcategory, even when affected units could be co-located and potentially share control equipment.

In the instant rulemaking, EPA cannot fabricate cost-effectiveness by assuming units in separate source categories could share control devices. Section 112(d) requires category-by-category standard-setting, and we are aware of no other rulemaking where EPA has combined different source categories for the purpose of setting NESHAP standards. Moreover, it is unreasonable, arbitrary and capricious for EPA to take advantage of the fact that these source categories and subcategories are comprised of a single source (or essentially a single source in the case of the EPR analysis where only one facility reported HCl emissions). In a typical situation where a source category would consist of multiple facilities, EPA would never be able to make a cost-effectiveness determination on such a facility-specific basis.

2. EPA's analysis, based on combining the Butyl Rubber (Halobutyl subcategory) and EPR source categories to justify beyond-the-floor halogenated continuous front-end process vent controls for the EPR source category, is inappropriate and inconsistent with maintaining business operating flexibility and how controls would be implemented.

While it is common practice to tie numerous operating units/ source categories to a flare system for control, this practice becomes problematic for control devices that require a higher level of preventive and ongoing maintenance. Flare systems are relatively low-maintenance and operate for many years without outages. Additionally, multiple flares are usually connected in order to provide continued emission control even if a particular flare is being maintained. Thermal oxidizers and halogen scrubbers, on the other hand, due to more moving parts and the severity of service, require more maintenance and typically are not spared (and the cost of sparing was not included in the cost or cost-effectiveness analyses). In this particular service, corrosion is expected to be a particular service factor issue. Sharing a thermal oxidizer/scrubber system, as EPA proposes, puts the operation of both units at unacceptable risk. Any significant maintenance need or outage of the control would require the shutdown of both units. Unplanned shutdowns of the control would result in dual violations (since shutdowns take time) and potentially large shutdown excess emissions as both units would have to make simultaneous emergency shutdowns. This causes many problems. Supplies of both products would be impacted and startup and shutdown costs and emission increases would occur unnecessarily. Another concern would be extended maintenance shutdowns of the shared control, because advantage could not be taken of the downtime to coincide major turnarounds on the two process units. Because of the size and complexity of these units, simultaneous major turnarounds are not feasible. Overall, then, having a shared control, will cause lost production, extra process unit outages and increased emissions.

The Halobutyl Rubber and EPR businesses at Baton Rouge are distinctly different in terms of the customer base, supply chain for alternate sourcing, and operating flexibility. Since the proposed incinerator/scrubber requirement, in EPA's analysis, ties the two units together, operating flexibility is limited as discussed above. Feedback from the businesses indicates that this is an unacceptable business basis and that separate control devices are needed to assure business viability. Consequently, EPA's analysis either needs to consider significant lost business and other costs and emission impacts in the beyond-the-the floor analysis for the proposed combined control; include the significant cost of a spare thermal oxidizer and halogen scrubber, which would clearly result in a determination that the controls are not cost-effective; or justify the new halogen control requirement on the basis of separate controls for each unit.

While we do not provide detailed cost estimates in Section VI for incinerator/scrubber controls separately for the Halobutyl Rubber and EPR source categories (primarily because we knew even on a combined basis controls are not cost-effective), we have scaled the estimate we developed for a shared control to two separate units that would handle the flow from the separate production units. Using that cost basis, results in the following cost-effectiveness result:

1. Halobutyl Rubber: > $20,600/ton

2. EPR: > $51,000/ton

For both of these cases, this analysis indicates that controls are not cost-effective.

C. The cost-effectiveness criteria for this proposal was not clearly defined by EPA, but recent experience suggests a level of approximately $10,000 per ton of HAP reduced.

In the proposal, EPA does not clearly indicate what the cost-effectiveness criterion is for decision-making to require controls in the beyond-the-floor analysis. EPA determined that front-end controls for Butyl Rubber ($7,900 per ton of HAP reduced), front-end controls for Halobutyl and EPR combined ($6,700), and back-end controls for Butyl Rubber ($7,000) were cost-effective. Back-end controls for Halobutyl Rubber ($47,300) and front-end controls for EPR alone ($21,600) were not considered cost-effective.

In other rulemakings, factors that appear to be considered when EPA determines cost-effectiveness include the toxicity of the HAP (mercury, for example, would justify a higher cost-effectiveness criteria) and whether or not there are significant co-pollutant reduction benefits. As already determined by EPA's residual risk analysis, the health risk and concerns associated with the HAP emissions from the Butyl Rubber and EPR source categories are minimal. Although ExxonMobil generally does not agree that EPA has authority to base NESHAP decisions on co-pollution reductions, co-pollutant reductions for the proposed front-end controls and for the Butyl Rubber subcategory are minimal and don't factor into the analysis.

Several other EPA decisions on cost-effectiveness were reviewed and noted as follows:

1. For Epichlorohydrin Elastomer Production, which is also addressed in this proposal, EPA determined that the beyond-the-floor cost of $31,000/ton for back-end process operations, to achieve a 35 ton/year HAP reduction, was not justified. EPA also noted that since the reduction was due to toluene there would be no reduction of cancer risk, a similar situation to the n-hexane emissions from the Butyl Rubber source category back-end operations. It was also noted that there would be increases in criteria pollutants and an increase in energy use. 75 Fed. Reg. 65099.

2. In another chemical industry rule EPA determined that "... the incremental cost-effectiveness relative to the 85 percent control option is estimated to be $13,500/ton. This cost is unreasonable." NESHAP for Chemical Manufacturing Area Sources; October 29, 2009; 74 Fed. Reg. 56023.

3. In the Miscellaneous Organic NESHAP (MON), another chemical industry rulemaking, EPA determined that various beyond-the-floor options in the $13,300 to $17,300 range were not cost-effective. The options related to lowering the control trigger level for batch process vents, lowering the control trigger for flow and concentration for wastewater, and lowering the HAP vapor pressure trigger for storage vessels. Hazardous Air Pollutant Emissions from Miscellaneous Organic Chemical Manufacturing and Miscellaneous Coating Manufacturing, able 5.1, p 5-8, September 2001.

In summary, while EPA did not clearly define the cost-effectiveness criteria for this rulemaking, it appears that using no more than $10,000/ton would be consistent with other Agency decisions for a rule of this type and for the HAP emissions targeted. Any substantive increase in this metric for this rulemaking would be arbitrary as there appears to be no basis for a substantive change in policy.

D. Summary of the emission sources to be included in evaluating the beyond-the-floor options.

If, despite its lack of authority, EPA proceeds to finalize further controls, the tables that follow summarize, for halogenated continuous front-end process vents, the appropriate HCl emissions basis for a beyond-the-floor analysis for the Butyl and EPR facilities and the potential maximum HCl reductions. The back-end beyond-the-floor emissions basis analysis was included in Section IV of these comments.

1. Baytown Butyl Rubber Front-End

2009 Emissions, HCl

Emission ID/Description	Emissions tons/year	Comments
FS12 (flare stack)	30.09	Reported to EPA in ICR
Less emissions not from continuous process vents	5.39	Loading rack, exchanger depressurization, safety bypass
Basis for beyond-the-floor analysis	24.70	
Potential emissions reduction with controls	24.5	99% control

2. Baton Rouge Halobutyl Rubber Front-End

2006 Emissions, HCl

Emission ID/Description	Emissions tons/year	Comments
Emissions reported to EPA	76.80	Reported to EPA in ICR
Basis for beyond-the-floor analysis	76.80	
Potential emission reduction with controls	76.0	99% control

3. Baton Rouge EPR Front-End

2005 Emissions, HCl

Emission ID/Description	Emissions tons/year	Comments
Emissions reported to EPA	24.05	Reported to EPA in ICR
Basis for beyond-the-floor analysis	24.05	
Emissions reduction with controls	23.8	99% control

E. The proposed front-end beyond-the-floor controls for Baton Rouge Halobutyl, Baton Rouge EPR, and Baytown Butyl Rubber are not cost-effective and should not be finalized.

In the proposed rule EPA determined that halogen controls on the halogenated continuous front-end process vents for the EPR source category and the Butyl and Halobuyl subcategories of the Butyl Rubber source category, based on installation of an incinerator and scrubber, are justified based on cost-effectiveness. The ExxonMobil cost analysis, which is included in Section VI of these comments and is based on a significant engineering scoping and cost estimating effort, indicates that the controls are not justified.

In addition to cost, the cost-effectiveness calculation requires an estimate of the emission reduction that will be achieved. For Group 1 halogenated front-end process vents, the potential emission reduction can be estimated as 99% (the required HCl removal) times the amount of HCl generated from combusting the chlorinated organic HAPs in the vents. In subsection D, above, we provided our estimate of the HCl emission reduction potential, which is slightly different from the EPA estimates due to clarifications of the data provided to EPA in our ICR response.

The cost-effectiveness for the proposed halogenated continuous front-end process vent requirements ranges from $20,000/ton to $80,000/ton. The EPA and ExxonMobil analyses are summarized below.

Cost-Effectiveness for Proposed Front-end HCl Control

EPA Analysis

Process	Capital Cost $K	Annual Cost $K	HCl Reductions Tons/Year	Cost-effectiveness $/Ton
Baton Rouge EPR	985	424	19.6	21,600
Baton Rouge Halobutyl	985	445	76.0	5,900
Baton Rouge Combined	1,120	642	95.6	6,700
Baytown Butyl	669	235	29.8	7,900

ExxonMobil Analysis

Process	Capital Cost $K[1]	Annual Cost $K	HCl Reductions Tons/Year	Cost-effectiveness $/Ton	Comments
Baton Rouge EPR	9,600	1,220	23.8	51,100	
Baton Rouge Halobutyl	12,400	1,570	76.0	20,700	
Baton Rouge Combined	13,300	1,690	99.8	16,900	Not practical/ legal case
Baytown Butyl	16,200	1,960	24.5	80,100	

[1] Includes Project Services costs

Note: Annual cost includes capital cost times a capital recovery factor of .1098 (as proposed) plus operating costs.

F. The proposed back-end beyond-the-floor controls for Baton Rouge Halobutyl and Baytown Butyl Rubber are not cost-effective and should not be finalized.

In the proposal beyond-the-floor analysis, EPA determined that additional controls on the back-end vents for the Baytown Butyl Rubber unit were justified based on cost-effectiveness, and that additional controls for the Baton Rouge Halobutyl Rubber unit were not cost-justified. The ExxonMobil analysis, on the other hand shows that control of the back-end process is not cost-effective for either unit. The cost-effectiveness for the proposed back-end control requirements ranges from $55,000/ton to $70,000/ton.

Section VI provides our estimates of the cost for the controls that would be required to comply with the proposal, based on a significant engineering scoping and cost estimating effort. For the reasons discussed in Section VI, these cost estimates are the best available cost basis for use in the beyond-the-floor calculations for the proposed Butyl and Halobutyl controls and EPA should adopt them.

In addition to cost, the cost-effectiveness calculation requires an estimate of the emission reduction that will be achieved. For the back-end processes, the potential emission reductions are lower than EPA has estimated. Our estimate of the emission reduction potential is as follows, beginning with our estimate of the emissions basis for the beyond-the-floor analysis, as derived in Section IV of these comments.

Potential Emission Reductions
(Tons organic HAP)

	Baytown Butyl	**Baton Rouge Halobutyl**	**Comments**
Emissions basis for the beyond-the-floor analysis from Section IV.B	25.77	41.66	
Less maintenance bypasses around existing RTOs	20.77	34.91	Required to maintain 98% destruction during normal operation of the existing RTOs (See discussion in Section IV)
Emissions after allowance for capture inefficiency (1%)	20.56	34.56	
Emissions after allowance for RTO destruction inefficiency (2%)	20.15	33.87	

Note: For base years reported in ICR

The cost effectiveness for the proposed back-end process emission limitations are summarized as follows.

Cost Effectiveness for Proposed Back-end Control

EPA Analysis

Process	Capital Cost $K	Annual Cost $K	n-hexane Reductions Tons/Year	Cost-effectiveness $/Ton
Baton Rouge Halobutyl	951	1,607	34.0	47,300
Baytown Butyl	235	181	25.7	7,000

ExxonMobil Analysis

Process	Capital Cost $K[1]	Annual Cost $K	n-hexane Reductions Tons/Year	Cost-effectiveness $/Ton
Baton Rouge Halobutyl	18,100	2,450	33.9	72,300
Baytown Butyl	12,500	1,530	20.2	75,600

[1] Includes Project Services costs

G. EPA should update the Economic Impact Analysis to reflect more realistic industry costs and the reduced U.S. competitiveness that will result from the proposed added control costs.

EPA included in the docket the "Economic Impact Analysis for National Emission Standards for Hazardous Air Pollutant Emissions: Group I Polymers and Resins", dated July 16, 2010. In the memo EPA summarized the annualized costs for the P&R1 facilities and provided an estimate of the cost to sales ratio. EPA needs to update the Economic Impact Analysis for the following reasons:

1. As indicated in this comment package, EPA has significantly underestimated the cost of controls.

2. The analysis lacks any assessment of the impact on U.S. supply competitiveness as a result of increased U.S. manufacturing costs not incurred by other worldwide suppliers. In international markets added costs incurred by

one geographic region are unlikely to be passed along to customers, thereby reducing incentives to supply from the U.S.

3. The analysis lacks any assessment of the impact of the proposed shared Halobutyl/EPR control on operating flexibility, supply capability, or international competitiveness of the two businesses.

VI. Emission Control Cost

A. ExxonMobil has extensive experience and comprehensive systems for the development and execution of capital projects.

For more than 125 years, ExxonMobil has been a leader in the evolution of energy and energy technology. Worldwide capital and exploration expenditures have averaged over $20 billion for the last five years. A key to the company's success has been a disciplined capital management plan coupled with the goal of flawless project implementation.

ExxonMobil's proven project management system incorporates best practices developed around the world. Emphasis on the early phases of concept selection and effective project execution results in investments that maximize resource and asset value. We also complete a rigorous reappraisal of all major projects and incorporate the findings from these reappraisals into future project planning and design, further strengthening our capabilities.

B. ExxonMobil has a structured process to develop capital projects, including cost estimates.

ExxonMobil has a capital project management system that uses periodic management gate reviews and check points to ensure that capital investments are aligned with safety, environmental, and business needs. The structured activities included in the process are designed to assure that projects are conducted in a safe and environmentally responsible manner, deliver assets of appropriate quality, meet cost and schedule expectations, and achieve commercial success. The system provides a common framework for capital projects across the entire company.

