American Forest & Paper Association

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AF&PA Comments on National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry (76 Federal Register 81328, December 27, 2011)

BETTER PRACTICES BETTER PLANET 2020

Continuing AF&PA's Commitment to Sustainability

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American Forest & Paper Association

February 27, 2012

EPA Docket Center (EPA/DC)
Environmental Protection Agency
Mailcode 2822T
1200 Pennsylvania Ave., NW
Washington, DC 20460

RE: Docket ID No. EPA–HQ–OAR–2007-0544, National Emission Standards for Hazardous Air Pollutants From the Pulp and Paper Industry (76 *Federal Register* 81328, December 27, 2011)

The American Forest & Paper Association ("AF&PA") appreciates the opportunity to submit comments on the Proposed National Emission Standards for Hazardous Air Pollutants From the Pulp and Paper Industry (76 Fed. Reg. 81328, December 27, 2011). The American Forest & Paper Association is the national trade association of the forest products industry, representing pulp, paper, packaging and wood products manufacturers, and forest landowners. Our companies make products essential for everyday life from renewable and recyclable resources that sustain the environment. The forest products industry accounts for approximately 5 percent of the total U.S. manufacturing GDP. Industry companies produce about $175 billion in products annually and employ nearly 900,000 men and women, exceeding employment levels in the automotive, chemicals and plastics industries. The industry meets a payroll of approximately $50 billion annually and is among the top 10 manufacturing sector employers in 47 states.

The forest products industry is a leader in sustainability and a foundation for green jobs. We supply family-wage jobs, lead the way on recycling and renewable energy, sustainably use renewable resources, and reduce greenhouse gases by using carbon-neutral energy and sequestering CO_2. Unfortunately, these important contributions are challenged by an unprecedented wave of new regulatory proposals under the Clean Air Act, including updates to the Pulp and Paper NEHSAP that could cause severe unintended harms if not carefully designed. This challenge comes right after the worst economic crisis since the Great Depression. To address this challenge, we stand ready to work with EPA, the Administration, and other stakeholders to achieve a regulatory path for a sustainable future.

Thank you for your consideration of the important issues included in these comments. Please feel free to contact Tim Hunt at 202-463-2588 on my staff if you have questions or need more information.

Sincerely,

Paul Noe
Vice President for Public Policy
American Forest & Paper Association

cc: G. McCarthy
J. Goffman
P. Tsirigotis
R. Dunkins
J. Bradfield
B. Schrock

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I. Introduction

The results of the Risk and Technology Review by EPA for the Pulp and Paper NESHAP determined that the level of residual risk that remains for the Subpart S category is acceptable. In short, the Maximum Achievable Control Technology (MACT) requirements were successfully implemented and the resulting reductions in emissions ensured that health risks associated with these facilities were protective with an ample margin of safety. This success was due to the efforts of both the Agency and the Industry to develop rules based on sound science with flexible compliance alternatives to allow for the unique situations at each facility. As described in detail below, AF&PA and its members are committed to operating in an environmentally responsible and sustainable manner. However, the U.S. forest products industry faces serious challenges to recover from the economic downturn and to overcome fierce competition from overseas manufacturers. In the face of such extreme economic pressure, the proposed rules would make matters far worse by imposing hundreds of millions of dollars of additional costs when the analysis shows the remaining amount of residual risk does not warrant such action. Therefore, it is imperative that any revised standards be carefully designed such that health and the environment continue to be protected without requiring unnecessary expenditures of resources and time.

As described in detail in these comments, EPA has the legal discretion and technical justification to substantially reduce or eliminate the burden of the proposed modifications to the Subpart S standards while still providing ample protection to health and the environment. EPA has ample discretion to make pragmatic choices that would appropriately balance EPA's responsibility to protect health and the environment with the Agency's (and the US Government's) need to protect and promote the productive capacity of the Nation.

II. Executive Summary

AF&PA, NCASI and the paper industry have a long history of working with EPA on air toxic regulations. The Subpart S rule was part of a multi-phase, multi-pollutant "Cluster" rule that integrated waste water Effluent Guideline rule revisions and air NESHAP rules and was heralded by EPA as a cooperative effort with industry and other public parties. Development of the rule took nearly a decade of ardent work and stakeholder/EPA joint problem-solving. For example, industry provided extensive test data and information at great expense that formed the basis for the Subpart S and Subpart MM MACT rules. Given the complexity and diversity of pulp and paper mills, the rules provide several alternative compliance options that have been widely used, cost effective and resulted in phases of pollution control equipment construction and integrated compliance strategies in the last decade.

Similarly, the industry has been very engaged with EPA when the Agency started to consider its residual risk and technology reviews for pulp and paper mills. Companies provided several iterations of improvements to the National Emissions Inventory and responded to a very extensive Information Collection Request (ICR) in 2011 even though AF&PA cautioned EPA that this was not the best way to collect information to inform its decision making. While we continued to seek information on the risk modeling results, AF&PA never heard how the ICR data was being used in the technology review, so it came as a surprise when the proposal included an increase in condensate treatment efficiency, an unexplained increase in the widely used pound-per-ton removal option beyond what the increased condensate treatment efficiency would imply, and a suggestion that EPA might simply eliminate excess emission allowances that are part of the current MACT standard In addition, AF&PA discussed the importance of the current excess emission allowances with EPA staff at several junctures in the rule development process so again it was unexpected that the Agency was considering their elimination. We understand that EPA is under a court-ordered deadline for this RTR, but that should not prevent meaningful information exchanges between EPA and the industry before a proposal is issued on a very complex data set. In fact, we warned the court that an accelerated rulemaking schedule could jeopardize a well-supported rule. The result is the proposed rule requires an increase in control efficiency that is not properly documented or justified in the docket.

AF&PA has used its best efforts to prepare useful comments in the time that EPA has provided. AF&PA has been hampered in its efforts by the lack of explanation in the preamble to the proposed rule and in the docket for how EPA analyzed available data and how EPA derived proposed revised standards and estimated costs and pollutant reductions. The specific model EPA used in its risk assessment is not available to the public. In some cases, as explained below, we have had to speculate about what EPA intended and respond on that basis. For those reasons, there may be comments here that EPA does not understand, or there may be aspects of EPA's intended proposal that AF&PA did not understand. We hope that there will be opportunities for clarification as EPA reviews these comments. In a number of instances, however, if EPA wishes to change the existing Subpart S standards EPA will have to publish a new proposed rule, because the December 27, 2011 notice either lacks a specific proposal at all or is so vague or ambiguous as to deprive the public of a meaningful opportunity to comment. As the courts have made clear, the fact that EPA has entered into an agreement to promulgate a final rule by July 31, 2012 would not excuse EPA from meeting its full procedural obligations, including: providing a clear explanation of the basis for proposed rule changes, providing the full set of data upon which to support any proposed rule revisions, and sufficient time for notice and comment. See, e.g., *U.S. Steel Corp. v. U.S. EPA*, 595 F.2d 207, 213 (5th Cir. 1979).

A. We Support the Conclusion that the Current Standard Protects Public Health with an Ample Margin of Safety

We support EPA's conclusion that the current MACT standards protect human health with an ample margin of safety. This is no accident as the industry spent roughly $1 billion in capital to control air emissions from pulp and paper mills to meet the Subpart S requirements. In fact, we believe the estimated acceptable risks are overstated due to use of conservative health benchmarks, inappropriate modeling assumptions and over estimates of emissions. EPA is required to look at both individual and population risks, and the conclusion that there is only about one statistical cancer case every 100 years shows emissions are well controlled. The conclusion of the section 112(f) risk review that no further controls are needed is well founded.

B. EPA's Technology Review Is Flawed

Unfortunately, we cannot indicate the same support for the "technology review" EPA performed under section 112(d)(6), even though EPA appropriately concluded there have been no advances in emission control measures. AF&PA strenuously objects to the apparent conclusion that current condensate treatment technologies should be required to perform at a higher level than the 92% control requirement established as the MACT "floor" in the Subpart S rule promulgated in 1998. First, EPA has misinterpreted the data upon which it has relied, due in part to the complexities of the compliance options allowed under Subpart S. Control efficiencies of steam strippers and biological treatment systems have not changed since implementation of Subpart S. EPA did not justify the basis for these changes, why they are necessary, and how they expect facilities to comply. This lack of information and clear explanation do not give AF&PA adequate opportunity to comment.

Second, the derivation of numerical limits corresponding to the 94% condensate control requirement, for mills using the lb/ODTP option, is flawed as it would require the collection of additional condensates which EPA did not intend (nor include in its cost estimate). The control efficiency increase would be closer to 25% than 2%. As a result, previously established compliance options would no longer be feasible, and very large investments would be necessary for compliance for no identified risk-reduction benefit, if compliance with this higher standard was even achievable by all mills. Finally, EPA has significantly under- estimated the cost of its proposed increase in condensate control , further validating that this change is not the small 2% control efficiency adjustment that EPA intended. AF&PA estimates the capital costs as being 9 to 23 times higher than EPA has estimated. EPA must consider costs and benefits under Clean Air Act section 112(d)(6) and Executive Order 13563, and spending $38,000 or more per ton for largely methanol reductions is a bad investment, and, more importantly, it is not required by, nor consistent with the Clean Air Act because no risk remains as a result of the current condensate treatment requirements.

C. Venting and Stripper Downtime Excess Emission Provisions Must Be Retained

The current excess emission provisions were established as part of the MACT “floor” and must be retained. The provisions are necessary for the safe operation of any pulp and paper mill and largely are not associated with equipment malfunctions. Any efforts to reexamine these provisions should happen outside the process of the residual risk and technology reviews because (1) EPA has not provided industry enough time to respond to its many questions regarding the need for these provisions, (2) the circumstances of their need and use are complex and unique to this source category, and (3) EPA is on an accelerated rulemaking schedule which will be a challenge to meet for just the section 112(f) and 112(d)(6) issues and will not provide time for a careful examination of excess emission provisions. We provide initial comments on excess emission provisions now and plan on supplementing these comments with additional information and suggestions by June 27, 2012, as EPA recently authorized.

Once industry provides EPA this additional data, we strongly urge that EPA and industry meet to review and discuss the information, since excess emission events are varied and their origins diverse. An understanding of current venting situations is essential to any meaningful review or consideration of changes to these well-established practices.

D. EPA Should Continue To Apply Different Requirements for Startup, Shutdown, and Malfunction Periods

EPA’s proposal to require sources to meet the same emission limitations during periods of startup, shutdown, and malfunction represents an unauthorized change to existing MACT standards. It is not required by case law and is inconsistent with past EPA practice and judicial interpretations of NESHAPs and NSPS. With respect to both SSM provisions and the excess emission provisions discussed above, EPA pins its analysis on semantic distinctions around the term “malfunction,” a term not even used in the relevant statutory authorities. The proposal lacks any meaningful assessment of the effect of startup and shutdown events on mills’ ability to comply with the numerical emission limitations in the rule, nor of the cost to eliminate the current allowances for startup and shutdown. There is no indication that EPA even considered using its authority under CAA section 112(h) to set work practice standards in lieu of the numerical emission limitations, even though EPA acknowledges the difficulty of sampling or monitoring emissions during such events. The affirmative defense EPA offers for claims for civil penalties for certain types of malfunctions is not a legally sufficient alternative to establishing section 112-compliant standards in the first place, and in any event it is impracticable in numerous respects.

E. EPA Has Underestimated the Cost To Implement Proposed Rule Changes

In sum, Subpart S has been a success in reducing health risks and requiring installation of the best control technologies, so no changes in the current regulatory requirements are warranted especially given the potential costs. The proposed changes, plus elimination of the excess emission provisions, could cost industry conservatively at least $2.4 billion in capital – 67 times greater than the $36 million in capital EPA estimated for the proposal. The table below summarizes the cost for each of the major provisions, each of which is substantial on its own.

Table 1: Capital Cost Impact of Proposed and Potential Rule Changes

Provision	EPA Cost Estimate	AF&PA Cost Estimate
94% control efficiency	$36 M	$300 M
Over-collection	NA	$500 M
Elimination of Excess Emission Provisions	NA	$1,600 M
Total	$36 M	$2.4 B

III. Risk Analysis

EPA has applied suitable modeling tools for the RTR assessment and the use of the ICR data has improved the accuracy of dispersion modeling and risk estimates. However, limitations and errors in the input data and in the modeling methods used, such as noted below, still affect the ability of the RTR assessment to accurately characterize maximum off-site risk. In most cases it is expected that a more accurate and detailed characterization of emissions sources would result in lower, more realistic risk estimates. AF&PA's ability to independently verify EPA's modeling, and to assess the effects of improving some of the input data as described below, is limited because the risk assessment platform used by EPA is not in the public domain and has not been made available by EPA.

A. We Support the Conclusion that the Current Standard Protects Public Health with an Ample Margin of Safety

In the preamble to the proposed rule, EPA states "we conclude that the current standard, before the amendments proposed here are put in place, protects public health with an ample margin of safety" (See 76 Fed. Reg. 81344). AF&PA supports this statement. The modeled risk results are based on data supplied by 171 mills during the Information Collection Request (ICR) in 2011. The data collected comprise a comprehensive data set reflecting the most up-to-date information. We estimate that the industry spent over $5 million to respond to the ICR survey (not including the cost for the original collection of the data that were included in the survey).

The results of the analysis conducted by EPA show that the NESHAP Subpart S rule was successful; in other words, MACT worked. This success is due to many factors, including approximately $1.0 billion[1] dollars spent by the industry to achieve the emission reductions realized by the rule.

B. Risk Result Corrections

Although the analysis conducted by EPA showed the current standard protects public health with an ample margin of safety, AF&PA worked with NCASI, consultants, and industry members to understand the risk drivers for the facilities with the highest risk as modeled by EPA. In the RTR risk assessment EPA incorporated information provided by mills in response to the recent ICR. A detailed examination of the modeling data used by EPA for mills with higher modeled risk identified some of the same issues previously encountered by AF&PA and discussed with EPA during the review of National Emissions Inventory (NEI) data.

AF&PA's consultant, AECOM, found errors in the model input parameters among the mills with higher modeled risk.[2] It is expected that these types of errors are common among all of the mills and <u>thereby likely contribute to a general overestimation of modeled risk</u> from this industrial sector.

- In EPA's refined assessment of the acute risk of Subpart S sources, eleven HAPs and nine mills had modeled maximum acute Hazard Quotients of 1.5 and greater. Among these mills more than one-third (4 of 9) have impacts that are

[1] NCASI estimate for implementation of Subpart S and Subpart MM. Majority of the capital cost was for Subpart S.

[2] See Attachment 1, Review of HEM Modeling Conducted by EPA for the Pulp and Paper Industry RTR, AECOM, February 2012

dominated by modeled wastewater treatment area sources that are incorrectly located.

- In EPA's assessment of the potential health effects due to long-term inhalation exposure from Subpart S sources, 42 mills had a modeled maximum individual lifetime cancer risk of 2 chances in a million or greater. Predicted hazard indices for all mills were less than 1 for Subpart S sources. For the 42 mills , the following observations can be made:

    - Risks at more than 64 % of these mills (27 of 42) are primarily associated with emissions from mill sources characterized as area sources, simplistically representing a large number of discrete emission sources. In dispersion modeling it is commonly found that a more detailed source characterization materially reduces modeled concentrations and associated modeled maximum off-site risk. This is largely because modeling as area sources inherently assumes that all emissions in the area are released at a single height and no credit is given for plume rise associated with individual point sources.

    - About 17% of the mills (7 of 42) were characterized as single point emission sources or with consolidated releases emitted from only a few points. This simplistic method insufficiently characterized the spatial distribution of source emissions at the mill, and would be expected to result in overestimates of off-site concentrations and associated risk.

    - About 26% of the mills (11 of 42) had incorrectly located one or more of the sources that contributed substantially to the modeled risk. It is expected that more accurately locating these sources would result in lower modeled risk.

    - Three of the 42 mills had maximum modeled risk at a population-based receptor that was erroneously placed in an uninhabited and inaccessible location close to a major emissions source.

    - About 26% of the mills (11 of 42) had erroneously calculated emissions, input the total facility emissions for a category into multiple sources rather than the contribution of each source, or used an emission factor based on questionable data. It is expected that more accurately locating these sources would result in lower modeled risk.

    - About 19% of the mills (8 of 42) had characterized sources with very low or default fugitive release heights. This simplistic method insufficiently characterized the dispersion of these source emissions at the mill, and would be expected to result in overestimates of off-site concentrations and associated risk.

In addition, for several mills the input data utilized in EPA's risk assessment were incorrect and those mills intend to submit corrected or updated data to EPA. Examples of data corrections include the following:

- HEM input data were off several orders of magnitude due to either mistakes in the NEI submittals or transcription errors from the NEI to the HEM model
- Some facilities did not submit an updated NEI to EPA based on revised bleached paper machine emission factor data issued by NCASI[3] in late June 2011
- Unrepresentative meteorological data were used in the HEM assessment

Based on findings highlighted above and discussions with facility personnel, we expect that the HEM risk results reported by EPA are in general higher than the actual risk for the industry that would be modeled if appropriate modeling refinements and corrections were made. However, even with these errors, EPA has determined that the remaining residual risk levels are acceptable. We realize that, in light of that conclusion, EPA may decide it is not necessary to rerun the HEM model and update the risk assessment at this time. We wish to note, however, that the correction of the identified errors would result in a lower estimated risks for pulp and paper mills at current emission rates.