The various project stages include: development planning; evaluation/selection of alternatives; further optimization/definition; detailed design, procurement, construction; and startup/operation. A project proceeds through a series of gates with each gate representing a milestone decision point based on an acceptable level of project definition. The gates typically represent go/no-go decision points for business ventures; for other projects (e.g. safety/environmental) they represent detailed reviews of project bases, critical path activities, and project schedule/success risks. A gate review would include various project elements, including, for example, technology selection, funding, staffing, planning issues, project cost estimates, contracting/purchasing strategies, safety and environmental considerations, information management, and project timeline.

C. ExxonMobil prepared cost estimates for the proposed controls as the first step in project development.

During typical project development ExxonMobil prepares a number of estimates with each reflecting cost of the project at some defined milestone of design definition. As project definition is improved throughout the development process project estimating accuracy improves.

Typical project estimates include:

1. Direct material: identified material costs for the physical components of permanent plant facilities; equipment (e.g. emission control devices, heat exchangers, pumps, distillation columns); other material items (e.g. piping, instrumentation, electrical, structural steel, concrete pads).

2. Direct labor: field installation costs, including prime contractor and subcontractors.

3. Indirect costs: overhead costs associated with plant construction (e.g. scaffolding, field supervision, construction equipment); costs for engineering and procurement of permanent plant facilities.

4. Contingency: budget for future changes that are expected but are unknown at the time of the estimate (e.g. design changes, execution developments).

In developing cost estimates for the controls required to comply with this proposal, ExxonMobil included the following steps:

1. Cost estimators worked closely with site technical contacts to develop a project basis. This information includes:

   (i) Location of each emission source and the routing of the piping/ducting to the oxidizer.
   (ii) Stream characteristics, such as gas flow and concentration.
   (iii) Oxidizer location and location of utilities.
   (iv) Other items that will be required to install the oxidizers (e.g. demolition of old facilities to make room for the new equipment, structural modifications needed to install the back-end controls on a finishing (back-end) building's roof).

2. The cost estimators visited the sites to survey the existing plants and the proposed locations of the new equipment. The purpose of this visit was for the cost estimator to understand the project scope and to try to identify any complexities and complications that would affect the cost estimate.

   (i) The team reviewed potential issues with supporting systems (e.g. wastewater treatment facilities, availability of electrical connections, other utilities).

(ii) The team reviewed site access and congestion items that could impact construction or design.

3. Major and specialty equipment quotes were solicited from third party contractors based on specific flow conditions and design requirements. The quoted components include material costs and installation estimates for:

   (i) Thermal Oxidizers and Acid-Gas Scrubbers.
   (ii) Ductwork from emission sources to oxidizers.

4. The other direct cost items (pumps, piping, instrumentation, foundations, etc.) were estimated in detail using proprietary ExxonMobil estimating methods (based on data and experience from previous and on-going projects).

5. The indirect costs and contingency were then estimated by using ExxonMobil's estimating methods for similar projects. Contingency is added based on estimate accuracy studies of previous projects at this projects development stage.

Some of these activities went beyond steps normally taken at this early phase of project development. Site visits are not usually made at this stage of a project, but it was deemed necessary because of the complexities associated with the installation and connection of the new equipment to an operating plant with limited space available.

D. Exxon Mobil has experience in the cost of installation and operation of thermal oxidizers at other locations; actual project costs support ExxonMobil's current control cost estimates and highlights how EPA's estimates are significantly understated.

Actual cost information was collected for thermal oxidizer projects completed by ExxonMobil in the last 10 years. These projects were completed around the world, so, for comparison purposes, these costs were converted from their source location and source time frame to a comparable cost in 2013 in Baytown, Texas. This conversion was made using ExxonMobil proprietary factors based on regularly published cost updates. These cost updates are produced from ExxonMobil's worldwide project experience and regular surveys of Engineering / Procurement / Construction contractors.

Each cost total represents the total cost of the thermal oxidizer project scope. This means it includes the material, labor, and engineering of the thermal oxidizer itself and all the associated ducting, piping, electrical and instrument components, and other support facilities.

Summary of Actual Project Capital Costs

Project	Year of Installation	Airflow (kscfm)	VOC (lb/hr)	Capital Cost ($M)
Site A: U.S.	2002	57	206.0	14.2
Site B: U.S.	2002	40	88.4	9.5
Site C: U.S.	2005	20	25.8	7.3
Site D: Europe	2003 / 2005	60	287.0	12.1

Note: M = million

More detailed information on these projects, including location, is included in the CBI letter.

Each project is different due to such factors as different plant layouts, the availability of utilities, and plant specific requirements. These four projects represent a good mix of possible thermal oxidizer projects. In summary, the installed costs of thermal oxidizers at four locations shows a typical actual cost of $7M to $14M, which is comparable to, and supports, the cost estimates developed for the controls potentially required by EPA's P&R1 proposal. Our actual experience also further highlights how EPA's control cost estimates are deficient and significantly understated.

E. Equipment selection for n-hexane emissions control

To support project development, a technology selection assessment was prepared to optimize control technology effectiveness and costs for the intended service. This section, and the following, provide background on the assessment.

The back-end emission streams from the Butyl and Halobutyl finishing operations are characterized as having a high volume of ambient air with a range of 20,000 - 80,000 acfm (actual cubic feet per minute) and with very low concentrations of VOCs (volatile organic compounds) with a range of 40 to 500 ppm (parts per million) by volume. Also, these streams approach saturation with moisture and contain significant quantities of sticky particulates. The particulates require filtration to prevent down-stream plugging of ducting and control equipment. A portion of the contained moisture condenses in the ducting, requiring removal, with the remaining portion staying in the process stream and passing through the control equipment. The control equipment selection requires that all these issues be considered so that the chosen technology can meet a high VOC destruction efficiency and reasonable service factor under these conditions.

Control of the VOCs contained in this stream requires addition of a considerable quantity of energy, in the form of natural gas, to achieve the desired thermal destruction of 98%. Not only is the large volume of air being heated, but the contained water vapor must also be raised to a temperature of 1450°F - 1550°F to achieve destruction of the contained VOCs. The control equipment selection therefore must accomplish these requirements with significant thermal efficiency and contribute minimum NOx emissions. Low NOx emissions are of particular importance in the Baton Rouge and Baytown areas where ozone attainment is an issue.

For this set of conditions, a Regenerative Thermal Oxidizer (RTO) is the technology of choice. A well-designed RTO has a destruction efficiency that can meet 98%. Also, the contained media can achieve a thermal efficiency of 95% which reduces the addition of natural gas by 95% as opposed to a conventional thermal oxidizer. The addition of natural gas is typically achieved by injection just upstream of the media bed. This injection point has the benefit of producing very low NOx emissions because the incoming process stream is preheated to a temperature that approaches ignition by the heat reclaimed from the destructed VOCs. A normal thermal oxidizer will have an ignition burner that will have a flame temperature that can approach 3000°F and will produce significant quantities of NOx even with the use of low NOx burners because the burner must provide all the heat required to bring the air stream to VOC destruction temperatures. Even a recuperative thermal oxidizer, which has some heat recovery, requires much more fuel combustion than an RTO, and therefore generates much more NOx..

Another desirable feature of a RTO is its ability to minimize the service factor impact of the significant amount of water vapor that is contained in the process stream. An RTO design has a limited amount of surface area that falls below the dew point temperature of the trace amounts of acid gases that may be present in the destructed gas stream, thereby significantly reducing corrosion in the thermal oxidizer versus a standard design.

The presence of trace amounts of acid gases and moisture requires that significant portions of the oxidizer and collection system be fabricated from metal alloys that can resist corrosion attack at temperatures that range from ambient to those in excess of 1500°F. Therefore, the ducting that connects the individual collection hoods to the RTO will be made of 304 SS (Stainless Steel). The inlet and outlet ducting manifolds are capable of seeing temperatures up to 600°F and will use a combination of 316 SS to RA 2205 (Royal Alloy). The media support beams within the RTO experience a wide swing of temperatures and will be fabricated from AL 6XN alloy. All of these materials are selected specific to the conditions they will experience.

F. Equipment selection for MeCl/HCl emissions control

The front-end emission streams from the Butyl Rubber and Halobutyl Rubber polymerization operations are characterized as having highly variable flow rates and high, but very variable, concentrations of Methyl Chloride (MeCl) and very low concentrations of other compounds. Therefore, the control equipment selection requires that additional ambient dilution air be introduced to achieve the desired 98% destruction efficiency.

Control of the MeCl contained in these streams also requires energy addition, in the form of natural gas, to reliably accomplish thermal destruction as the MeCl content and stream flow can vary greatly (e.g., <1 to > 800 lb/hr MeCl and 19 to >3900 lbs/hr stream flow at the Baytown Chemical Plant). Each process stream must be raised to a temperature of ~1400°F to achieve destruction. Following thermal oxidation the produced acid gases (HCl) will require cooling and scrubbing with a sodium hydroxide and water solution to neutralize the hydrochloric acid. The control equipment selection, therefore, must accomplish these requirements with significant thermal efficiency and contribute minimum NOx emissions to the atmosphere.

Selection of a Recuperative Thermal Oxidizer (RCO) followed by a quench and acid gas scrubber are the technologies of choice for this situation. A well-designed RCO and acid gas scrubber can achieve the specified organic HAP destruction (98%) and HCl removal (99%). Also, the heat exchange surfaces can reclaim 60 to 65% of the heat produced during oxidation for use in pre-heating the combustion air and process gas stream. This will reduce the need for additional natural gas when low concentrations of MeCl are present in the feed stream. The ability to preheat a combustion air stream has the added benefit of producing very low NOx emissions because the incoming process stream and air mixture is preheated to a temperature that approaches ignition by the heat reclaimed from the oxidized MeCl. A normal thermal oxidizer will have a fired burner that will have a high flame temperature and will produce significant quantities of NOx, even with the use of low NOx burners.

Because of corrosion concerns, the RCO will be fabricated from Inconel 625 and 316 SS (Stainless Steel) the quench section will be made of Hastelloy C-276, the acid gas scrubber will be FRP (Fiberglass Reinforced Polyester) and the induced draft fan and discharge stack will be 304 SS. All of these materials are selected specific to the conditions they will experience.

G. Summary of capital costs for proposed control devices.

The table below summarizes ExxonMobil's estimates for the controls identified in the proposal. For comparison purposes, a combined Halobutyl Rubber and EPR front-end control system was estimated, since that is the basis for EPA's beyond-the-floor decision, though as we discuss in Section V, a shared system is neither legally or practically viable. Where we have evaluated the cost-effectiveness of the realistic case of separate controls, we have scaled this cost estimate for the combined unit using the design flows and well-established scaling approaches.

The total capital cost covers the capital cost of engineering, buying, and installing the selected control device and all auxiliary items. These numbers are based on installation in Baytown or Baton Rouge and a 2013 mechanical completion date. They exclude Project Services Costs, which are discussed in the CBI letter. The CBI letter also includes details on the cost estimates, including vendor quotes.

	Controls Equipment			Design Flow	Total Capital
	RTO	RCO	Scrubber	(scfm)	Cost $M
Baytown Butyl Front-End Controls		✓	✓	5,700	13.0
Baton Rouge Halobutyl and EPR Front-End Controls		✓	✓	2,650	10.6
Baytown Butyl Back-End Controls	✓			70,000	10.0
Baton Rouge Halobutyl Back-End Controls	✓			80,000	14.5

H. Summary of operating costs for proposed control devices.

In addition to project costs there will be ongoing operating costs associated with the facilities. These costs typically include:

1. Energy-related (natural gas and electricity)
2. Maintenance (routine and preventive maintenance; materials and labor)
3. Operating labor
4. Other utilities (wastewater, steam, plant air, nitrogen)
5. Other costs such as administrative, taxes, insurance, overhead

The following table summarizes the major operating costs for the four sets of controls. Details on the cost estimate basis are included in the CBI letter.

Operating Costs, k$

Cost Category	Baton Rouge Halobutyl and EPR Front-End Controls	Baytown Butyl Front-End Controls	Baton Rouge Halobutyl Back-End Controls	Baytown Butyl Back-End Controls
Natural Gas	52.0	11.8	71.0	23.7
Electricity	13.2	17.6	301.9	114.3
Maintenance	120.0	120.0	60.0	15.0
Operations	39.5	39.5	26.3	6.6
Total	224.7	188.9	459.2	159.5

Note: k = thousand

I. EPA's capital and operating cost estimates for the controls proposed have major deficiencies and significantly underestimated the expected costs.

New Plant Installations versus Retrofits

EPA's pollution control cost manual states,

> "All costs are for new plant installations; no retrofit cost considerations are included."

EPA Air Pollution Control Cost Manual - Sixth Edition (EPA 452/B-02-001). Entire Document. Page 528/752.

The installation of a thermal oxidizer in an existing plant poses a number of challenges that the EPA Manual and method do not address.

1. Oxidizer Location. Construction of a new unit allows for optimization of the plot plan. This means that the designer can shuffle equipment around and position an oxidizer very close to the emission sources. Because the proposed controls will be installed in existing units with limited space to place equipment, the oxidizers will have to be located at least 300 feet from the emission sources. This leads to a significant cost in ducting to bring the emissions to the oxidizers.

2. Working in and around an Operating Unit. Working near an online unit creates a number of delays that slow down work and cost more money. These include such things as a more thorough work-permitting procedure, interruptions from the plant (events such as gas leaks), extra safety requirements, and long distances between the work areas and material staging areas. These delays can reduce productivity by up to 30%.

3. Tie-ins. When collecting emissions from existing sources, connecting the new equipment or piping to existing equipment or piping is referred to as a tie-in. Tie-ins to operating units require extra planning and engineering, as well as extra labor to make sure the connection occurs smoothly. Many of the tie-ins for these projects will be hot-taps, which are especially difficult. Hot-taps involve connecting a new pipe to an existing one that is in operation without disturbing the operation of the existing pipe.

4. Limited Utilities Available. Adding an oxidizer to an existing unit requires electricity, natural gas, steam, and other utilities. A unit seldom has spare capacity for all the utilities needed; therefore extra capacity has to be built. For example, if all the electrical breakers in a substation are in use, an additional unit may need to be added to power just a few pumps or fans.

5. Engineering. Significant additional engineering will be required not only for the new facilities to be installed, but also to address the impact on existing equipment and operations.