C. Comments on Methodology

1. HEM3 Model & Corresponding Data Sets Are Not in the Public Domain

The inhalation risk estimates for this sector have been computed using EPA's Human Exposure Model (HEM3-AERMOD). For this assessment EPA updated the public domain version of HEM3 (available at http://www.epa.gov/ttn/fera/hem_download.html) so that the program implements the current version of AERMOD. In applying HEM3, EPA applied a more robust set of hourly meteorological data than the data available on the HEM3 Website. In addition, EPA revised the population-based receptor files in HEM3 to exclude receptors that appear to be on-site and to add receptors in nearby residential areas. While these types of modeling enhancements are suitably

[3] The National Council for Air and Stream Improvement (NCASI) is an independent, non-profit research institute that focuses on environmental topics of interest to the forest products industry.

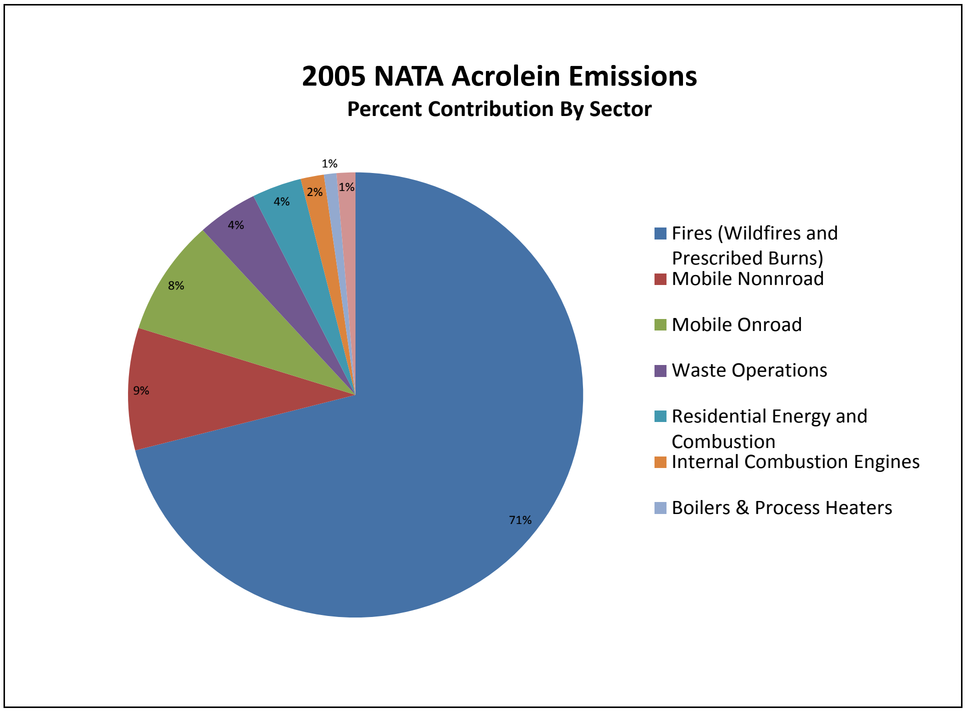
incorporated into the RTR, EPA's use of a version of HEM3 and corresponding receptor and meteorological data sets that are not in the public domain prevents us from independently verifying and interpreting EPA's risk findings. Although, upon our request, EPA has shared detailed HEM3 output, the unavailability of the updated program and data has prevented a more in-depth and comprehensive review and examination of the effects of correcting model inputs in terms of modeled risks.

2. Acrolein Emissions

EPA "removed acrolein emissions from the Subpart S modeling files due to the uncertainty in the emissions estimates" (See 76 Fed. Reg. 81334).[4] We concur with EPA's conclusion that the available acrolein emissions information is not reliable and can not serve as the basis for a determination that there is unacceptable residual risk from existing pulp and paper mill HAP emissions. For starters, acrolein is a very reactive gas and hard to measure at the parts per billion level of emissions. Acrolein acute toxicity is also not a concern. Please be reminded that AF&PA submitted information to EPA in January 2011 pointing out faults in the acute toxicity values. The primary generators of acrolein emissions are fires and mobile sources; however, EPA has not regulated acrolein from mobile sources to date. The forest products industry is a very small contributor to ambient levels/loadings of acrolein because paper mill acrolein emissions would only be a fraction of the 1% shown for boilers and process heaters (See Figure 1).

[4] EPA's contractor RTI elaborated on the causes of this uncertainty in Appendix H of the memorandum entitled, "Inputs to the Pulp and Paper Industry October 2011 Residual Risk Modeling," located in the docket at EPA-HQ-OAR-2007-0544-0122. RTI explained that "in the case of acrolein from Subpart S non-combustion sources, this [EPA emission factor development] protocol results in emission factors based primarily on assumed ½-MDL values from a majority of test runs where acrolein was not detected which introduced a large number of unknowns into the dataset, thereby multiplying the uncertainties [in the source of acrolein emissions from non-combustion sources] outlined above to an unknown degree. The uncertainty in the initial data set is further magnified when the emission factors are applied across the industry, yielding a resultant acrolein emission inventory predicated primarily on assumed values and not actual emissions measurements. This magnified uncertainty is compounded with the additional uncertainty of acrolein emissions from different paper machine operating parameters and different wood species used in pulping, resulting in further exacerbation of the uncertainty." Inputs Memo p. H-2.

Figure 1: 2005 NATA Acrolein Emissions



In the past, paper machines have been identified by EPA as the primary source of acrolein emissions from pulp and paper mills. However, emissions levels of acrolein from paper machines are very low – low enough that accurate testing is limited by the test method.

In addition to the uncertainty in the magnitude of emissions from the paper industry, the health effects caused by exposure to acrolein are certainly overestimated in EPA's IRIS database. In 2007 the Hamner Institute completed a study of acrolein's health effects which included 90-day animal/rat studies as well as work on a computational fluid dynamic model (CFD) on uptake of acrolein to understand biological dose. This research was published in a peer-reviewed journal.[5] On October 17, 2008, AF&PA sent a letter advising EPA of the new studies and in December 2010 AF&PA asked EPA to update its acrolein IRIS assessment and amend the risk value for acrolein using the

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[5] Dorman, et al., Respiratory Tract Responses in Male Rats Following Subchronic Acrolein Inhalation, *Inhalation Toxicology* 20:205-216 (2008). Schroeter et al., Application of Physiological Computational Fluid Dynamics Models to Predict Interspecies Nasal Dosimetry of Inhaled Acrolein, *Inhalation Toxicology* 20:227-243 (2008). Struve, et al., Nasal Uptake of Inhaled Acrolein in Rats, *Inhalation Toxicology* 20:217-225 (2008).

Hamner studies. Before EPA estimates any risk from acrolein emissions, the IRIS assessment on acrolein must be revised to reflect the best available science.

In February 2010, EPA's Science Advisory Board (SAB) supported the use of IRIS as the "preferred" database but also advised EPA to consider alternatives where the IRIS values are based on limited data. Specifically, "the Panel found EPA's approach to selecting dose-response chronic toxicity values to be generally sound, but recommends the Agency more closely scrutinize values that emerge as drivers of risk assessment results." [5/7/10 letter to EPA]. The table below shows a comparison of the acrolein Reference Concentrations (RfC) used by government organizations for risk analysis. Table 2 shows that EPA's current value for acrolein is, indeed, not based on the best available scientific data and more than 15 times more stringent than the RfCs established more recently by CalEPA and Ontario.

Table 2: Comparison of Acrolein RfC used by Various Government Organizations

Government Agency	Previous RfC ($\mu g/m^3$)	Recent RfC ($\mu g/m^3$)	Year
EPA	0.02	0.02	2003
Hamner Institute	--	0.6	2008
CalEPA	0.06	0.35	2008
Ontario	0.08	0.4	2009

EPA's current RfC is based on a study by Feron (1978) that examined few animals, did not involve exposure concentrations low enough to develop a NOAEL (no observed adverse effect level) (just LOAEL), and did not study nasal uptake/activity. EPA has acknowledged the study was of poor quality and large uncertainty factors were used (1000x). EPA noted the following in a technical document regarding the use of health effects information in evaluating school air toxic monitoring results

> "The comparison level shown for acrolein is the EPA RfC which is set below a level associated with health effects. The RfC is set as a factor of 1000 below an exposure concentration associated with sensitive nasal effects in laboratory animals. Since the EPA RfC was derived, the California EPA has derived a

chronic REL[6] based on more recently available information on acrolein and its effects. The Cal-EPA REL, which is 0.35 $\mu g/m^3$, is somewhat more than a factor of 100 below the level associated with effects in the more recently available study."[7]

The recommended value, based on the Hamner Institute study, is 30 times less stringent than what EPA is using (0.6 $\mu g/m^3$ (270 ppt) vs. 0.02 $\mu g/m^3$ (9 ppt)). CalEPA (0.35 $\mu g/m^3$) and Ontario, Canada (0.4 $\mu g/m^3$) have set their RfCs at much less stringent levels. The values used by CalEPA and Ontario are referenced by EPA as more appropriate in the technical document for interpretation of health effects surrounding schools.

In sum, we support EPA's proposed conclusion that the available acrolein emission information is not reliable and cannot be used for regulatory purposes. But, even if EPA were to include acrolein emissions in its risk assessment for this source category, the alternative RfCs presented in the Hamner study would be more scientifically valid than the EPA IRIS value. When both the Hamner study RfC and industry emissions data for acrolein are applied, the analysis would not support a conclusion that there are any significant residual risks associated with acrolein emissions from this source category.

3. Formaldehyde Emissions

As noted in the comments from the Formaldehyde Panel of the American Chemistry Council in Response to EPA's Proposed NESHAP from the Pulp and Paper Industry "the EPA has failed to support key conclusions . . . with the best available science"[8] in evaluating the potential impacts from formaldehyde emissions. "In particular, EPA incorporates the 1991 IRIS dose-response model – an overly conservative and outdated model – for determining the level of risk presented by formaldehyde exposure and ignored, without any rationale, nearly 25 years of research. The utilization of the IRIS model is all the more egregious considering the availability of the CIIT biologically-

[6] REL refers to a Reference Exposure Level. "CalEPA defines the REL as a concentration level at (or below) which no health effects are anticipated, a concept that is substantially similar to EPA's non-cancer dose-response assessment perspective."
http://www.epa.gov/ttn/atw/toxsource/chronicsources.html

[7] Schools Air Toxic Monitoring Activity (2009) Uses of Health Effects Information in Evaluating Sample Results, 09/10/2009, EPA,
http://www.epa.gov/schoolair/pdfs/UsesOfHealthEffectsInfoinEvalSampleResults.pdf

[8] Comments from the Formaldehyde Panel of the American Chemistry Council in Response to EPA's Proposed NESHAP from Pulp and Paper Industry (Docket No. EPA-HQ-OAR-2007-0544.); 2/27/12

based dose-response (BBDR) model, which better reflects the available science."[9] The Formaldehyde Panel also points out that in the National Academy of Sciences' (NAS) April 2011 report of its review of formaldehyde risk, the panel supported the use of the CIIT BBDR model and concluded that "the BBDR model for formaldehyde is one of the best–developed BBDR models to date" and recommended that "EPA use the BBDR model for formaldehyde in its cancer assessment."[10] Further, EPA relies on an inferior model to support its impact analysis of formaldehyde emissions from pulp and paper mills.

AF&PA urges EPA to reject the 1991 IRIS dose-response model in evaluating formaldehyde risk. Key deficiencies in the use of data in the risk analysis include:

- Contrary to IQA Guidelines, EPA inappropriately applies the outdated IRIS dose response values in determining formaldehyde inhalation exposure risk in support of the Proposed Rule.
    - The 1991 IRIS model does not constitute the best available science and therefore should not be used in determining formaldehyde inhalation exposure risk in support of the Proposed Rule.
        - The CIIT's BBDR model is a superior model for determining the cancer risk associated with formaldehyde exposure.
        - EPA overstates the variability associated with CIIT's model and bases its view on inappropriate manipulations of the model's underlying assumptions.
        - The deference given to the 1991 IRIS Assessment is directly at odds with EPA's mandate to "consider all credible and relevant information" in a rulemaking proceeding.
        - EPA's proposed rule should be based on the best available science at the time of the rulemaking." [11]

4. Hexachloroethane (HCE)

Hexachloroethane (HCE) emissions from brownstock washers and bleach plant sources emerged as a primary risk driver for some facilities in EPA's December 2011 risk modeling. Many facilities used emission factors found in NCASI's Air Toxics

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[9] Id.

[10] National Research Council of the National Academies, *Review of the Environmental Protection Agency's Draft IRIS Assessment of Formaldehyde* (2011) (NAS Report), available at http://www.nap.edu/catalog.php?record_id=13142.

[11] Comments from the Formaldehyde Panel of the American Chemistry Council in Response to EPA's Proposed NESHAP from Pulp and Paper Industry, Attachment 2 .

Database to estimate HCE emissions from these sources. These NCASI emission factors are based upon limited test data from 1993, most of which were non-detects. HCE was detected in one diffusion washer vent at a bleached pulp mill and not detected at three vacuum-drum washer systems (eleven total vents) at two bleached pulp mills. HCE emissions were detected in one ECF bleach plant scrubber vent but not detected in six non-ECF bleach plant systems. HCE is not a known pulping byproduct, and the conditions for its formation are not expected to exist either in brownstock washer systems or in bleach plant systems. Given the above factors, there is significant uncertainty about these isolated detects in the brownstock washer and bleach plant sources. NCASI is planning to perform additional emissions testing of several vents from a vacuum drum washer system, a diffusion washer system, and a bleach plant scrubber to confirm the expected absence of hexachloroethane. A memo from NCASI outlining this issue is included as Attachment 3[12].

D. EPA's Approach to Examining Risk is Inconsistent with the Statute

1. EPA Fails To Provide a Rational Basis for Using Allowable Emissions in Conducting Risk Assessments Under § 112(f).

EPA uses the term "MACT allowable" emissions in the preamble to mean "the highest emissions level that could be emitted by the facility without violating the MACT standards" (See 76 Fed. Reg. at 81334). The Agency asserts that considering MACT allowable emissions in determining residual risk under § 112(f) "is inherently reasonable since these risks reflect the maximum level at which sources could emit while still complying with the MACT standards." *Id*. The Agency's risk assessment included an assessment at "MACT allowable" emissions levels. Specifically, the Agency used actual emissions from the data supplied in the Part II NEI emissions dataset and developed a ratio to calculate MACT allowable emissions based on control levels reported in the ICR for each facility. Risk estimates were then based on these calculated MACT allowable emissions.

EPA cannot lawfully use MACT allowable emissions in the proposed risk assessments and residual risk determinations because the Agency has failed to provide any reasoned explanation for why risk assessments based on actual emissions estimates are inadequate. It is noteworthy that CAA section 112(f)(1)(A) required EPA to report to Congress on "methods of calculating the risk to public health *remaining, or likely to remain*, from sources subject to regulation under this section after the application of

[12] "Hexachloroethane Emissions from Brownstock Washers and Bleach Plant Sources", Zach Emerson, NCASI, February 24, 2012

standards under subsection (d) of this section" (emphasis added). Section 112(f)(1)(B) required EPA also to report on "the *actual health effects* with respect to persons living in the vicinity of" affected sources" (emphasis added). These requirements clearly signal that Congress expected EPA to focus on actual risk and not hypothetical risk in implementing the requirements of section 112(f). Thus, it is not reasonable in the first instance for EPA to construe section 112(f) as authorizing Agency risk assessments based on hypothetical "MACT allowable" emissions.

Moreover, the Agency's risk assessment methodology already reflects numerous conservative assumptions. For example, health benchmarks, such as acute reference doses, typically incorporate two to three orders of magnitude of conservatism to account for uncertainties, such as the extrapolation of animal toxicity testing data to humans. Similarly, the dispersion models used to predict off-site ambient HAP concentrations attributable to emissions from affected sources incorporate numerous conservative assumptions to simplify the analysis of highly complex factors, such as meteorology, terrain, and atmospheric chemistry. In addition, risk assessments assume exposure to the most exposed individual on a continuous basis for an entire lifetime.

In light of the conservatism that already is inherent in EPA's risk assessment methodology, it makes no sense to apply yet another layer of conservatism – this time based on the hypothetical assumption that affected sources should be expected to emit more than the actual data indicate – to section 112(f) risk assessments. Furthermore, EPA has provided no data or analyses indicating that its current methodology results in negative bias. EPA has provided no data demonstrating that affected sources actually do emit at levels significantly higher than the actual data show for any significant period of time, or should reasonably be expected to do so.[13] In short, EPA's proposal to use hypothetical emissions levels in section 112(f) risk assessments is based on nothing more than the unsupported assertion that sources *might* emit at these higher levels. The failure to provide a reasoned explanation or evidence as to why this approach is justified and the failure to provide any record evidence supporting the use of MACT allowable emissions render this proposal insupportable under the law.