Equipment Costs – RCO versus RTO

For the back-end controls, ExxonMobil typically uses Regenerative Thermal Oxidizers (RTOs) versus Recuperative Thermal Oxidizers (RCOs). RTOs require a higher initial investment, but make up for it in fuel savings. This is because RTOs can achieve up to 95% heat recovery. More details on the selection of RTOs can be found in the equipment selection discussion at the start of this section.

The EPA estimate assumed a direct flame incinerator (0% heat recovery) for the back-end controls at the Baytown Butyl Plant, and a recuperative thermal oxidizer (70% heat recovery) for the Baton Rouge Halobutyl plant. This led to lower capital equipment costs than if they had used their methods to estimate RTOs. The table below shows what the equipment cost would be for RTOs based on EPA's Cost Manual.

	Baytown Butyl	**Baton Rouge Halobutyl**
Total Gas Flow (scfm)	13,037	28,096
0% Heat Recovery Incinerator	95,876	
70% Heat Recovery Incinerator		276,310
Regenerative Thermal Oxidizer[1]	371,238	545,471
Percent Increase	387%	197%

[1] These calculations come directly from EPA's Air Pollution Control Cost Manual.

Auxiliary Equipment

According to the EPA's Control Cost Manual, the total Purchased Equipment Cost (PEC) is the sum of the Equipment Cost (EC) plus any auxiliary equipment, such as ducting or pumps. In the EPA's cost estimate, no auxiliary equipment was added for the incinerators and only pumps and packing were added for the scrubbers.

Because of limited space close to the emission sources, the incinerators will be located 300 ft from the emission sources for 3 of the 4 projects, and 1,200 ft away for the Baytown Butyl front-end controls. This results in a significant amount of ducting that was not included in the EPA estimate.

In addition to pumps and packing, the scrubbers will require a storage drum to hold a 1 hour supply of the scrubbing liquid and a heat exchanger to keep the scrubbing liquid cool. The storage drum and heat exchanger add up to a significant cost that was not included in the EPA estimate.

Total Capital Investment Factor

To estimate the Total Capital Investment, the EPA's Cost Manual first generates a purchased equipment cost, PEC. The PEC is then multiplied by a total capital investment factor to generate the Total Capital Investment. According to the manual, these factors are 1.61 for incinerators and 2.20 for acid gas scrubbers. In the EPA's estimate, a factor of 1.25 was used for the incinerators that were smaller than 20,000 scfm. The table below shows the factors in use.

EPA Cost Estimate Total Investment Factors

	Front-End Controls		Back-End Controls	
	Baytown Butyl	**Baton Rouge Halobutyl and EPR**	**Baytown Butyl**	**Baton Rouge Halobutyl**
Incinerator				
Purchased Equipment Cost	138,337	385,012	187,671	590,943
Factor	x 1.25	x 1.25	x 1.25	x 1.61
Total Capital Cost	172,921	481,264	234,589	951,419
Scrubber				
Purchased Equipment Cost	225,636	290,516		
Factor	x 2.20	x 2.20		
Total Capital Cost	496,400	639,136		

Compared to typical ExxonMobil projects, these factors are quite low. A typical ExxonMobil project would have a ratio of 4 or 5 rather than 1.61 or 2.20. The reason for this difference is the EPA method assumes small indirect costs, whereas ExxonMobil's project experience indicates these costs are very significant.

According to the EPA Cost Manual, indirect costs should be 31% of the purchased equipment cost for an incinerator, and 35% for a scrubber. Indirect costs consist of engineering, construction supervision, scaffolding, construction equipment, and other field expenses. EPA also includes the estimate contingency in the indirect cost category. In a typical ExxonMobil project, the indirect costs, engineering, and contingency is 200% to 300% of the purchased equipment cost.

ExxonMobil projects require a significant amount of engineering. Engineering for new construction in an operating plant containing hydrocarbons is a tedious and complicated process. It is essential to design a system that is low risk and very safe. Impact on existing facilities requires additional engineering.

The contingency for this estimate at this stage is relatively high because of uncertainties in scope. Small changes in design or execution strategy could have a very large impact on cost. At this early point in the project, numerous assumptions are made and changes/developments in scope are expected. For example, if it is determined that another emission source will have to be added to the control device, it will impact the RTO size, ducting, and utility requirements. These small changes actually have a large impact on the cost, especially as the project gets closer to completion. A change late in a project has a large cost impact because it can result in a significant amount of rework.

In summary, the EPA estimate is inadequate for four reasons:

1. It does not include retrofit considerations.

2. It assumes that recuperative thermal oxidizers will be installed for back-end controls. ExxonMobil typically uses regenerative thermal oxidizers for these controls because the additional investment is justified by the operating cost savings and the lower NOx emissions.

3. It does not include the significant costs for auxiliary equipment, such as ducting, storage drums, or heat exchangers.

4. The total capital investment factor used is much too low for a major retrofit project and does not produce enough cost for indirect costs, engineering, or contingencies. It does not reflect the safety and other facility requirements necessary in an existing operating plant.

VII. Compliance Time

A. EPA should provide 4 years to comply with emission limits that require capital investment to install controls; the automatic one year extension should be incorporated into the final rule.

EPA's rulemakings related to the Boiler/Process Heater MACT, other air toxics rules, and utility air rules will trigger a significant demand for combustion engineers, company resources, materials, and construction resources to meet those compliance deadlines. This proposal provides three years for compliance where controls will have to be installed. As EPA has assumed in its supporting analyses, these will be combustion controls. While three years is oftentimes reasonable for installing such controls, it is inadequate in this case due to the widespread demand for combustion-related resources. The Agency should provide, in the final rule, an additional one year of compliance time for any unit subject to an emission limit under this regulation. This additional one-year extension is pursuant to CAA § 112(i)(3)(B), and 40 CFR 63.6(i).

B. EPA should allow four years for compliance even when the back-end emission limit is set at the floor and no beyond-the floor controls are required.

EPA proposes that for the Halobutyl Rubber subcategory a back-end emission limit that would be based on the emissions data provided for a single year and no beyond-the floor controls would be required. Based on this, and an expectation that no capital investment would be required, EPA proposes a compliance date one year from the date of the final rule. However, the no capital investment assumption is potentially in error, depending on the final rule for the following reasons:

1. The proposed emission limit for Halobutyl Rubber was based on one year of data with no allowance for variability. As we indicate in our discussion of variability in section IV of these comments, the emission factor derived from that year's data must be increased by at least 43% to reflect the historic variability of emissions from that unit. Without that adjustment, in most years the unit will exceed the floor limit and it will take considerable time and potentially capital investment, to ensure the emission limit can be met for all 12-month periods.

2. The removal of the existing startup and shutdown provisions and the failure to include reasonable replacements will force the development of new work practices and may require added capital investment for further controls given the obligation of compliance at all times.

3. In addition, the proposed rule does not currently consider the state permit conditions available to the sites to allow for maintenance on the existing RTOs. This effectively tightens the standard applicable to the Halobutyl unit and makes it likely that upgrades to the existing RTO or other capital investment will be required.

C. EPA should clarify that, in the absence of allowing four years as recommended above, for back-end emission limits not requiring controls the first compliance demonstration is two years (24 months) following the date of the final rule.

For back-end process provisions that EPA anticipates would not require controls, it is proposed that compliance with rule requirements be required no later than one year from the date of publication of the final rule. The compliance determination in § 63.495(g)(5) says: "each month, divide the total mass of organic HAP emitted for the 12-month period by the total mass of elastomer produced during the 12-month period." Thus, as compliance is required beginning one year after rule publication, data collection begins in the 13th month. Since compliance is based on annual emissions (53 Mg/yr for Halobutyl in the proposal) this requires data to be collected for 12 months after the compliance date before a compliance determination can be made, and then the determination is made every month thereafter. So in effect, compliance can only be demonstrated after 24 months from the date of the final rule.

There has been some indication that EPA believes that the first month's data (13th month from the date of the final rule) should be used to demonstrate compliance, and then, after two months, the two month emissions and production data should be used to determine compliance, etc. Such an interpretation would be patently inconsistent with the proposed rule language and the emission limit, which is a rolling 12-month limit. Using performance from shorter time frames to compare against a 12-month emission limit effectively increases the stringency of the standard by eliminating monthly variability. For example, the first month could have higher than normal emissions due to grade slate. The proposed rule emission limit did not factor in monthly variability nor did the rule consider the potential added capital investment required to meet a more stringent limit. In the final rule EPA should clarify that, in the absence of allowing four years as recommended above, for emission limits that EPA believes will not require controls, the first compliance demonstration is two years (24 months) following the date of the final rule.

D. The timing of the backend compliance calculation needs to be corrected.

The regulatory language in § 63.495(g)(5) requires calculating the 12-month average emissions for Butyl and Halobutyl back-end process emissions. However, the proposed language requires that you do the calculation before the end of the 12th month. The rule language says: "each month, divide the total mass of organic HAP emitted for the 12-month period by the total mass of elastomer produced during the 12-month period." This is impractical since there is additional production and emissions occurring right up until the end of the month. The regulatory language should be revised to provide that each month you calculate the 12-month average emissions and production for the previous calendar 12-month period.

E. EPA should clarify that the compliance date related to removal of the Startup/ Shutdown/ Malfunction provisions is also four years.

In the proposed rule EPA did not indicate the compliance date related to the removal of the Startup/ Shutdown/ Malfunction provisions. Given that potential emissions during startup and shutdown periods were not incorporated into the 1996 standard, facilities may have to invest capital to improve or add controls and certainly will have to develop new work practices, test them and train personnel. As a result, they would need up to four years for project construction and implementation and to implement needed work practice changes. Startups and shutdowns occur infrequently. In fact, there is likely to be only one major unit turnaround in a four year period. Thus, even work practices will take an extended time to develop and test, since sources must wait for planned startups and shutdowns to determine if a particular work practice meets the newly imposed emission limits. This is a particular concern for the back-end emission limits, since those are 12-month averages. Therefore, it takes up to 12 months to determine if a startup or shutdown has caused the emission limit to be exceeded.

VIII. Startup/Shutdown/Malfunction (SSM) and Affirmative Defense

A. EPA has misread *Sierra Club v. EPA*

EPA asserts that its treatment of excess emissions during SSM events in the proposed rule is consistent with the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019, which vacated the exemption for excess emissions during SSM events contained in the 40 C.F.R. Part 63 General Provisions for emission standards for hazardous air pollutants under § 112. EPA claims that the D.C. Circuit's interpretation of the definition of "emission standards" requires EPA to apply MACT emission standards at all times, compelling EPA to eliminate the SSM exemption from subpart U. 75 Fed. Reg. at 65074. While that statement may be literally accurate — "exempting" emissions entirely, so that they would not be subject to any emission standard, would not satisfy the requirement of the *Sierra Club* panel — the opinion does not preclude EPA from applying a different emissions standard during SSM events than applies during normal operations. In fact, the opinion acknowledges that CAA § 302(k)'s "inclusion of [the] broad phrase" "any requirement relating to the operation or maintenance of a source to assure continuous emission reduction" in the definition of "emission standard" suggests that EPA need not "necessarily continuously apply a single standard." 551 F.3d at 1027. *See also id.* at 1021 ("accepting that 'continuous' for purposes of the definition of 'emission standards' under CAA section 302(k) does not mean unchanging"); *id.* (referring to "the CAA's requirement that some section 112 standard apply continuously") (emphasis added).

Thus, EPA cannot hide behind the *Sierra Club* decision as a justification for ignoring the inability of even the "best performers" to achieve the proposed emission standards during SSM events. If EPA sets the emission standards based on the "best performing 12% of units in the category," those limitations must on average be "achieved" by the best performers. An emission limitation that applies during SSM events has not been demonstrated to be "achieved" by the best-performing 12% of units in the category" unless EPA can show that those best performers actually meet that emission limitation during SSM events.

The D.C. Circuit also has recognized that standards based on what sources achieve must account for the limitations inherent in the technology used to reduce emissions. For example, in a case reviewing NSPS under § 111 of the CAA, *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 398 (D.C. Cir. 1973), the court acknowledged that "'startup' and 'upset' conditions due to plant or emission device malfunction, is an inescapable aspect of industrial life and that allowance must be made for such factors in the standards that are promulgated." *Id.* at 399; *see National Lime Ass'n v. EPA*, 627 F.2d 416, 431 n.46 (D.C. Cir. 1980) (noting that "a uniform standard must be capable of being met under most adverse conditions which can reasonably be expected to recur"). The D.C. Circuit acknowledged this same principle when reviewing emission standards for new sources in the medical waste incinerator rule under CAA § 129 in *Sierra Club v. EPA*, 167 F.3d 658 (D.C. Cir. 1999). In that case, while the court did not find the record sufficient to support EPA's approach for new sources, the D.C. Circuit did not object to a standard-setting approach which would account for the performance of technology under the "worst reasonably foreseeable circumstances." *See id.* at 665. Furthermore, the D.C. Circuit reiterated the principle in *National Lime* that "where a statute requires that a standard be 'achievable,' it must be achievable 'under the most adverse circumstances which can reasonably be expected to recur.'" *Id.* at 665 (citing *National Lime Ass'n v. EPA*, 627 F.2d at 431 n.46). EPA's MACT approach in the proposed P&R1 NESHAP ignores these longstanding principles by applying the same set of standards at all times, including SSM.