2. The "Total Facility" Approach to Conducting Risk Assessment Exceeds EPA's Authority Under § 112(f).

EPA explains in the proposal that, "To put the source category risks in context, we also examine the risks from the entire "facility," where the facility includes all HAP-emitting

[13] To the contrary, as explained below mills necessarily design and operate their emission control systems to operate at emission rates below the applicable standards, to provide a compliance margin that accommodates variability in process and control equipment.

operations within a contiguous area and under common control" (See 76 Fed. Reg. 81338). For this source category, EPA concludes that, "Nearly all 171 major sources include chemical recovery combustion sources (e.g., recovery furnace, smelt dissolving tank, lime kiln)" and that, "Pulp and paper mills also include paper coating, landfills, petroleum storage and transfer and other operations." *Id*. As a result, "where data were available, we performed a facility-wide risk assessment for these major sources as part of today's action." *Id*.

Notwithstanding these assertions, EPA is without authority to consider facility-wide risks because the CAA requires residual risk determinations to be conducted on a category-by-category basis. Section 112(f)(2)(A) unambiguously requires EPA, within 8 years after adopting a MACT standard for a given source category or subcategory, to "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." Section 112(f)(2)(A) further dictates that, "Emissions standards promulgated under this subsection shall provide an ample margin of safety to protect public health." It is not reasonable to construe these provisions as authorizing EPA to consider emissions from entire facilities in conducting risk assessments and potentially revising the underlying rule, for the simple reason that the Congress clearly envisioned that full implementation of the MACT program would take longer than 8 years. Consequently, it would be impossible for EPA to fulfill its unambiguous obligation for section 112(f) standards to protect public health with an ample margin of safety in cases where facilities contain sources in a category where the 8-year deadline for conducting the section 112(f) risk review precedes the adoption of MACT standards for other sources at the facilities.

In addition, section 112(f)(2)(A) further provides that, "If standards promulgated pursuant to subsection (d) of this section 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" (emphasis added). This provision unambiguously requires the section 112(f) risk assessment to be focused exclusively on "emissions from a source in the category or subcategory." For this reason alone, EPA does not have authority to consider emissions from any sources other than those in the source category or subcategory under review at that time. Thus, the risk assessment EPA conducted for the proposed rule overstates the risks that EPA was supposed to be considering in the residual risk review for Subpart S.

3. Demographics May Not Be Considered in Conducting Risk Assessments Under § 112(f).

EPA explains in the preamble that "the agency has reviewed this rule to determine if there is an overrepresentation of minority, low income, or indigenous populations near the sources such that they may face disproportionate exposure from pollutants that could be mitigated by this rulemaking" (See 76 Fed. Reg. at 81353). EPA concludes that the rule will not have such effects because "it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority, low income, or indigenous populations." *Id*.

EPA is without authority to factor such "environmental justice" considerations into this rule, because the term "public health" cannot reasonably be interpreted to include consideration of environmental justice in the section 112(f) context. Section 112(f)(2)(A) expressly instructs EPA to impose additional emissions controls if needed to provide an ample margin of safety "to protect public health." The term "public health" is not defined in section 112 or in EPA's Part 63 regulations.

In the context of EPA's national ambient air quality program ("NAAQS"), the Supreme Court has observed that the "primary definition of the term" should be applied – *i.e.*, public health means "the health of the public." *Whitman v. American Trucking Associations, Inc.*, 531 U.S. 457, 465 (2001). This conclusion emphasizes that the scope of the term "public health" should be dictated by the meaning of the word "public." In relevant part, Webster's Dictionary defines the adjective "public" to mean "of, relating to, or affecting all of the people or the whole area of a nation or state" and "of or relating to people in general." These definitions emphasize that the word "public" should be construed expansively as describing the people as a whole, and not particular demographic segments.

EPA's established approach to assessing potential impacts on public health under the NAAQS program is consistent with this meaning. EPA reasonably interprets the term "public health" to include consideration not only of potential impacts to the population as a whole, but also to sensitive subpopulations – recognizing that the objective is to protect the group rather than any particular individual in the group (See, e.g., 71 Fed. Reg., 61144, 61145 fn. 2 (Oct. 17, 2006)). Importantly, sensitive subpopulations are identified according to their particular health-based sensitivities (*e.g.*, asthmatics) rather than demographic classifications unrelated to particular health-based sensitivities (*e.g.*, population without a high school diploma).

With this backdrop, it would not be reasonable to construe the term "public health" as used in section 112(f) as allowing consideration of demographic classifications that bear no relationship to the potential health effects presented by the HAPs at issue for the given source category or subcategory. EPA's proposal would unreasonably inject racial, ethnic, economic, and other policy considerations into a program designed to provide protection for the public at large. For example, if EPA were to suggest that the population without a high school diploma should receive extra scrutiny, why should the Agency not afford the same scrutiny to other reasonably definable educational groups, such as those with a high school diploma, those with college degrees, and those with advanced degrees. There is simply no principled way to identify and define those groups that should receive extra scrutiny from those that do not. In short, injecting "environmental justice" considerations into section 112(f) standard setting would inappropriately cause arbitrary policy and political considerations to trump objective scientific analysis. This would be patently unreasonable and, as such, would not be a supportable interpretation of section 112(f).

IV. Technology Review

A. We Support the Conclusion that There Are No New Control Technologies that Should Be Required

In the preamble to the rule, EPA states "For chemical pulping and bleaching, we have determined that there have been no advances in emission control measures since the subpart S standard was originally promulgated in 1998" (See 76 Fed. Reg. 81344). In addition, EPA noted that "Our technology review of kraft condensates did not yield any information about new technologies that could become the basis for regulatory options" (See 76 Fed. Reg. 81345). AF&PA agrees with these statements. The technology used by the industry for Subpart S compliance is the same as when the rule was promulgated. These systems have the same capabilities as the units that were used by the "best performing" mills that were the basis for the MACT "floor."

B. Condensate Collection & Treatment Standards

In the preamble to the rule, EPA states "For kraft pulping condensates, we have determined that the technology has sufficiently advanced since the 1998 MACT rule to warrant the development of an updated standard" (See 76 Fed. Reg. 81344). AF&PA <u>does not agree</u> with this statement.

Clean Air Act Section 112(d)(6) directs EPA to "review, and revise *as necessary*…[the initial MACT standards] (taking into account *developments* in practices, processes, and control technologies)" (emphasis added). EPA is now proposing to revise the condensate treatment requirements ***not because*** the Agency has identified any new developments in processes or treatment technologies beyond what EPA identified when establishing the MACT “floor,,***but simply because*** EPA believes it has data indicating that wastewater treatment systems and steam strippers achieve control efficiencies greater than the 92% that the current MACT rules require. Firstly, there is not support of the Agency’s conclusion in the available data.[14] Additionally, even if this were true, this is not a sufficient finding to warrant revising the MACT standards pursuant to section 112(d)(6) (and EPA lacks any other authority for revising the Subpart S MACT standards[15]).

The analysis of stripper performance test data in the docket is inadequate and we believe EPA lacks an understanding of what the data represent. The test data are not summarized to the extent that they could be verified by the companies that submitted such data within EPA’s massive Information collection request effort. Individual test data are not even listed in the docket. We believe the data are largely initial compliance test data as required by the rule. These tests confirm compliance with the rule with a necessary margin to assure compliance over the range of operating conditions the stripper will see. The same is true of analogous waste water treatment system controls. A margin of compliance determined under initial performance test conditions verifies proper design and construction of the equipment and not that “technologies have advanced.” Further, there is no adequate description we could find in the record on how EPA is considering to modify stripper and wastewater treatment systems to achieve a higher 94 % destruction efficiency, while maintaining a margin and certainty of compliance needed for operation over the range of conditions present. Finally, the calculated pound per ton compliance option requirements, purportedly consistent with the 94% efficiency objective, could not be achieved, in any way we could determine, without more than doubling the investment in control equipment. The logic employed in developing the pound per ton proposed requirements clearly appears flawed. These concerns are developed more fully in more specific comments that follow.

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[14] *Interim comments on rationale and methodologies used to evaluate and propose increased treatment requirements for kraft condensates in the Pulp and Paper ITR,* NCASI Memo to Ms. Robin Dunkins, Mr. John Bradfield, Mr. Bill Schrock, February 17, 2012. – This memo outlines other factors to be considered while reviewing condensate treatment data reported in the ICR and why it is inappropriate to attribute the performance to technological or operational improvements. – Discussed in Section IV.C2 and provided as Attachment 4.

[15] Congress structured section 112 unlike other provisions of the Clean Air Act (and other environmental statutes). Under CAA sections 112(c)(2) and 112(e), EPA was given definite deadlines for promulgating MACT standards for various source categories. The MACT “floor” thus represented performance at a specified point in time. Congress did not give EPA authority to review periodically the performance achieved by the “best performing” facilities, but only to determine, at least every eight years after the MACT “floor” was established (and any more-stringent “beyond-the-floor” MACT standards were justified), whether it is necessary to revise the MACT standards to account for “developments in practices, processes, and control technologies.”

When the statute directs EPA to revise MACT standards only where "necessary…taking into account developments" in process and control technology, EPA must identify specific changes in the applicable technology that necessitate a change in the standard. EPA has not done so here. Neither the preamble to the proposed rule nor any document we could identify in the docket describes new control technology for pulp mill condensates, nor even advances in the condensate collection and steam stripper technology that was the basis for existing condensate treatment standards. Rather, EPA has concluded that it can set a more-stringent limit that can be met by some mills using the *same* technology that was the basis of the existing MACT standards. Congress clearly did not intend for section 112(d)(6) to authorize that sort of tightening of the standard that companies have already taken the steps to meet, absent a specific change in available technology. (Moreover, as EPA has already acknowledged, even if new, more-effective treatment technology were available, EPA would still need to consider the cost-effectiveness of that technology and other factors (See *NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008)). EPA has not conducted that sort of analysis here.

As discussed below, the only fact that EPA relies on to propose revised standards, purportedly under authority of CAA section 112(d)(6), is that some mills are achieving HAP removal rates greater than the 92% removal rate that was assumed for the current MACT standards. But that is entirely to be expected; in fact, it would be surprising if mills were meeting the MACT standards ***at all times*** and ***with a very high compliance probability*** and yet on average had treatment efficiencies no higher than the minimal efficiency necessary to comply with the existing MACT standards. For instance, sound engineering and environmental control practices would require a steam stripper to be designed and operated with a removal efficiency greater than 92% to assure compliance at all times. Even mills that were the best performers and were used to establish the MACT "floor" would have wanted to make further improvements in the amount of HAPs they collected, or the removal efficiency of their stream stripper, or both, to ensure that they could comply consistently with the MACT standards once promulgated. Nothing in the language of section 112(d)(6), the legislative history of section 112, or common sense suggests that Congress wanted EPA to constantly "ratchet-down" the MACT standards, removing the margin of compliance that facilities have built into their HAP control systems. Adjustments are appropriate only when there are advances in practices, processes, or control technologies."

1. Condensate Generation

The MACT standards for the Pulp and Paper Industry (Subpart S) require affected facilities to collect and treat condensates generated in the pulping process. These condensates contain varying concentrations of HAPs, of which methanol is the predominant one and is used as a surrogate in the rule. These HAPs are then apportioned throughout the process to the pulp, pulping liquors, condensates, and gas streams, also known as non-condensable gases (NCGs). Some methanol remains in the liquor and will be destroyed when the liquor is burned in the recovery furnace to recover sodium and sulfur. Methanol that remains in the pulp carries over to the bleach plant (if applicable) and the paper machines. Throughout the process, water containing relatively low concentrations of methanol is sent to the wastewater treatment system (WWTS). For the purposes of compliance with Subpart S, HAPs are collected from either the gases or condensates from the pulping and evaporator equipment. NCASI studied the generation and portioning of methanol during the development of the “Cluster Rule” (of which Subpart S is the air portion), and NCASI Technical Bulletin No. 702 covers those details.

EPA proposes to change the condensate treatment requirements (See 76 Fed Reg 81354, section 63.446). In order to understand how these proposed changes can affect the industry, it is important to both understand how and where condensates are generated and the variability in generation between those processes and facilities. Processes at each mill are slightly different and the differences affect the partitioning of methanol. The ability to treat condensates is governed by the fact that methanol has an affinity for water, and it takes a lot of energy/resources to drive methanol from the liquid phase. Therefore, of the condensates generated, only the concentrated streams, which contain the overwhelming majority of the methanol, can be effectively and efficiently treated in steam strippers.

Collecting and treating more process methanol results in greater and greater cost of destruction and makes less and less sense given the acceptable risk conclusion at current treatment levels. MACT was set at a more reasonable treatment efficiency and condensate collection rate because the systems that comprised the “floor” were designed almost entirely for odor control, and these decisions were made with a necessary mind towards reducing odor (and therefore methanol and other HAPs) cost-effectively. Higher levels of control or collection cannot be construed as an “advance in technology” but only as a design requirement to ensure compliance is achieved with a reasonable margin of assurance.

2. Background on Condensate Collection & Treatment Compliance Options in the original NESHAP

The MACT standard was divided into two phases of implementation. Phase I set the limits for condensate collection and treatment and also required collection and treatment of Low Volume High Concentration (LVHC) NCG streams. During Phase II, mills were required to collect and treat High Volume Low Concentration (HVLC) NCG streams.

In 1993, there were 32 mills with steam strippers and the top 15 were used to develop the MACT “floor” (top 12% of all 125 mills that were covered by the rule). It is noted that the top 15 mills were all bleached mills. A NCASI study documenting HAP collection and treatment at all sources (NCASI Technical Bulletin 661) identified that the best performing 15 mills collected on an average 11.1 lb/ODTP of methanol and achieved a treatment efficiency of 92%. Based on average collection of methanol by the top 15 strippers, EPA developed the collection standard of 11.1 lb HAP/ODTP, with methanol being the surrogate for HAPs (See 40 C.F.R. § 446(c)(3). The standard was adjusted to 7.2 lb HAP/ODTP for unbleached mills, given that unbleached mills generate methanol at a rate that is 64% of the rate at which methanol is generated by bleached mills (See NCASI Technical Bulletin 702).

The two primary methods for condensate treatment are (1) steam stripping, and (2) biological treatment. At the time the “Phase 1” requirements of the Subpart S rule were being developed, the technology used by most mills that had condensate treatment was steam stripping. Given the affinity of methanol to water and the fact that they could be effectively treated by the active organisms in existing aerated stabilization basins (ASB), biological treatment of the condensates, along with other mill wastewaters, was identified as a feasible alternative to attain a similar level of HAP reduction[16]. The condensates had to be transported in a hardpipe and introduced below the surface of the treatment system in order to minimize volatilization.

Both the condensate collection and condensate treatment requirements in the Subpart S rule were based on the average collection levels and performance of steam strippers at the best performing mills. As noted above, 11.1 lb HAP/ODTP was the average HAP collection of the “floor” steam strippers. As this was an average collection, it was noted that not even all “floor” mills could achieve a collection standard of 11.1 lb HAP/ODTP for bleached mills. Therefore, the ‘named streams’ approach was developed. The ‘named streams’ are locations where volatile HAPs are generated in concentrations that can be effectively treated.

[16] Most aerated stabilization basin (ASB) systems—the most common type of wastewater treatment systems at pulp mills--are more difficult to operate to achieve a 92% destruction efficiency than steam strippers, but they also require less routine downtime for maintenance than steam stripper technology and at less cost. The lb/ODTP treatment option accommodates lower treatment efficiencies if more condensate is collected and treated. These options grew out of the cooperative Cluster Rule effort after industry advanced wastewater treatment as an equally effective treatment system with lower energy requirements and downtime. Cooperative thinking is what led to the flexible structure inherent in the Cluster Rule and the relative “near-uniqueness” of individual mill compliance systems – equivalent control with the most practical design given conditions and constraints of individual mills.

To meet the condensate collection requirements for Phase 1, mills could either:

- Collect 11.1/7.2 lb HAP/ODTP (bleached/unbleached) from named streams
- Collect all ‘named streams’ (it was noted that some mills could not generate the amount of methanol in the lb/ODTP standard), or
- Collect 65% of HAPs contained in pulping, turpentine recovery, and evaporator systems (based again on the average collection of ‘named streams’ by “floor” mills) plus all HVLC/LVHC condensates.

(See 40 C.F.R. § 63.446(c).) It is noted that all these options required collection of ‘named streams’ as identified by the rule. (i.e., a mill could not take credit for collecting ‘unnamed streams’.)

In addition to collection options, the current Subpart S rule offers four treatment options. These options were again developed based on the “floor” mills’ performance in treating an average of 92% in their steam strippers and the outlet concentration of those units.