Courts have reached a similar conclusion when considering analogous Clean Water Act requirements that EPA establish technology-based effluent limitations based on the best available control technology. Knowing that there would be periods where a discharger, even with "exemplary use of" the identified best technology, would exceed the effluent limitations because of conditions "beyond the control of the permit holder," EPA violated the Clean Water Act by failing to provide an "upset provision" to address those periods. *Marathon Oil Co. v. EPA*, 564 F.2d 1253, 1273-74 (9th Cir. 1977). *See also, e.g., NRDC v. EPA*, 859 F.2d at 207 (distinguishing between technology-based effluent limitations, where some provision for "upsets" is required, and water-quality-based effluent limitations, which are tied to achieving water quality standards rather than based on available technology, and therefore need not include an upset provision).[5]

As noted above, the *Sierra Club* panel did not prevent EPA from adopting emission standards that are different for SSM periods than for normal operation. Nor did it conclude that EPA is barred from using a "requirement relating to the operation or maintenance of a source to assure continuous emission reduction" as the emission standard that applies during such events. *See* 551 F.3d at 1027. All that decision

[5] *Weyerhaeuser Co. v. Costle*, 590 F. 2d 1011 D.C. Cir. 1078), does not support EPA's position. In that case, the court was discussing a "technology forcing" standard, rather than one, like MACT and NSPS, that is to be based on what is already being "achieved" or has been demonstrated to be achievable. Also, the decision came long before *NRDC v. EPA*, 859 F.2d 156 (D.C. Cir. 1988) which, as noted above, affirmed the need for an upset provision to address circumstances where compliance with effluent limitations is impossible through no fault of the permittee, and which endorsed *Marathon Oil*.

rejected was EPA's assertion that it had discretion to decide not to impose any emission standard whatsoever during SSM periods. *See id.* at 1027-28, 1030 (noting that EPA was not claiming that the General Provisions SSM exemption was either an emission standard under § 112(d) or a design, equipment, work practice, or operational standard under § 112(h)).[6]

B. EPA should propose a separate emission limit or apply work practice standards during periods of SSM to appropriately recognize the operating and emission differences during these periods.

EPA's failure to provide specific standards applicable to SSM periods in the proposed P&R1 NESHAP is contrary to the statute's requirement that the standards established under § 112(d) be "achievable." Furthermore, EPA's data analysis used in developing the proposed standard does not reflect the consideration of emissions during startup and shutdown periods. Although the proposed rule contains a discussion regarding EPA's position with respect to considering malfunction emissions in developing § 112(d) standards, 75 Fed. Reg. at 65074, which these comments address below, EPA appears to presume that startup and shutdown emissions will comply with the existing and proposed standards for normal operations. While acknowledging that "[p]eriods of startup ... and shutdown are all predictable and routine aspects of a source's operations," *id.*, EPA's proposal provides no information that startup and shutdown data were considered in EPA's floor-setting process.

EPA has two choices to address startup and shutdown emissions. First, EPA could promulgate numerical emission standards that apply to startup and shutdown emissions. To promulgate such a standard, EPA needs to have data to determine which facilities are the best performing sources during startup and shutdown periods. EPA either needs to identify or collect this data and propose one or more standards applicable during startup and/or shutdown.

Second, given the current lack of and difficulty in measuring and collecting data for startup and shutdown emissions, it would be appropriate for EPA to set work practices for these events. Section 112(h) allows EPA to set work practice standards for situations where "it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard," defined as any situation where "the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations." §§ 112(h)(1)-(2). Gathering data from startup and shutdown periods would be challenging given the often brief and variable nature of these periods, the lack of proven methodologies for measuring such emissions, as well as the need to define the exact time period for what is considered "startup" and/or "shutdown" and the extremely variable array of equipment that could be involved in startups and

[6] The statement in the majority opinion that "Congress gave no indication that it intended the application of MACT standards to vary based on different time periods," 551 F.3d at 1028: (1) is contradicted by other statements in the opinion, referenced above, that a MACT standard need not continuously apply a single emission limitation, (2) is *dicta*, because that was not the situation presented by the challenge regulations and argued by EPA, (3) ignores the extensive case law about technology-based limitations referenced above, and (4) does not in any event say that the CAA precludes EPA from adopting different emission limitations that apply during SSM events.

shutdowns. A work practice approach for these periods would satisfy both the statute's requirement that MACT standards be "achievable" and the requirement that there be a MACT standard applicable at all times.

A work practice approach for these periods also would be consistent with EPA's recently promulgated MACT standards for compression ignition reciprocating internal combustion engines (CI-RICE). *See* National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines, Final Rule, 75 Fed. Reg. 9648 (Mar. 3, 2010). EPA finalized work practice standards for startup of such engines because the agency determined that it was "not feasible to finalize numerical emission standards that would apply during startup because the application of measurement methodology to this operation is not practicable due to technological and economic limitations." *Id.* at 9656. According to EPA, applicable test methods that would be needed to measure during these events "do not respond adequately to the relatively short term and highly variable exhaust gas characteristics occurring during these periods." *Id.* at 9665.

For similar reasons, EPA should set work practice standards to apply to malfunction periods. EPA argues in the preamble to the proposed rule that these periods should not be considered a "distinct operating mode" and uses this position to justify not factoring malfunction emissions into the proposed MACT standards. Considering that EPA's proposed MACT standards are supposed to apply at all times, the implication is that periods of malfunction also are covered by the MACT standards that apply during normal operations. This directly conflicts with the statutory requirement that the MACT standard be "achievable."

Given that the data used to develop the P&R1 NESHAP proposal does not consider malfunctions despite the fact that EPA claims malfunctions are not a separate operating mode from normal operations and that the statute requires that the standard be "achievable," EPA must either reconsider and re-propose the MACT standards considering malfunctions or set a separate standard, such as a work practice standard to address periods of malfunctions. Section 112(h) allows EPA to set work practice standards for situations where "it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard . . . ." Similar to startup and shutdown, malfunctions fit with the situations described in the definition of "not feasible to prescribe or enforce an emission standard" as any situation where "the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations." Emission testing for malfunctions would be near impossible to conduct given the sporadic and unpredictable nature of the events. EPA acknowledges in the preamble to the proposed rule that it is "impracticable" to take periods of malfunctions into account when setting emissions standards given the "myriad different types of malfunctions that can occur across all sources in each source category" and that "malfunctions can also vary in frequency, degree, and duration, further complicating standard setting" 75 Fed. Reg. at 65074. Section 112(h) work practice standards, therefore, are well-suited to address malfunction periods and the complexities and challenges surrounding collecting data and establishing numerical standards for those events.

An example of an appropriate work practice for SSM periods is one that EPA has had in place for many years, development and use of SSM plans. These plans are carefully prepared, tied to the specific type of operation, and identify the steps necessary to minimize emissions during SSM periods. If warranted, root cause analyses could be added to further strengthen the work practice requirement.

C. The proposed affirmative defense is not a substitute for setting emission standards for SSM periods.

EPA acknowledges that regulated sources sometimes will be unable to comply with standards because of malfunctions, even if their equipment is properly designed and maintained, through no fault of the source. 75 Fed. Reg. at 65074. Rather than promulgate a separate emission standard that eliminates that situation during SSM, achievable with the identified best technology, EPA offers instead an "affirmative defense." Inclusion of the affirmative defense would not cure EPA's failure to meet the § 112(d) requirement to set emission standards that are achievable during SSM events.

Even if the proposed affirmative defense were not unreasonably restrictive, as discussed below, being able to assert a defense obviously is not the same as complying with emission limitations in the first instance, particularly in the case of an emission limitation that the CAA requires be achievable. Although a source qualifies for the affirmative defense, it may be considered to have violated the standards—and may have to report violations, certify noncompliance, etc. Assuming a source successfully demonstrates the affirmative defense to penalties, the fact remains it has reported a violation of standards and is legally vulnerable.

It is unclear how the affirmative defense would apply to enforcement actions by state and local governments, or to private citizen enforcement actions under CAA section 304. While we assume EPA intends the affirmative defense to be available in a citizen suit, still: (a) a lay judge, rather than environmental experts at EPA, would be assessing the source's entitlement to the affirmative defense, and (b) it appears that the source might be subject to injunctive relief, and could be required to pay in the citizen-plaintiff's attorneys fees, even if the source successfully demonstrated that it qualified for the affirmative defense. EPA has not addressed these and other apparent limitations and shortcomings of the affirmative defense, which make it an entirely inadequate substitute for setting standards that include provisions for SSM events.

Furthermore, there is no legal basis for outright precluding application of an affirmative defense to injunctive relief. EPA apparently believes it will encounter situations where a facility can qualify for the affirmative defense to civil penalties but there will still be some preventive step EPA will be able to require to avoid a future exceedance. However, in order to qualify for the affirmative defense in the first place, a facility must demonstrate, at a minimum, that it could not have reasonably prevented the exceedance. In most if not all cases where the affirmative defense applies, there will be no reasonable injunctive relief available.

At a minimum, EPA should state that the affirmative defense applies to civil penalties, administrative penalties, and injunctive relief. EPA also should reword the affirmative defense, so that it states a person who demonstrates entitlement to the affirmative defense "will not be deemed in violation of" the subpart U standards. Cf. 40 C.F.R. § 80.613. (stating that persons demonstrating specified defenses "will not be deemed in violation" and are not "deemed liable for a violation" of diesel fuel sulfur program regulations).

D. The proposed affirmative defense as written is unreasonable and impracticable.

If EPA refuses to set alternative emission standards that apply during SSM periods and continues to rely instead on the proposed affirmative defense, the affirmative defense must be substantially modified for it to provide any significant, practical value. First, as noted above, the affirmative defense needs to state clearly that a source that qualifies for the affirmative defense shall not be deemed to have violated the applicable standards during that time.

Second, the affirmative defense should be available not only for malfunctions, but also for excess emissions during startup and shutdown. There is no logical reason why a source that experiences excess emissions during startup or shutdown that were not reasonably preventable (either because it experienced conditions EPA did not anticipate in setting the standards, or because EPA's assumption about the achievability of those standards during startup and shutdown periods was wrong) should be excluded from the affirmative defense.

Third, many aspects of the proposed affirmative defense make it unavailable as a practical matter for many if not most malfunctions. As further detailed below, several of the conditions for establishing an affirmative defense use phrases that are subject to a wide range of interpretations, and that on their face do not recognize any need for reasonableness or cost-effectiveness. How will the enforcement authority, or a judge, determine whether "proper design" or "better operation and maintenance practices" could have prevented a malfunction (§ 63.480(j)(4)(i)(A)), whether a recurring malfunction is a result of "inadequate design" (*id.*), whether repairs were made "as expeditiously as possible" (§ 63.480(j)(4)(i)(B)), whether the source took "all possible steps" to minimize the impact of the excess emissions (§ 63.480(j)(4)(i)(E)), *and* whether emissions control systems were operated "if at all possible" (§ 63.480(j)(4)(i)(F))? In many if not most cases, it may have been possible to avoid the malfunction, or to do more to reduce the magnitude of the excess emissions, if the source had the benefit of hind-sight or if the source had spent unreasonable amounts of money or had imposed economically impracticable constraints on its operation. The affirmative defense, as proposed, leaves open the possibility that a source will be considered to be in violation because the enforcement authority decides that in one or more respects it would have been "proper" or "possible" for the source to take further steps to prevent or minimize the malfunction.

1. The proposed affirmative defense notification and timing requirements are unnecessary and unreasonable and thus arbitrarily limit the potential use of the affirmative defense. They should be revised.

Proposed § 63.480(j)(4)(i) says in part, "To establish the affirmative defense in any action to enforce such a limit, the owners or operators of facilities must timely meet the notification requirements of paragraph (4)(ii) of this subsection, ..."

Proposed § 63.480(j)(4)(ii) provides:

> (ii) Notification. The owner or operator of the facility experiencing an exceedance of its emission limit(s) during a malfunction shall notify the Administrator by telephone or facsimile (FAX) transmission as soon as possible, but no later than 2 business days after the initial occurrence of the malfunction, if it wishes to avail itself of an affirmative defense to civil penalties for that malfunction. The owner or operator seeking to assert an affirmative defense shall also submit a written report to the Administrator within 30 days of the initial occurrence of the exceedance of the standard in this subpart to demonstrate, with all necessary supporting documentation, that it has met the requirements set forth in paragraph (4)(i) of this subsection.

We believe the notification requirements are arbitrary and unreasonable. Sites are required to decide within 2 days of the start of any event whether they want to use the affirmative defense. There is no apparent reason why EPA needs to know within 2 days of an event whether a facility intends to assert an affirmative defense. Depending on the circumstances of the event, the first 2 days may be critical to responding to and resolving the event. This time period is when a facility will be taking actions that demonstrate the facility is entitled to the affirmative defense, if necessary, but the facility will not necessarily know within 2 days whether it indeed will be able to make the required showing.

In particular, it is unreasonable to require sources to make such a decision before knowing whether the event results in an exceedance. Many compliance requirements have long averaging times. Daily averages are typical in subpart U for continuously monitored parameters. Thus, a source would never have more than a day to react to an indicated excursion and to decide if it was due to a malfunction and then whether to invoke the affirmative defense provision. If the event occurs over an extended period and is not a large change in the monitored parameter, there may be no excursion during the first day of the event and then the use of the affirmative defense is unreasonably foreclosed. Monthly averages are the basis for determining compliance with the stripper bottoms limits for EPR units. In the extreme, the proposed back-end process vent emission limits for Butyl and Halobutyl are 12-month rolling averages. Thus, a subpart U source often will not know if a particular event will cause a deviation from these standards for as long as one month and almost never within two days. The time period for meeting the affirmative defense requirements should start with the date the site determined that there was an exceedance, rather than from the start of the event.

Additionally, it may take time to investigate an event and determine if all of the criteria for a malfunction and the affirmative defense are met. In fact, as we discuss below, some of the criteria for using the affirmative defense (such as performing a root cause analysis) often cannot be completed in 30 days, much less 2 days. Investigations to determine if an event meets the malfunction criteria often cannot safely start until an event is over, because operating personnel are reacting to the event, the equipment cannot be investigated until the situation is stable and technical expertise must be gathered.

There are already many mechanisms at the Federal and State level to make immediate notifications of excess emission events to assure the public safety and health are protected. Thus, the proposed notification requirements in P&R1 are only important in providing adequate time for use of administrative proceedings and additional time for reporting imposes no public health or safety concern or serves any enforcement purpose. Currently, excursions from subpart U requirements, including those due to malfunctions, are reported to EPA in the subpart U semi-annual report. In many cases, it would be obvious to the enforcement authority, based on the kind of malfunction or deviation reports that sources already submit under many air programs, that an exceedance of the proposed standards resulted from an unforeseen and unavoidable equipment failure or process upset. It is extremely inefficient and burdensome for both sources and regulators to require a complete justification of the affirmative defense before the enforcement authority has indicated any need for further investigation. The 2-day notification requirement should be deleted.

The 30-day demonstration requirement also must be extended. Allowing only 30 days to provide the kind of extensive documentation required by the affirmative defense as currently written, including a completed root cause analysis (RCA), is arbitrary and unreasonable and frequently impossible. For major events, it can take weeks and sometimes months to pull together a team of experts and complete a RCA. In order to provide adequate time for the more complicated malfunction situations and RCAs, the requirement should be to submit a written report demonstrating entitlement to the affirmative defense within 180 days of determining that there was an exceedance due to a malfunction. Alternatively, based on our experience, 90 days is the minimum time that should be required, but in that case, the rule must allow for an extension of up to 180 days for more complicated situations.