The options provided to treat the collected streams are:

- Reduce or destroy at least 92% by weight of the collected HAPs, or
- Remove or destroy at least 10.2 or 6.6 lb HAP /ODTP (bleached/unbleached mills), or
- Remove or destroy so the control device outlet HAP concentration is at or below 330/210 ppmw (bleached/unbleached) or
- Recycle condensates to an enclosed treatment system.

(See 40 C.F.R. § 63.446(e).) Based on these requirements, facilities designed systems to comply with the standards with an inherent margin of safety to ensure continuous compliance, given both process and control device variability. In other words, mills designed systems to achieve some level of control beyond what was required by the rule in order to ensure a compliance margin and demonstrate compliance at all times (99%+ compliance probability). This is why it is not surprising for the average treatment performance to exceed the levels required by the current standards.

3. Clean Condensate Alternative

MACT I Phase 2 required the collection of HVLC gases from brownstock washer systems, oxygen delignification systems, and some deknotters, screening systems, and deckers. As the cost to collect these gases was high (high volume means larger piping systems and control devices that can handle the volume), the Agency developed an alternative to collection and control of these streams, known as the Clean Condensate Alternative (CCA). This option allowed a mill to collect and treat additional condensates (named or unnamed streams) in order to achieve emissions reductions equivalent to those required from "Phase 2" of the rule for control of HVLC systems. (See 40 C.F.R. § 63.447.)

Facilities demonstrating compliance using CCA had to quantify emissions under a baseline scenario that reflected MACT I Phase I compliance. Facilities were not allowed to take credit for emission reductions resulting from compliance strategies chosen for MACT I Phase 1. For example, consider a bleached mill complying with the 11.1 lb HAP/ODTP collection requirement and demonstrating the need for 10% over-collection (12.21 lb/ODTP) in order to increase compliance probability and establish averaging times. Subsequently, this level of collection would be treated as the baseline for CCA and the Mill would have to achieve additional and surplus emissions reductions to offset not collecting the HVLC streams identified in the rule[17]. In order to demonstrate compliance under this option, the Mill would have to collect additional condensates over the example 12.21 lb HAP /ODTP baseline and achieve equivalent with the emissions reductions that would have been achieved by controlling the HVLC sources identified in Phase 2. A more complete example of an approach to CCA is described in Attachment 6.

C. Technology Has Not Changed for Condensate Treatment

The technology for condensate treatment has not changed since the development of the original Subpart S MACT "floor". EPA claims that the data collected from the ICR indicates that facilities are consistently treating condensates to a higher level than in the current rule. Firstly, the above conclusion cannot be drawn from the data.[18] Second, this conclusion rests on the erroneous assumption that an increase in treatment requirement from 92% to 94% can be implemented at a minimal capital cost of $36 million. AF&PA strongly disagrees with this statement. The systems in place were designed for a Phase 1 treatment standard; however, the 2011 ICR data reflected condensate collection and treatment being achieved as a result of both Phase I and

[17] Letter from R. Douglas Neeley, EPA Region IV, to Larry Webber, Georgia EPD, March 27, 2003. "Any extra streams or additional mass of condensate used as an operating cushion, or for determine the need for flexibility provided by a longer averaging time cannot be used as credit for the CCA, since it was granted and used to meet the collection requirements of § 63.446."

[18] *Interim comments on rationale and methodologies used to evaluate and propose increased treatment requirements for kraft condensates in the Pulp and Paper ITR,* NCASI Memo to Ms. Robin Dunkins, Mr. John Bradfield, Mr. Bill Schrock, February 17, 2012. – This memo outlines other factors to be considered while reviewing condensate treatment data reported in the ICR and why it is inappropriate to attribute the performance to technological or operational improvements. – Discussed in Section IV.C2 and provided as Attachment 4.

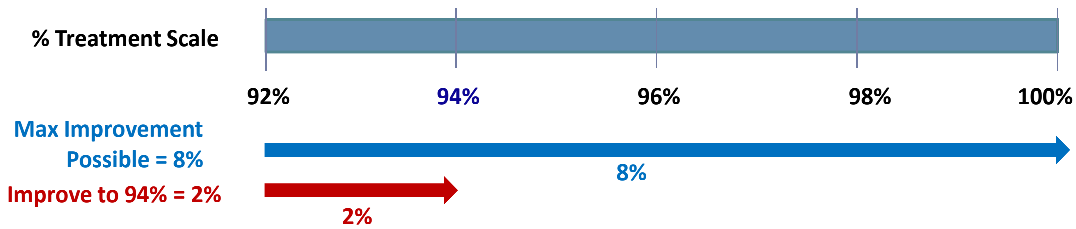
Phase 2 requirements. Thus the survey responses included mills using CCA or other equivalency-by-permit alternatives to meet Phase 2 requirements. EPA's conclusions resulted from a misinterpretation of the ICR responses and application of an inappropriate calculation methodology.

1. Clarification of the Proposed Numerical Limits

NCASI and AF&PA have previously pointed out to EPA that the numerical HAP treatment levels EPA has proposed, supposedly reflecting an increase in methanol removal efficiency from 92% to 94%, are greater than the current HAP collection requirements. (40 C.F.R. § 63.446(c)(3)) allows bleached and unbleached kraft mills to comply with condensate standards by collecting for treatment condensates from listed equipment that contain a total HAP mass of 11.1 lb/ODTP or more, or 7.2 lb/ODTP or more, respectively. Yet, the proposed § 63.443(e)(4) and (5) would require those mills to demonstrate that they are removing at least 12.8 lb/ODTP or 8.3 lb/ODTP, respectively.) The proposal to increase the required HAP reduction (e.g., from 10.2 lb/ODTP in the current rule to 12.8 lb/ODTP, for bleached kraft mills and from 6.6 lb/ODTP in the current rule to 8.3 lb/ODTP, for unbleached kraft mills) is not consistent with the proposed rule's stated basis: that the removal efficiency can be increased from the 92% to 94% and that no additional condensates need to be collected.

In the equivalency calculation used to arrive at these numerical limits, EPA has calculated the percent increase in control for each 1% increase in treatment efficiency from 92% to 98% (the level of control achieved for mills choosing the condensate recycling option). The rationale is represented graphically below:

Figure 2: EPA Calculation Methodology



The percent ***"standard improvement"*** [19] corresponding to an increase in treatment efficiency from 92% to 94% would be:

- 2% of the maximum possible 8% = 2/8 = 25%

Using this approach, the percent **"*standard improvement*"** for each 1% increase in treatment efficiency (from 93% to 98%) would be:

- At 93% - 1% of max possible 8% = 1/8 = 12.5%
- At 94% - 2% of max possible 8%: 2/8 = 25%
- At 95% - 3/8 = 37.5%
- And so forth.

These percent ***"standard improvements"*** were subsequently directly applied as scaling factors to arrive at numerical treatment limits (Table 2 in the October 23, 2011 Memo, reproduced here).

[19] "Summary of Kraft Condensate Control Technology Review," EPA Memorandum to Docket – EPA-HQ-OAR-2007-0544-0128, John Bradfield and Kelley Spence, October 23, 2011, page 4.

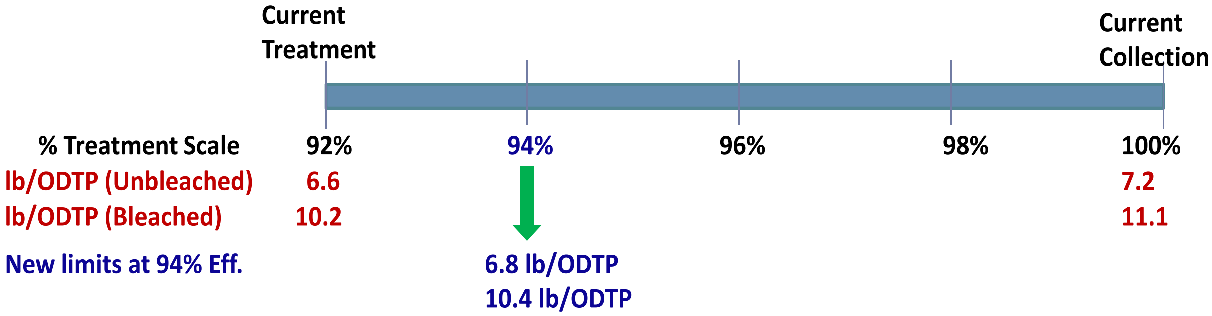
Table 3: EPA Scaling Factors and Recalculated Numerical Limits