Finally, related to the RCA requirement, EPA should clarify that the requirement to perform a RCA "to determine, correct, and eliminate the primary causes of the malfunction" does not require that identified corrective actions be completed within the demonstration period. Long- term corrective action can require facility modifications that can take years to design and execute or procedural changes that can take months to safely implement.

For these reasons, we recommend EPA delete the 2-day initial notification requirement as unnecessary, leaving in place only a 180-day written demonstration requirement. We believe the initial notification of the decision to use the affirmative defense should be on the same schedule as providing the supporting information, and that time should start when the source determines that there was an exceedance and that that exceedance was due to a malfunction.

We recommend that § 63.480(j)(4)(ii) be revised as follows.

> (ii) Notification. ~~The owner or operator of the facility experiencing an exceedance of its emission limit(s) during a malfunction shall notify the Administrator by telephone or facsimile (FAX) transmission as soon as possible, but no later than 2 business days after the initial occurrence of the~~ malfunction~~, if it wishes to avail itself of an affirmative defense to civil penalties for that malfunction.~~ The owner or operator seeking to assert an affirmative defense shall ~~also~~ submit a written report to the Administrator within ~~45~~ 180 days of ~~the initial occurrence of the exceedance of the standard in this subpart~~ determining that an exceedance has occurred to demonstrate, with all necessary supporting documentation, that it has met the requirements set forth in paragraph (4)(i) of this subsection.

2. Proposed § 63.480(j)(4)(i)(A) is arbitrary and unreasonably vague and can potentially never be met. Limiting the use of the affirmative defense to a subset of malfunctions is unjustified and unexplained and should be corrected.

Proposed § 63.480(j)(4)(i)(A) specifies what has to be proven to use the affirmative defense. It states:

> The excess emissions were caused by a sudden, short, infrequent, and unavoidable failure of air pollution control and monitoring equipment, or a process to operate in a normal and usual manner; and could not have been prevented through careful planning, proper design, or better operation and maintenance practices; and did not stem from any activity or event that could have been foreseen and avoided, or planned for; and were not part of a recurring pattern indicative of inadequate design, operation, or maintenance;

Under subpart U, the malfunction definition from 40 CFR § 63.2 applies. That definition is:

> *Malfunction* means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

Thus, the proposed first sentence of § 63.480(j)(4)(i)(A) only permits application of the affirmative defense to a subset of malfunctions, i.e., those that are "short" and those that are "unavoidable" (as opposed to "not reasonably preventable.") The criteria for using the affirmative defense should be identical to the criteria for a malfunction in the malfunction definition. Any differences are arbitrary and capricious and not supported by the record.

In addition to the criteria from the malfunction definition, § 63.480(j)(4)(i)(A) also requires that a source demonstrate that the malfunction "could not have been prevented through careful planning, proper design, or better operation and maintenance practices; and did not stem from any activity or event that could have been foreseen and avoided, or planned for; ..." That is a vague, subjective and potentially impossible criterion. Once an event occurs, you may know enough that you "could" have prevented it. In fact, that is the very basis for the later requirement to do a root cause analysis – so a facility can identify the root cause and plan to prevent recurrences. Even being hit by a meteor would fail this test, since one theoretically could have planned for it, even if the chance of such an occurrence is infinitesimal. In short, these demonstration requirements are so vague and subjective as to make the affirmative defense potentially unavailable.

We believe this paragraph must be limited to showing that the malfunction definition criteria were reasonably met and that no expansion beyond that definition should be included. Certainly, the record does not support a requirement to demonstrate anything more than that the malfunction definition was met. Thus, we recommend the following:

> The excess emissions were caused by a sudden, ~~short,~~ infrequent, and ~~unavoidable~~ not reasonably preventable failure of air pollution control and monitoring equipment, or a process to operate in a normal and usual manner; and that the failure was not caused in part by poor maintenance or careless operation ~~could not have been prevented through careful planning, proper design, or better operation and maintenance practices; and did not stem from any activity or event that could have been foreseen and avoided, or planned for; and were not part of a recurring pattern indicative of inadequate design, operation, or maintenance;~~

3. Proposed § 63.480(j)(4)(i)(B) imposes an unreasonable requirement and focuses on the wrong endpoint and should be clarified.

Proposed § 63.480(j)(4)(i)(B) requires that "Repairs were made as expeditiously as possible when the applicable emission limitations were being exceeded. Off-shift and overtime labor were used, to the extent practicable to make these repairs."

The phrase "as expeditiously as possible" is ambiguous and potentially impossible to meet. "Possible" is yet another subjective and ill-defined concept. Furthermore, requiring the "repairs" to be done rapidly is not the correct focus because excess emissions may have ceased before repairs are complete. The correct focus should be on reducing the excess emissions as rapidly as practical, which is addressed in the proposed (C) paragraph. Eliminating excess emissions may involve repairs, but may involve adjusting a control set point, bypassing a stuck control valve or other operator actions, shutting down the equipment or process, or routing the emissions to a an alternate control.

The second sentence, regarding the use of off-shift and overtime labor, is based on a misperception that using additional labor somehow indicates expediency or efficiency. As mentioned previously, often the excess emissions have ceased prior to repair work occurring. Even where repairs are the critical path to minimizing emissions, work may be managed adequately by rotational shift personnel. In any given case, the enforcement authority may choose to question whether appropriate steps were taken to minimize emissions. There is no sound reason for the rule to contain a specific but ill-defined criterion around overtime labor.

We recommend § 63.480(j)(4)(i)(B) not be finalized and proposed § 63.480(j)(4)(i)(C) remain as the basis for demonstrating an appropriate response to the malfunction.

4. Proposed § 63.480(j)(4)(i)(D) should be protective of personal injury and property damage and EPA should not be suggesting that they are only concerned with severe personal injury or property damage.

   Proposed § 63.480(j)(4)(i)(D) states "If the excess emissions resulted from a bypass of control equipment or a process, then the bypass was unavoidable to prevent loss of life, severe personal injury, or severe property damage."

   The word "severe" should be deleted from this proposed language. This language presumes an operator could know the magnitude of injury or damage before an incident necessitating a bypass occurs. Any situation that presents a risk to people, property, or equipment could be more or less "severe" in the end but cannot be precisely foreseen. In addition, there can be substantial room for disagreement about what constitutes "severe" property damage. And what degree of injury to employees must the bypass avoid in order to qualify as avoiding "severe" personal injury? The use of "severe" renders this requirement too subjective to be practically enforceable.

   Moreover, potential "severity" is not the proper focus. Bypassing control equipment or the process in some cases might be an appropriate exercise of good air pollution control practices. For example, a bypass can be the appropriate response to an upset, e.g., in order to prevent fouling of pollution control equipment media that in turn would result in reduced pollution control equipment efficiency or increased pollution control equipment downtime.

5. Proposed § 63.480(j)(4)(i)(E) sets an impossible requirement that invalidates the possibility of using the affirmative defense and so should be deleted.

   Proposed § 63.480(j)(4)(i)(E) states "All possible steps were taken to minimize the impact of the excess emissions on ambient air quality, the environment, and human health."

   This provision is ambiguous at best and impossible to demonstrate at worst. A facility cannot necessarily know in real time what "impacts" or potential impacts emissions might have on air quality, the environment, and human health, nor can a facility do anything other than minimize emissions to minimize a potential impact. In addition, it is impossible to demonstrate that "all possible steps" were taken to do anything. Paragraph (C) already requires a source to minimize the excess emissions. We do not know what other steps the Agency expects or how we could demonstrate that the impacts of those already minimized emissions could be further minimized. This paragraph should be deleted.

6. Proposed § 63.480(j)(4)(i)(G) should be revised to reflect the use of current recordkeeping technology.

   Proposed § 63.480(j)(4)(i)(G) requires "Your actions in response to the excess emissions were documented by properly signed, contemporaneous operating logs." The use of signed logs has declined with the use of various forms of electronic recordkeeping. Operators are directed to focus on optimizing operations, and responding to malfunctions if necessary, not filling out paperwork. Generally, records are maintained of the event characteristics (often electronically), the amount of excess emissions and the supporting calculation (generally done after the event ends and kept in an engineering file), and the steps taken to deal with the event and the excess emissions (sometimes electronically, sometimes on paper).

   Thus, we recommend that this requirement be rephrased to require:

   > ~~Your actions in response to the excess emissions were documented by properly signed, contemporaneous operating logs.~~ Records are maintained documenting the ~~malfunction~~ event, including actions taken to minimize emissions and the calculation of the amount of excess emissions.

7. Proposed § 63.480(j)(4)(i)(H) is duplicative of § 63.483(a)(1), applies more broadly than a particular malfunction event, and should be deleted.

   Proposed § 63.480(j)(4)(i)(H) requires "At all times, the facility was operated in a manner consistent with good practices for minimizing emissions." This is a general requirement and included in proposed § 63.483(a)(1). Since the affirmative defense provisions address emissions during a malfunction, where, by definition, there are excess emissions and the affirmative defense already requires you to minimize emissions during the malfunction, this paragraph is redundant and confusing. Furthermore, this paragraph deals with the entire facility not just the EPPU or the malfunctioning equipment. It's inclusion in the affirmative defense provisions would suggest that you cannot defend yourself for a particular malfunction event if there was some issue anywhere else in the facility having nothing to do with the subpart U operation. Such a limitation would be unreasonable.

E. Proposed § 63.480(j)(3) should be made consistent with § 63.480(j)(4)(i)(D) and address the safety issues associated with malfunctioning control devices.

Proposed amended § 63.480(j)(3) specifies:

> The owner or operator shall not shut down items of equipment that are required or utilized for compliance with this subpart during times when emissions (or, where applicable, wastewater streams or residuals) are being routed to such items of equipment if the shutdown would contravene requirements of this subpart applicable to such items of equipment.

The existing § 63.480(j)(3) includes an exception to this requirement for malfunctions. That exception is proposed for deletion. Proposed § 63.480(j)(4)(i)(D), on the other hand, indicates that it is excusable to shutdown malfunctioning equipment when "the bypass was unavoidable to prevent loss of life, severe personal injury, or severe property damage." While we discuss above in our comments on the affirmative defense conditions that we believe any personal injury or property damage should qualify for the defense, we believe these two paragraphs should be made consistent and thus the bypass exception for malfunctions in the current § 63.480(j)(3) should be maintained.

F. Front-end control device maintenance should be addressed.

For continuous front-end process vents in Butyl, Halobutyl, and EPR units, the proposed halogen control requirements will require use of a thermal oxidizer/halogen scrubber in place of the flare and other combustion devices currently in use to meet the organic HAP requirements of the current rule. Thermal oxidizer/halogen scrubber systems are likely to have lower service factors than the process unit, flare or other combustion device, because of their increased susceptibility to halogen corrosion and to plugging problems. Since the flare would comply with the organic HAP removal requirement and the thermal oxidizer/halogen scrubber is a beyond the floor step, an allowance for some thermal oxidizer/halogen scrubber maintenance is allowable as long as it is reasonable and considered in the beyond-the-floor evaluation. We, therefore suggest EPA allow up to 240 hours per year of thermal oxidizer/halogen scrubber outage, as long as the front-end process vents are routed to a flare or other combustion device during that outage. This represents a maximum decrease in post control HCl emissions from 125.6 Tons/year to 121.8 Tons/year for the Butyl and Halobutyl subcategories and EPR category combined and would save potentially significant production losses, costs and emissions by avoiding unit shutdowns to allow maintenance of these devices.

IX. Other Comments and Edits

A. The proposed controls are inconsistent with the EPA Administrator's key principles which include getting meaningful results with cost-effective controls.

On the 40th anniversary of the Clean Air Act (September 14, 2010) Lisa Jackson outlined five principles to address concerns about overly expensive or burdensome rules. The principles included: promoting energy efficiency and new technologies; using a multipollutant approach to rules; setting achievable standards with flexibility to meet them; seeking input from all stakeholders -- the public, industry, states and others -- on rules; and setting cost-effective standards that get meaningful results. Her specific remarks included:

> Finally, we will set the standards that make the most sense – focusing on getting the most meaningful results through the most **cost-effective measures** (emphasis added). The Clean Air Act does not compel regulations for all industry categories, and we want to ensure that we move forward without burdening small businesses, non-profits and other entities that don't account for significant amounts of pollution in our skies.
>
> Our goal is to use the tools in Clean Air Act to provide flexibility for everyone, to work in sync with market principles and to encourage investment in new technologies that provide cost-effective and efficient methods for lowering pollution in the air we breathe. As Administrator and as an American consumer, I know we must be smart in the strategies we employ. Industry needs clarity and certainty to make the best investments. They are the key to the innovation that helps us reduce pollution, protect our health and preserve our environment.

The proposed controls for the Butyl Rubber and EPR source categories are inconsistent with the stated principles of the Administrator as they are not cost-effective, add costs that have no substantive environmental benefit, and reduce competitiveness of U.S. manufacturing. Furthermore, the rule would result in the diversion of investment capital that could be used for more productive purposes (e.g. energy efficiency, process improvements) thereby supporting economic growth and cost-competitiveness. Companies have capital budgets that necessitate difficult choices; capital funds are not unlimited.

B. Since there is no deadline for finalizing any rule related to the Butyl Rubber and EPR source categories, EPA should take the appropriate amount of time to thoroughly review the comments submitted and re-assess their beyond-the-floor cost-effectiveness determination.

There is no legal deadline to finalize the rule for four source categories within the Group I Polymers and Resins category of sources, including Butyl Rubber and Ethylene Propylene Rubber. This is recognized in the revised consent decree that resolves a lawsuit filed by the Sierra Club in the United States District Court for the

Northern District of California (Sierra Club v. Jackson, No. 09-cv-00152 SBA). The revised consent decree was filed September 27, 2010 and now states:

> On December 16, 2008, EPA published a final determination under sections 112(d)(6) and 112(f)(2) for the following four Group I Polymers and Resins categories: Polysulfide Rubber Production; Ethylene Propylene Rubber Production; Butyl Rubber Production; and Neoprene Production. *See* 73 Fed. Reg. 76,220. The allegations in plaintiff's Complaint address only the five Group I Polymers and Resins categories not covered by the December 2008 action. [Sierra Club v. Jackson, No. 09-cv-00152 SBA, page 3, footnote 2]

Before the consent decree was modified EPA had a final rule date of June 30, 2011. Based on the revised consent decree, EPA should establish a rulemaking schedule for the four source categories referenced above that is more appropriate for a rule with such significant issues. Typically, EPA requires about one year from the date of a proposed rule to the date of a final rule. This time period allows for a thorough review of comments submitted and the revision of the proposed rule as appropriate.

C. Provisions are needed to address maintenance of surge control vessels controlled with non-water condensers.

Condensers are commonly used to control storage vessels and surge control vessel emissions in elastomer operations, because they recover the controlled material and are very cost-effective due to the availability of high-level refrigeration (e.g., propane refrigeration). However, these controls become ineffective when the refrigeration system must be shut down for maintenance. This has not been an issue under subpart U as a result of the shutdown exemption and will not be a significant issue for storage vessels with removal of the shutdown exemption because of the storage vessel planned routine maintenance provisions.

However, the planned routine maintenance provisions in the storage vessel provisions do not apply to surge control vessels. Thus, sources will have to install combustion or other controls in place of the condenser systems for surge control vessels controlled in this manner. This change will be costly and is not discussed in the record. Changing surge control vessel controls will result in loss of the vent material rather than its recovery and will generate combustion emissions, including NOx and greenhouse gas emissions. Furthermore, it cannot be accomplished by the promulgation date of the rule, which is the apparent effective date for the loss of the shutdown exemption. The emissions involved are relatively small and are currently emitted and thus it would not be justified to control them even if time permitted. Thus, we request that, as has been done in other rules (e.g., the MON rule) that subpart U allow use of the storage vessel control provisions for surge control vessels. We suggest the following amendment to § 63.502(a) to accomplish this revision.

> *Equipment leak provisions.* The owner or operator of each affected source, shall comply with the requirements of subpart H of this part, with the exceptions noted in paragraphs (b) through (m) of this section. Surge

control vessels required to be controlled by subpart H may, alternatively, comply with the Group 1 storage vessel provisions specified in § 63.484.

At our Baytown Butyl Rubber Unit, the refrigerated condensers are followed by a dual bed carbon adsorption system in order to comply with State requirements. However, the carbon system does not achieve 95% removal if the condenser is out of service and so these surge control vessels cannot meet the normal NESHAP requirements (40 CFR 63.172) when the refrigeration system is shutdown. The Agency did not consider this situation in evaluating whether to extend the normal subpart U emission limits to startup and shutdown periods. In this case, the normal limits are met for a time, but the carbon system can sometimes have breakthrough if the primary bed has become saturated because the secondary bed can become saturated before the primary bed can be changed, since it can take up to 24 hours to change a carbon bed. If the Agency does not address startups and shutdowns in general, it should address this situation in particular by allowing up to 24 hours to change or replace a saturated carbon bed, where carbon beds are used as controls during startup and shutdown periods. Addressing this situation is appropriate because carbon adsorption is a typical temporary control that can be used to control startup and shutdown emissions when the primary control must be shutdown.

D. The back-end emission limits and emission calculations for the Butyl and Halobutyl units should be based on total elastomer production.

Proposed § 63.494(a)(4)(i) establishes an emission limit based on Butyl Rubber production and § 63.494(a)(4)(iii) establishes an emission limit based on Halobutyl Rubber production. However, the Baytown unit, for example, has flexible operations that produce Butyl Rubber some of the time and Halobutyl Rubber at other times. Thus, the divisor for the each of these subcategories should be total rubber production, not just production of one type of rubber. The associated compliance provisions in proposed § 63.495(g)(4) already handle this concern by specifying the divisor as "total elastomer produced." As we discussed in Section III, we also believe it needs to be clarified that this is the mass of elastomer leaving the stripper, not finished rubber production.

E. The first example at the end of the current § 63.480(j)(1) is useful and should not be deleted and the missing "the" in the proposed language should be added.

§ 63.480(j)(1) is proposed to be modified as follows:

> The emission limitations set forth in this subpart and the emission limitations referred to in this subpart shall apply at all times except during periods of non-operation of the affected source (or specific portion thereof) resulting in cessation of the emissions to which this subpart applies. ~~The emission limitations of this subpart and the emission limitations referred to in this subpart shall not apply during periods of start-up, shutdown, or malfunction, except as provided in paragraphs (j)(3) and (j)(4) of this section.~~ However, if a period of ~~startup, shutdown, malfunction or~~ non-

operation of one portion of an affected source does not affect the ability of a particular emission point to comply with the emission limitations to which it is subject, then that emission point shall still be required to comply with the applicable emission limitations of this subpart during ~~the start-up, shutdown, malfunction, or~~ period of non-operation. ~~For example, if there is an overpressure in the reactor area, a storage vessel that is part of the affected source would still be required to be controlled in accordance with the emission limitations in § 63.484. Similarly, the degassing of a storage vessel would not affect the ability of a batch front-end process vent to meet the emission limitations of §§ 63.486 through 63.492.~~

The word "the" should not be deleted in the phrase "comply with the applicable emission limitations of this subpart during ~~the start-up, shutdown, malfunction, or~~ period of non-operation." Additionally, the first example in the last two sentences of the existing language are helpful to understanding the meaning of this paragraph and we suggest they be retained rather than deleted. Removing the startup, shutdown and malfunction exemptions has no impact on that example.

F. The introductory sentence of § 63.505(g) needs to be modified to limit the applicability of that section to match the rest of the changes.

Existing § 63.505(g) states:

> Parameter monitoring excursion definitions. (1) With respect to storage vessels (where the applicable monitoring plan specifies continuous monitoring), continuous front-end process vents, aggregate batch vent streams, back-end process operations complying through the use of control or recovery devices, and process wastewater streams, an excursion means any of the three cases listed in paragraphs (g)(1)(i) through (g)(1)(iii) of this section.

However, only the back-end process operations currently regulated by subpart U have monitoring requirements and are subject to the excursion definitions in (g). Excursions for the proposed new back-end requirements for Butyl and Halobutyl subcategories are defined in proposed § 63.505(j) and not in this paragraph (g). Thus, as has been done elsewhere, the current requirement needs to be limited to back-end operations subject to § 63.494(a)(1) through (3).

We suggest § 63.505(g) be revised as follows:

> Parameter monitoring excursion definitions. (1) With respect to storage vessels (where the applicable monitoring plan specifies continuous monitoring), continuous front-end process vents, aggregate batch vent streams, back-end process operations complying with § 63.494(a)(1) through (3) through the use of control or recovery devices, and process wastewater streams, an excursion means any of the three cases listed in paragraphs (g)(1)(i) through (g)(1)(iii) of this section.

G. EPA's preamble claim that dioxins and furans are formed when chlorinated hydrocarbons are burned in a flare and, presumptively, that their combustion in a thermal oxidizer reduces the generation of these compounds, is unsupported and should be rescinded in the final rule preamble.

In Section V.B.6.b, of the proposal preamble, the Agency claims, relative to combusting chlorinated hydrocarbons in a flare, that:

> When chlorinated organics are burned in a flare, there are variations in the combustion which likely results in the formation of combustion by-products. These combustion by-products could include trace chlorinated compounds such as dioxins and furans. [75 Fed. Reg. 65108]

There is no data in the record to support this supposition. Furthermore, there is no data to suggest that, even if this were the case, less dioxin or furan would be formed in the thermal oxidizer/scrubber system the Agency proposed to require instead of the flare. The basis for the beyond-the-floor proposal to control halogens in Group 1 continuous front-end process vents is HCl generation and there is no basis for suggesting that there is any benefit relative to dioxin/furans that results from the proposal. This preamble statement should be withdrawn in the final rule preamble.

H. Other Edits

1. The introductory paragraph to § 63.498(a) should reference (a)(1) through (a)(4), not (a)(1) through (a)(3).

2. The reference to Table 8 in the existing § 63.493 is proposed for deletion, but should be kept. Otherwise Table 8 should be deleted, since it is not otherwise referenced.

X. Residual Risk and Technology Review: Butyl Rubber and EPR Source Categories

A. ExxonMobil supports EPA's position that it was not necessary to revisit the residual risk review as part of this rulemaking.

In the proposed rule EPA notes, for the Butyl Rubber and EPR source categories, that these source categories were previously determined to be low-risk (maximum lifetime cancer risk less than 1-in-1 million). Consequently EPA does not believe it necessary to conduct a facility-wide or demographic risk analysis. EPA therefore did not address the residual risk review in this rulemaking.

CAA § 112(f)(2) requires EPA to promulgate standards for each category or subcategory of sources:

> if promulgation of such standards is required in order to provide an ample margin of safety to protect public health... or to prevent, taking into

consideration costs, energy, safety and other relevant factors, an adverse environmental effect... If standards promulgated pursuant to subsection (d) and applicable to a category or subcategory of sources emitting a pollutant (or pollutants) classified as a known, probable, or possible human carcinogen do not reduce lifetime excess cancer risks to the individual most exposed to emissions from a source in the category or subcategory to less than one-in-one million, the Administrator shall promulgate standards under this subsection for such source category.

In the 2007 proposed residual risk rule for source categories that include Butyl Rubber and EPR EPA notes:

> ... we estimate that the residual risk remaining from HAP emission from these eight source categories affected by today's proposal do not pose cancer risks equal to or greater than 1-in-1 million to the individual most exposed, do not result in meaningful rates of cancer incidence, and do not result in a concern regarding either chronic or acute noncancer health effects for the individual most exposed. No chronic inhalation human health thresholds were exceeded at ecological receptors for any of the eight source categories; therefore, we believe there is low potential for adverse environmental effects due to direct airborne exposures. We also believe that there is no potential for an adverse effect on threatened or endangered species or on their critical habitat within the meaning of 50 CFR 402.13(a) because our screening analyses indicate no potential for any adverse ecological impacts. [72 Fed. Reg. 70552-3]

As EPA noted in the proposed rule, none of the hazardous air pollutants in the Butyl Rubber and EPR source categories are carcinogenic hence there is no cancer risk. In addition, the maximum Hazard Index (HI) for any facility in the source categories impacting ExxonMobil is as follows:

1. Butyl Rubber: Maximum HI = 0.2

2. Ethylene Propylene Rubber: Maximum HI = 0.5

Based on the risk assessment results EPA concluded that no further regulation was required because the existing MACT standards protect public health with an ample margin of safety and prevent an adverse environmental effect:

> EPA is not required to promulgate standards for a source category under section 112(f) if public health is protected with an ample margin of safety and adverse environmental effects are prevented.... In making this conclusion we determined that the source categories addressed in today's proposal that emit one or more HAP which are known or potential carcinogens pose cancer risks less than or equal to 1-in-1 million to the individual most exposed. In addition, we also determined that emissions from these source categories result in chronic noncancer target organ-specific HI less than or equal to 1 for the individual most exposed, are unlikely to result in health effects under acute scenarios and are not anticipated to pose any significant and widespread adverse environmental effects. [72 Fed. Reg. 70555]

In the 2008 final rule EPA stated that the HAP emissions:

> ... do not pose cancer risks equal to or greater than 1-in-1 million to the individual most exposed, do not result in meaningful rates of cancer incidence, and do not result in a concern regarding either chronic or acute noncancer health effects for the individual most exposed. In addition, no chronic inhalation human health thresholds were exceeded at environmental receptors... there is low potential for adverse environmental effects... there is no potential for an adverse effect on threatened or endangered species. [73 Fed. Reg. 76225]

ExxonMobil supports EPA's conclusion that under the CAA no further regulation is required due to the very low risk associated with the ExxonMobil and other facilities in the Butyl Rubber and EPR source categories. The post-MACT (implementation of Maximum Achievable Control Technology standards) emission risks addressed by EPA from these sources fall well within the acceptable risk range established by the decision framework codified in § 112 (Benzene NESHAP).

B. ExxonMobil supports EPA's position that it was not necessary to revisit the technology review as part of this rulemaking and that no additional controls are required based on the technology review.

In the 2007 proposed rule EPA concluded:

> ... there have been no significant developments in practices, processes, or control technologies since promulgation of the MACT standards. Because there have been no such significant developments and because public health is protected with an ample margin of safety, we conclude that no further revisions to the standards affected by today's proposal are needed under section 112(d)(6) of the CAA. [72 Fed. Reg. 70555]

In conducting the technology review EPA relied on the technology review conducted for the Hazardous Organic NESHAP (HON), which did not identify any significant developments in practices, processes, or control technologies since promulgation of the original HON standards in 1994. This is an appropriate analysis since control devices applicable to the source categories included in this proposed rule are similar to the ones impacting HON facilities. In addition, EPA indicated a "development" for purposes of the technology review would be based on:

1. Any add-on control technology or other equipment, and any work practice or operational procedure, and any process change or pollution prevention alternative that could be broadly applied that was not identified and considered during MACT development.

2. Any improvements in add-on control technology or other equipment (that was identified and considered during MACT development) that could result in significant additional emission reduction.

EPA also stated:

> While we agree that no further controls are required under the technology review, our view is that for facilities that have risks below the level that triggers regulation (e.g., 1-in-1-million cancer risk) a technology review is not needed. In these cases there is no likelihood of additional meaningful risk reductions. Conducting a technology review is suggesting that reducing risk below 1-in-1 million should continue to be a policy objective even though Congress established this risk level as the level for which source categories are eligible for delisting from the program. Continued focus on these low risk sources is contrary to the direct language of the Act, creates significant regulatory uncertainty and would simply act to waste both public and private sector resources. [Memo dated December 12, 2007; "Developments in Practices, Processes, and Control Technologies for RTR Phase II, Group 1 Source Categories...;" in the EPA docket]

ExxonMobil supports EPA's conclusion that no additional controls are required based on the §112(d)(6) technology review.

C. EPA should delist the Butyl and EPR source categories due to low risk.

1. EPA has the legal authority to delist source categories.

Under CAA § 112(c)(9):

> (B) The Administrator may delete any source category from the list under this subsection, on petition of any person or on the Administrator's own motion, whenever the Administrator makes the following determination or determinations, as applicable:
>
> (i) In the case of hazardous air pollutants emitted by sources in the category that may result in cancer in humans, a determination that no source in the category (or group of sources in the case of area sources) emits such hazardous air pollutant in quantities which may cause a lifetime risk of cancer greater than one in one million to the individual in the population who is most exposed to emissions of such pollutants from the source (or group of sources in the case of area sources).
> (ii) In the case of hazardous air pollutants that may result in adverse health effects in humans other than cancer or adverse environmental effects, a determination that emissions from no source in the category or subcategory concerned (or group of sources in the case of area sources) exceed a level which is adequate to protect public health with an ample margin of safety and no adverse environmental effect will result from emissions from any source (or from a group of sources in the case of area sources).
>
> The Administrator shall grant or deny a petition under this paragraph within 1 year after the petition is filed.

An important point to note is that the Administrator does not require a formal petition to delist a source category. EPA, on their own, can initiate the delisting based on the data available.

2. **EPA has demonstrated low risk for the Butyl Rubber and EPR source categories and should now take the steps to delist these source categories from the air toxics regulations.**

EPA ran risk models for the sources in the Butyl Rubber and EPR source categories for the 2007 proposed rulemaking and, based on the data provided in 2010, found no reason to rerun the models. As noted above:

(i) None of the HAPs in the Butyl Rubber and EPR source categories are carcinogenic hence there is no cancer risk.
(ii) For Butyl Rubber the maximum HI was = 0.2.
(iii) For Ethylene Propylene Rubber the maximum HI was = 0.5.

Based on the extensive analysis for the Butyl Rubber and EPR source categories, EPA should initiate a process to delist these two source categories.

XI. EPA Policy on Residual Risk and Technology Reviews

A. Continuing implementation of residual risk and technology reviews should be consistent with the HON Court decision.

The June 6, 2008 "HON" court decision (No. 07-1053, *NRDC and LEAN v. EPA*) supported several key EPA policy decisions. The court case related to challenges to the final residual risk and technology reviews for the Hazardous Organic National Emission Standards for Hazardous Air Pollutants (HON), finalized December 21, 2006. 71 Fed. Reg. 76603.

The court decision addressed EPA decisions under both the residual risk (CAA § 112(f)(2)) and technology review (CAA § 112 (d)(6)) programs. Key elements of the court decision, from a policy perspective are summarized below:

1. **EPA has the discretion to determine that a maximum individual cancer risk level of approximately 100-in-1 million for a source category is acceptable; EPA is not obligated to revise industry standards to reduce lifetime excess cancer risk to one-in-one-million.**

From the court decision:

> The cited item in the Federal Register is EPA's emission standard for benzene, which is a carcinogenic hazardous air pollutant. In the *Benzene* rulemaking, EPA set forth its interpretation of "ample margin of safety," as that term was used in the 1970 version of the Clean Air Act. It said that the "ample margin" was met if as many people as possible faced excess lifetime

> cancer risks no greater than one-in-one million, and that no person faced a risk greater than 100-in-one million (one-in-ten thousand). 54 Fed. Reg. at 38,044-45. In other words, the *Benzene* standard established a maximum excess risk of 100-in-one million, while adopting the one-in-one million standard as an aspirational goal. This standard, incorporated into the amended version of the Clean Air Act, undermines petitioners' assertion that EPA *must* reduce residual risks to one-in-one million for all sources that emit carcinogenic hazardous air pollutants. [*NRDC v. EPA*,529 F.3d 1077, 1082 (D.C. Cir. 2008)]

In the Benzene NESHAP, EPA stated an overall objective as follows:

> ... in protecting public health with an ample margin of safety, we strive to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately 1-in-1-million; and (2) limiting to no higher than approximately 1-in-10 thousand (i.e., 100-in-1 million) the estimated risk that a person living near a facility would have if he or she were exposed to the maximum pollutant concentrations for 70 years. [75 Fed. Reg. 65072]

2. **Cost is to be considered when determining the "ample margin of safety", consistent with the Benzene NESHAP.**

> Finally, petitioners argue that EPA unlawfully considered cost while setting the "ample margin of safety" in the residual risk standards. Petitioners are correct that the Supreme Court has "refused to find implicit in ambiguous sections of the [Clean Air Act] an authorization to consider costs that has elsewhere, and so often, been expressly granted." *Whitman v. Am. Trucking Ass'n*, 531 U.S. 457, 467 (2001). In this case, however, we believe the clear statement rule has been satisfied. As explained above, subsection 112(f)(2)(B) expressly incorporates EPA's interpretation of the Clean Air Act from the *Benzene* standard, complete with a citation to the Federal Register. In that rulemaking, EPA set its standard for benzene "at a level that provides 'an ample margin of safety' in consideration of all health information . . . as well as other relevant factors *including costs and economic impacts*, technological feasibility, and other factors relevant to each particular decision." 54 Fed. Reg. at 38,045 (emphasis added). EPA considered cost in *Benzene*, and subsection 112(f)(2)(B) makes clear that nothing in the amended version of the Clean Air Act shall "affect[]" the agency's interpretation of the statute from that rulemaking. [*NRDC*,529 F.3d at 1083]

3. **The technology review does not require a recalculation of the MACT floor standards.**

For the technology review, EPA has adopted the position that they would evaluate developments in practices, processes, and control technologies and then revise a standard as necessary. A recalculation of the floor is not required. Recalculating the floor every 8 years would lead to a ratcheting down of the standards, a methodology not indicated in the CAA and one that would lead to high costs and potentially impractical standards for many manufacturers with little or no health benefit.

> It is argued that EPA was obliged to completely recalculate the maximum achievable control technology – in other words, to start from scratch. We do not think the words "review, and revise as necessary" can be construed reasonably as imposing any such obligation. Even if the statute did impose such an obligation, petitioners have not identified any post-1994 technological innovations that EPA has overlooked. [*Id.* at 1084]

B. The Residual Risk and Technology Reviews should be concurrent.

The CAA requires, after promulgation of each MACT, both a residual risk (within 8 years) analysis and a technology review (no less often than every 8 years). Since these assessments apply to the same sources, including individual emission sources, and are interrelated, it is an efficient use of Agency and industry resources to conduct these reviews at the same time. This also avoids the potential for inconsistency in separate rulemakings. In addition, the results of the residual risk assessment should be used to inform the technology review determination. We support EPA's efforts to conduct the reviews concurrently as they have done for the source categories evaluated to-date, and we encourage the Agency, despite the pressures of time and litigation, to continue this approach.

C. Risk assessments should be based on source category actual emissions.

The foundation for any regulatory decision-making should be a sound database that reflects actual emissions and appropriate/realistic modeling inputs and assumptions. It is appropriate to use actual emissions data in determining risk. The Agency's risk assessments are inherently conservative. To the extent real data is used, the risk assessment becomes more realistic. Potential emissions overstate emissions and risk because facilities do not operate at the level of their potential emissions (oftentimes the permit limit) in order to maintain a compliance margin.

It is also appropriate to focus the risk assessment on the source category to be regulated. If there are other sources (e.g., mobile sources, area sources) that are contributing to or driving the risk, these sources should be evaluated under separate rulemaking since further controls on P&RI sources do not address any issues with these other sources. In addition, the CAA is quite clear in § 112(f)(2)(A):

> [T]he Administrator shall, within 8 years after promulgation of standards for each category or subcategory of sources pursuant to Subsection (d), promulgate standards for such category or subcategory if promulgation of such

standards is required in order to provide an ample margin of safety to protect public health in accordance with this section...

D. Risk should be evaluated at the centroid of census blocks.

It is also appropriate to use the centroid of census blocks in determining maximum individual risk. This is where people live and may potentially be impacted. Modeling to a fenceline is inappropriate in a risk assessment because people do not live on the fenceline and this approach overstates risk. This approach is consistent with EPA's position stated in the final decision on the residual risk rule for Gasoline Distribution Facilities.

> In a national-scale assessment of lifetime inhalation exposures and health risks from a category of facilities, it is appropriate to identify exposure locations where an individual may reasonably be expected to spend a majority of his or her lifetime. Further, it is appropriate to use census block information on where people actually reside, rather than points on a fenceline, to locate the estimation of exposures and risks to individuals living near such facilities. [71 Fed. Reg. 17354]

E. EPA should not expand the health information metrics beyond those already evaluated; the three planned added measures do not provide needed information on the cancer and non-cancer risk of the regulated source category.

In the proposed rule preamble EPA outlines the planned approach to future residual risk rule reviews. The overall approach is outlined in the Benzene NESHAP and is a two-step process. The first step is the determination of acceptable risk; the second step provides for an ample margin of safety while evaluating other relevant factors including costs, economic impacts and technological feasibility.

In the past the Agency has looked at several human health risk metrics associated with emissions from the category, including:

1. The MIR (maximum individual risk);
2. The numbers of persons in various risk ranges;
3. Cancer incidence;
4. Maximum non-cancer hazard index (HI); and
5. Maximum acute non-cancer hazard.

As part of the analysis EPA also considered source categories under review that are located near each other, assessed impact of maximum emissions allowed in addition to actual emissions, and considered risk estimating uncertainties.

In the revised future approach to residual risk rules EPA is also planning to consider additional measures of health information, including:

1. Estimates of "total facility" cancer and non-cancer risk;

2. Demographic analyses (distribution of risks across different social, demographic, and economic groups within the populations near the facilities where source categories are located); and

3. Additional estimates of the risks from emissions allowed by the MACT standard (i.e. maximum allowable emissions or permit limits).

A concern with this expansion of health measures is that they dilute the more important health measures already in place which more directly, although conservatively, assess the risk from the regulated source category. Additional concerns with the added measures include:

1. It is not clear how these additional measures will actually be used to modify a standard. For example, what is the legal basis for these measures and what criteria will be applied in assessing these measures and modifying an emission standard?

2. Using "allowable emissions" overstates risk, as EPA has acknowledged. Use of actual emissions provides a more realistic estimate of risk. Facilities always strive to maintain a compliance margin, which is the margin between allowable and actual emissions, to ensure ongoing compliance. If actual risk is acceptable, would EPA, in the absence of data suggesting there is a problem, really require additional controls just because maximum or allowable emissions could, theoretically, result in higher emissions?

In summary, EPA should not expand the health information metrics beyond those already evaluated. The three planned added measures do not provide needed information on the cancer and non-cancer risk of the regulated source category.

F. In calculating cost-effectiveness in residual risk decisions, EPA should evaluate cost on a risk reduction basis.

EPA traditionally evaluates cost-effectiveness in terms of cost per ton of pollutant reduced. This is certainly an appropriate approach in evaluating MACT beyond-the-floor determinations. However, in a risk-driven rule EPA should evaluate cost on a cost per unit of risk reduction basis. This approach ties better to the objective of the residual risk program. For example, for a carcinogenic HAP, EPA should evaluate cost-effectiveness by determining the cost per cancer incidence reduced.

G. In addition to the health risk metrics already established, EPA should include central tendency or most expected risk assessments to better communicate the conservative nature of EPA risk assessments.

EPA's risk assessments are inherently very conservative for a number of reasons, including:

1. Unit risk estimates for cancer used by the Agency are upper bound numbers, hence they overstate the true risks.

2. Exposure assumptions are conservative; they include the assumption that an individual is exposed to the highest concentration for 70 years. The reality is that the movements of individuals results in a typical exposure period of significantly less than 70 years. As EPA has noted:

   > We acknowledge that the use of upper bound URE and 70-year exposure duration are sources of uncertainty in our analyses that tend to overestimate risk. [73 Fed. Reg. 76228]

To better communicate the conservative nature, and therefore the health protective aspect, of residual risk rules EPA should develop most expected (i.e. 50% probability of occurrence) or central tendency estimates.

H. In the future, when EPA finalizes a residual risk rule with controls and work practices, the rule should not be applicable to low-risk sources.

In the March 1999 "Residual Risk Report to Congress," EPA indicated that after the implementation of the MACT technology standards "EPA will then evaluate the remaining risk and consider ample margin of safety as discussed below. In those cases where it is determined to be necessary, EPA will use CAA Section 112(f)(2) residual risk authority to set national standards but focus the applicability of standards only on those portions of the source category."

A low-risk exclusion should be included in future rules based on a site-specific determination similar to applicability determinations for other rules (e.g. NSPS, MACT). Anything beyond this is inconsistent with the recognition that many sources are low-risk and don't require additional regulation.

I. The applicability determination approach for low-risk sources should not establish on-going permitting and reporting requirements when the rule is not applicable.

Our recommended approach for low-risk determinations in future rules is consistent with the approach taken in other air rules, where a facility determines initial applicability and later reviews applicability through a management-of-change process related to capital investments and operational changes. For example, in NSPS rules certain site changes could trigger applicability, but the initial permit would only indicate that a certain NSPS rule was not applicable and would not include additional permit terms to demonstrate "non-applicability" such as requiring additional emission limits at the "modification" threshold level.

EPA does not currently require an onerous process with significant on-going requirements for "non-applicability" determinations for other federal rules, and should not take this approach under a residual risk program. Any demonstration criteria to determine that a site is low risk should not be more onerous or costly than complying with the control and work practice standards.

J. The applicability determination for low risk sources should include elements that streamline the process while recognizing the low-risk nature of the sources.

Some of the key elements of a low-risk applicability determination, consistent with the low or negligible risk associated with facilities not requiring further controls, include:

1. Facilities can use any scientifically accepted, peer-reviewed risk assessment methodology.

2. Set the rule applicability threshold at a risk level that reflects the ample margin of safety that results from the proposed controls and work practice standards, consistent with the findings of the risk assessments for the source category. An alternate, very conservative approach is to base applicability on a threshold level that defines low-risk sources as having a cancer risk less than or equal to 1-in-1 million and a hazard index less than or equal to 1. Since EPA has already decided not to regulate source categories with risks higher than 1-in-1 million, and the Benzene NESHAP decision framework supports evaluating factors that will result in acceptable risk levels above 1-in-1 million, it would be within the Agency's discretion to establish an applicability threshold at a level above 1-in-1 million.

3. Include a notation in a Title V application (or permit) that the residual risk standards are not applicable to the specific source. No other permit terms are appropriate (since the rule isn't applicable). Title V provides an ongoing compliance certification obligation for sources and Responsible Officials.

4. Applicability determinations should not require a regulatory approval process. Applicability determinations would be available for review by regulatory authorities. In the HON proposal, EPA requested comment on the possible means for "approving" such demonstrations (e.g., by EPA affirmative review, by the State permitting authority, by EPA audit, by third-party, or by self-certification plus EPA audit). The suggestion that some type of approval is necessary for non-applicability determinations for low-risk sources would set up a burdensome, unwarranted process. Needless to say, States will be concerned about a possible ongoing obligation to approve these determinations. Setting up a process of this nature would discourage the low-risk applicability approach and is inconsistent with the Agency's past stated objective of not regulating low-risk sources.

5. Facilities would continue to have the on-going obligation, similar to the obligation for all federal/state/local air rules, to reassess applicability when facility changes are judged to potentially impact rule applicability.

6. Applicability reassessments should be limited to source changes (within the control of the company) and changes that go through a formal rulemaking process. This is the approach that has been taken with other air rules. Low-risk sources should not have to review applicability due to changes outside the control of the facility. Changes to health benchmarks, EPA risk assessment procedures, improvements and changes in dispersion models, and changes in human population and census track data should not automatically trigger a source obligation to reassess applicability. Issues related to these type changes are broader than those of individual sources.

7. The analysis and modeling should be consistent with the health concerns in the source category. For example, if the concern is chronic impacts then the modeling should be based on annual emissions and no hourly modeling for acute effects should be required.

8. If EPA determines for a source category that there are no adverse environmental risks, then there should be no requirements on individual facilities to demonstrate no adverse environmental risk.

9. The applicability determination should be completed before the first major compliance date of the rule.

K. Application of CAA § 112(d)(6) should incorporate the framework of § 112(f)(2).

CAA § 112(d)(6) requires the Agency to review, and revise emission standards as necessary, taking into account developments in practices, processes and control technologies. EPA should base any review and revision under § 112(d)(6) through the lens and the structure of the § 112(f) rulemaking framework:

> We also believe that the periodic review should be of whatever Section 112 standard applies to the relevant source category, regardless of whether the original Section 112(d) and/ or 112(h) NESHAP has, or has not, been revised pursuant to Section 112(f)(2). We recognize that one could read the Section 112(f)(2) language to authorize EPA's setting a standard under Subsection (f)(2) separate from the NESHAP standard set under Subsections (d) and/or (h). Following this reading, one might argue that any review under (d)(6) should be only of the (d)(2), (d)(4), or (d)(5) NESHAP standard, as applicable. It is our position, however, that the better reading of (f)(2) allows EPA to revise the relevant Subsection (d) standard if the agency determines residual risk so justifies under (f)(2); indeed, our practice has been to follow this approach. [Coke Ovens; 70 Fed. Reg. 19993]

This approach would require the Administrator to weigh the potential for future risk reduction under § 112(d)(6) against the cost of that reduction in the same manner as set forth in the second step of the 1989 Benzene NESHAP rule. Under the 1989 Benzene NESHAP rule, the primary objective of § 112(f) is to assure that emissions are controlled to a level that can be considered "acceptable" or "safe."

Reviews that focus solely on cost-per-ton formulations that do not consider the risk reduction potential of controls could result in the imposition of technology controls that yield very little if any reduction in risk. Since Congress expressly rejected this approach in its codification of the decision framework in the 1989 Benzene NESHAP rule, it is difficult to believe that the EPA should adopt this approach in conducting reviews under § 112(d)(6). In the Benzene NESHAP rule codified by Congress, EPA assessed the economic cost and feasibility of requiring additional controls for five source categories. EPA considered and then rejected more expensive control options because the costs of further controls in those options were large in comparison to the potential risk reduction.

CAA § 112(d)(6) reviews must be considered an extension of the main purpose of § 112, to reduce the public's risk from exposure to air toxics, not the imposition of new technology for technology's sake. EPA also notes that:

> [t]his approach results in clearer and more effective implementation because only one part 63 NESHAP would apply to the source category, and is supported by the fact that Section 112(d)(6) refers to 'emission standards promulgated under this section' (emphasis added), as opposed to 'subsection,' in defining the scope of EPA's authority to review and revise standards. [71 Fed. Reg. 34437]

EPA stated in the final rule affecting the Butyl Rubber and EPR source categories that in the technology review EPA:

> ... is not precluded from considering additional relevant factors, such as costs and risk.... For example, when a section 112(d)(2) MACT standard alone obtains protection of public health with an ample margin of safety and prevents adverse environmental effects, it is unlikely that it would be "necessary" to revise the standard further... [73 Fed. Reg. 76226]

L. EPA has the authority to limit the conditions under which EPA revises an emission standard under CAA § 112(d)(6) and to base that revision on the residual risk decision framework.

As EPA correctly pointed out in the proposed HON rule, § 112(d)(6) provides the Administrator with the discretion to decide the factors to consider in determining whether a revision to a MACT standard is necessary.

> Section 112(d)(6) of the CAA requires us to review and revise MACT standards, as necessary, every 8 years, taking into account developments in practices, processes, and control technologies that have occurred during that time. This authority provides us with broad discretion to revise the MACT standards as we determine necessary, and to account for a wide range of relevant factors.
>
> We do not interpret § 112(d)(6) as requiring another analysis of MACT floors for existing and new sources. Rather, we interpret the provision as essentially requiring us to consider developments in pollution control in the industry

("taking into account developments in practices, processes, and control technologies"), and assessing the costs of potentially stricter standards reflecting those developments (69 FR 48351). As the U.S. Court of Appeals for the DC Circuit has found regarding similar statutory provisions directing EPA to reach conclusions after considering various enumerated factors, we read this provision as providing EPA with substantial latitude in weighing these factors and arriving at an appropriate balance in revising our standards. This discretion also provides us with substantial flexibility in choosing how to apply modified standards, if necessary, to the affected industry.

71 Fed. Reg. 34436-7

Although the language of § 112(d)(6) is nondiscretionary regarding periodic review, it grants EPA much discretion to revise the standards "as necessary." Thus, although the specifically enumerated factors that EPA should consider all relate to technology (e.g., developments in practices, processes and control technologies), the instruction to revise "as necessary" indicates that EPA is to exercise its judgment in this regulatory decision, and is not precluded from considering additional relevant factors, such as costs and risk. EPA has substantial discretion in weighing all of the relevant factors in arriving at the best balance of costs and emissions reduction and determining what further controls, if any, are necessary. This interpretation is consistent with numerous rulings by the U.S. Court of Appeals for the DC Circuit regarding EPA's approach to weighing similar enumerated factors under statutory provisions directing the agency to issue technology-based standards. *See, e.g. Husqvarna AB, v. EPA*, 254 F.3d 195 (DC Cir. 2001). 71 Fed. Reg. 34437.

Congress gave EPA discretion in revising MACT standards "as necessary," so long as EPA takes into account technology changes. As EPA notes, it has the authority to balance relevant factors, giving greater weight to the goal of § 112. Moreover, Congress expressly provided for EPA to consider health risks in establishing MACT standards. Section 112(d)(4) grants the Administrator the authority to consider health thresholds "with an ample margin of safety" when establishing emissions standards under § 112(d).

Further, Congress clearly sought to have § 112(f) inform § 112(d). Nothing in § 112 indicates that Congress sought to establish two different sets of "emissions standards" for hazardous air pollutants. As EPA correctly notes, § 112(f)(2) would require revised emission standards under (d) "if the agency determines residual risk so justifies under (f)(2)." 71 Fed. Reg. 34,437. As EPA indicated, this approach would result in clearer and more effective implementation because only one Part 63 NESHAP would apply to the source category.

EPA has determined that § 112(f)(2) allows the Agency to revise the relevant MACT standard if further controls are warranted to reduce residual risks. As a practical matter, if EPA concludes that there are no major changes that would significantly alter EPA's original estimates of risk that were used as a basis for EPA's determination of ample margin of safety, then EPA should conclude that a revision is unnecessary because the source category presents risks that are both acceptable and protective with an ample margin of safety.

Congress' overall objective in establishing § 112 was to assure that residual HAP emissions from MACT regulated sources are controlled to a level that is considered "safe" or "acceptable." This means reducing risks to levels EPA determined are "acceptable" in accordance with step one of the decision framework included in the 1989 Benzene NESHAP rule. It does not mean eliminating all risk or even requiring that all sources reduce their risks to levels less than one-in-a million.

The legislative history of the 1990 CAA Amendments shows that Congress repeatedly rejected imposing controls beyond levels considered safe and protective of public health because they would impose regulatory costs without providing any public health benefit. Under § 112(d)(4), EPA has the authority to consider a "health threshold, with an ample margin of safety," when establishing MACT standards. *See* S. 101-228, Dec. 20, 1989, at 520. Congress explained that the purpose of the provision was to ensure that MACT standards are not more stringent than necessary to protect human health in order to avoid unnecessary expenditures:

> To avoid expenditures by regulated entities which secure no public health or environmental benefit, the Administrator is given discretionary authority to consider the evidence for a health threshold higher than MACT at the time the standard is under review. [Id. at 171]

Congress recognized that once EPA determined an acceptable level of risk—*i.e.,* a health threshold with an ample margin of safety (in this instance without the consideration of costs)—it need not reassess control technology. This can be compared to the determination under § 112(f) to establish first an "acceptable" or "safe" level of risk without consideration of costs, followed by an ample margin of safety determination.

> [T]he Administrator has two options to use in assuring that low priority regulation will not be required [under section 112(c)(5) and 112(d)(4)]. . . . Again, there is a means to avoid regulatory costs which would be without public health benefit. [S. Rep. No. 101-228, at 175-76]

Congress also clearly rejected provisions that would have required all sources to meet a 1-in-1 million standard. Any proposed interpretation of § 112(d)(6) as requiring successive reviews unless sources achieve this risk level implies that sources must ultimately meet a 1-in-1 million risk standard in order to avoid further regulation. There is no legislative history from the 1990 CAA Amendments that suggests Congress expected EPA to revise MACT standards after a residual risk determination has been made that the risks presented are "acceptable" and protect the public health with an ample margin of safety (either as a result of residual risk determination or through promulgation of a residual risk standard). There is no discussion as to the factors to be considered once an "acceptable" risk level or level deemed protective with an "ample margin of safety" has been reached.

Congress, in fact, expressed a clear concern for the opposite – the waste of resources to reduce risks below levels considered safe.

If Congress had intended a separate "technology-based" ratchet, then there would have been no need for § 112(f). As EPA noted in the Coke Oven Rule:

> we reiterate that there is no indication that Congress intended for section 112(d)(6) to inexorably force existing source standards progressively lower and lower in each successive review cycle, the likely result of requiring successive floor determinations. [70 Fed. Reg. 20008]

Further controls would have the effect of requiring additional emission reductions from sources that EPA believes are already sufficiently controlled to protect the public health with an ample margin of safety. Requiring further emission reductions from these sources would be a waste of public and private resources, and have no appreciable impact on public health.

M. A review under CAA §112(d)(6) is not required if the post-MACT emission levels result in risks that are deemed to be protective of public health with an ample margin of safety, making any revisions under § 112(d)(6) not necessary.

EPA should exempt source categories for which the post-MACT emission levels are protective of public health with an ample margin of safety:

> For example, when a section 112(d)(2) MACT standard alone obtains protection of public health with an ample margin of safety and prevents adverse environmental effects, it is unlikely that it would be "necessary" to revise the standard further, regardless of possible developments in control options. Thus, the Section 112(d)(6) review would not need to entail a robust technology assessment. Note that the circumstances discussed above presume that the facts surrounding the ample margin of safety and environmental analyses have not significantly changed. If there have been significant changes to fundamental aspects of the risk assessment then subsequent section 112(d)(6) reviews with robust technology assessments (and relevant risk considerations) may be appropriate. [71 Fed. Reg. 34437]

Because some source categories have already been found to be protective of public health with an ample margin of safety, it is proper to create a presumption that these sources should not be subject to further review under § 112(d)(6). To reduce regulatory uncertainty, however, EPA should further clarify that the nature of the "significant changes to fundamental aspects of the risk assessment" that might trigger a review under § 112(d)(6) are changes that are likely to increase the estimates of risk by orders of magnitude.

N. If EPA does undergo a review under CAA § 112(d)(6), the review should be limited to evaluating significant changes in technology/work practices -- not changing applicability thresholds.

CAA § 112 (d)(6) indicates the scope of the (d)(6) technology review:

> Review and Revision - The Administrator shall review, and revise as necessary (taking into account developments in practices, processes, and control technologies), emission standards promulgated under this section no less than every 8 years.

It is our view that the scope of the § 112(d)(6) review should be to assess advances in work practices and control technologies to determine if there are fundamental technology changes that could result in a step-change reduction in costs relative to the currently employed technology. The Agency would then need to determine the appropriateness of applying new requirements to new/reconstructed sources, or whether retrofits on existing sources are justifiable, which is a higher hurdle due to the cost and complexity of retrofitting existing sources that are already controlled.

With most control technologies (e.g. thermal oxidation, flares, steam strippers) there continue to be only incremental improvements in efficiency, design and reliability (e.g. via metallurgy changes), none of which represent a significant change in work practices or control technologies. In these cases, no further controls via § 112(d)(6) should be prescribed.

We do not believe that the § 112(d)(6) review should be based on changing applicability thresholds. For example, expanding rule applicability by reducing tanks size or vapor pressure cutoffs in applicability determinations, or increasing a TRE cutoff independent of technology advances should not be considered. This approach has nothing to do with developments in practices, processes, and control technologies and is not indicated in the CAA as a basis for the technology review. EPA already made applicability determinations in the original MACT rules by evaluating the floor and "beyond-the-floor" options. Again, nothing in the statute warrants review of these determinations and EPA should not use § 112(d)(6) to modify the original MACT floor analysis by changing applicability thresholds. Changes in applicability thresholds should only be considered in the § 112(f) risk standards if justified to reduce risk.

O. If a technology review is warranted, EPA's approach to the scope of the technology review is appropriate

In this proposal EPA summarizes how a technology review will be performed. The approach appears to be consistent with the approach used in prior § 112(d)(6) reviews. First, the Agency determines if there have been any "developments in practices, processes, and control technologies" by drawing on Agency experience, reviewing technology databases, and requesting information from industry. If such developments are available, then the Agency will conduct an analysis of the technical feasibility of requiring the implementation of the developments along with the impacts in areas such as costs, emission reductions, and risk reduction. The Agency has defined a "development" as:

1. Any add on control technology or other equipment that was not identified and considered during MACT development;
2. Any improvements in add-on control technology or other equipment (that was identified and considered during MACT development) that could result in significant additional emission reductions;
3. Any work practice or operational procedure that was not identified and considered during MACT development; and
4. Any process changes or pollution prevention alternative that could be broadly applied that was not identified and considered during MACT development.