		Recalculated Numerical Limits (lb/ODTP)	
% Treatment (% control improvement)	**Multiplication Factor Used**	**Bleached Mills**	**Unbleached Mills**
92%		10.2	6.6
93% (12.5%)	**1.125**	11.5 (= 10.2 x 1.125)	7.4 (= 6.6 x 1.125)
94% **(25%)**	**1.250**	12.8 (= 10.2 x 1.25)	8.3 (= 6.6 x 1.25)
95% (37.5%)	**1.375**	14.0	9.1
96% (50%)	**1.500**	15.3	9.9
97% (62.5%)	**1.625**	16.6	10.7
98% (75%)	**1.750**	17.9	11.6

As discussed during the meeting between OAQPS and the AF&PA on Jan 12, 2012, this methodology of calculating numerical limits is inconsistent with the premise behind the equivalency approach. Key insights from the equivalency approach highlight this issue:

- The scale ranging from 92% to 100% is the treatment scale
- Assuming that whatever is not treated/controlled is released as emissions, emissions would reduce from 8% to 0% as treatment increases from 92 to 100%
- The percent ***"standard improvements"*** calculated above are, in effect, ***emissions reductions.***
- In other words, a 2% increase in the numerical treatment efficiency standard is equivalent to a 25% reduction in associated **remaining** emissions.
- When calculating numerical treatment limits, the applicable scaling factors should therefore reflect the original ***treatment*** scale and not the percent ***"standard improvement" (emissions)*** scale. As done in the original rulemaking, the lb/ODTP treatment requirement is simply calculated by multiplying the collection requirement by the proposed percent control efficiency as shown below.

Figure 3: AF&PA Recommended Calculation Methodology



<u>Recalculating the Numerical Treatment Standards for Kraft Process Condensates</u>

The numerical treatment standards corresponding to the 94% treatment level can be calculated directly as shown below. They are represented on the treatment scale above.

- 7.2 lb/ODTP x 0.94 = **6.8 lb/ODTP** for unbleached mills
- 11.1 lb/ODTP x 0.94 = **10.4 lb/ODTP** for bleached mills

An alternate approach to calculating these numerical treatment levels that is logically consistent with applying EPA's statements about increasing treatment efficiency from 92 to 94 percent using the percent ***"standard improvement"*** scale would be as follows:

- Collection levels are 7.2 lb/ODTP and 11.1 lb/ODTP (unbleached and bleached respectively)
- At 92%, the treatment levels are 6.6 lb/ODTP and 10.2 lb/ODTP
- Therefore, when increasing the treatment standard from 92% to 94%, you achieve a ***25 percent "standard improvement" (reduction in emissions)***
  - 6.6 + ***25% of*** (7.2 – 6.6) = **6.8 lb/ODTP** - unbleached mills
  - 10.2 + ***25% of*** (11.1 – 10.2) = **10.4 lb/ODTP** - bleached mills

In developing the ppmw option that equates to 94% removal, EPA used the correct calculation methodology. For example, the current standard for bleached mills is 330 ppmw at the outlet of the control device. Since this standard was based on a treatment efficiency of 92%, it would be assumed that the inlet condensate concentration is 4,125 ppmw (330 / (1-0.92)). If the treatment standard were raised to a level of 94%, the outlet concentration would need to be lower than 248 ppmw[20] (4125 ppmw x (1-.94)).

In addition, EPA calculated that the rule would result in the reduction of 4,000 tons of HAP emissions per year. Based on the assumption that 97 mills produce an average 1,000 ODTP/day and the average decrease in emissions would be 0.2 lb/ODTP (equivalent increase in the standard calculated using the AF&PA methodology) the result is a reduction of approximately 3,500 ton HAP/yr which is in line with the EPA estimate.

2. ICR Data Was Inappropriately Interpreted

OAQPS staff suggested informally, during a meeting with industry representatives on January 12, 2012, that the mass HAP reduction standard proposed in this rulemaking can also be justified by ICR data. This is inconsistent with rule language in the proposal which suggests that the proposed numerical limits are based on a supposed equivalency between a 94% removal rate and a lb/ODTP mass reduction (See 76 Fed Reg 81345). We therefore do not have anything in writing explaining the basis for the proposed mass removal rate requirements. This prevents the industry from commenting effectively on the December 27, 2011 proposed rule. Nevertheless, EPA has suggested in subsequent discussions that information reported by mills in response to the Part I ICR supports the proposed rule. At AF&PA's request, NCASI has attempted to analyze the ICR data to help EPA understand its significance. During the January 12 meeting with industry representatives, EPA also provided a spreadsheet summarizing the data EPA had culled from industry responses to the Part I ICR.

Since that meeting, NCASI was able to access the entire set of responses EPA received to the Part I ICR. In response to EPA's proposal to increase assumed stripper (or biotreatment) efficiency from 92 to 94%, NCASI has determined that the ICR data are not sufficient to support that proposal (or any increase in treatment efficiency above the current MACT standards). With respect to lb/ODTP condensate treatment levels, NCASI has analyzed the ICR responses to assess whether they could be used to support a conclusion that technology improvements would allow for more stringent condensate treatment requirements.

In its review, OAQPS has subcategorized kraft mills based on the type of treatment performance data provided in the ICR. Specifically, OAQPS reviewed the mass treatment levels (lb/ODTP) reported by both unbleached and bleached mills to

[20] "Summary of Kraft Condensate Control Technology Review," EPA Memorandum to Docket – EPA-HQ-OAR-2007-0544-0128, John Bradfield and Kelley Spence, October 23, 2011, page 4.

ascertain whether operational improvements had been realized by facilities. As discussed in the meeting with AF&PA and NCASI on January 12, 2012, several other factors need to be considered while reviewing condensate treatment performance data reported in the ICR and attributing that data to technological or operational improvements. These other factors are provided below:

- **Facilities using the Clean Condensate Alternative (CCA)** - For facilities complying with the HVLC system requirements under §63.443 using CCA (§63.447) or other "equivalency by permit" options, the reported condensate treatment levels reflect compliance with the requirements under both §63.446 and §63.447 (Phase 1 and Phase 2, respectively). Therefore, as indicated by EPA in the meeting, it is inappropriate to attribute the combined treatment values to Phase 1 treatment requirements. (An example CCA compliance option is discussed in Attachment 6.)

- **High performance biological treatment systems** – A handful of facilities demonstrate compliance with Phase 1 by treating hardpiped condensates in high rate biotreatment systems like activated sludge treatment (AST), anaerobic treatment, or UNOX. These dedicated high rate systems can operate at higher treatment efficiencies than traditional Aerated Stabilization Basins (ASB). As a consequence, these systems are generally paired with lower lb/ODTP collection levels (closer to the 11.1 lb/ODTP collection requirement for bleached mills). The focus in these systems is to collect higher-concentration (lower-volume) condensates and to minimize flow (which is a significant determinant in system capital and operating costs). The trade-off is higher treatment efficiency on a smaller (more-concentrated and lower-volume) amount of HAP for roughly equivalent pound-per-ton-treated performance.

  When percent treatment data from these systems are combined with those of ASBs and the "combined average" is compared against the current 92% standard, there is a potential to erroneously conclude that ASBs are performing at levels above the current standard.

- **Operational and seasonal variability in biological treatment system performance** – Facilities have the option of collecting additional condensates in their hardpiping system in order to maintain compliance flexibility, i.e., to be able to demonstrate compliance using either the "percent removal" or "lb/ODTP" treatment options. Additionally, reported treatment levels also reflect safety margins required to demonstrate ongoing compliance with treatment requirements over the wide range of operational situations that exist throughout typical pulp mills.

- **Facilities demonstrating compliance using steam strippers** – The reported percent destruction OR percent removal numbers reflect equipment performance during one or two Initial Performance Tests (IPT). These datasets are snapshots of performance immediately following commissioning or scheduled maintenance and reflect safety factors inherent in equipment design. These design factors are essential to ensure ongoing compliance at the level of the current standard. They compensate for the gradual degradation of performance from the higher initial level of control to the minimum control requirement over normal maintenance cycles, largely attributable to fouling or scaling of heat transfer surfaces in contact with process condensates. Initial performance tests would, by nature, capture the high end of designed performance.

From the data requested in the ICR it would not be possible for EPA to discern the relative importance and contributions of these factors, particularly in the context of the wide flexibility in compliance options, the design variations, and operational differences that exist among individual compliance systems. Recognizing this, companies responding to the ICR had requested that EPA confer with them in analyzing the data in order to ensure that conclusions reflected a thorough understanding of process variations and realities. EPA chose not to communicate on these issues in developing the proposed standards.

The ICR data provided by OAQPS was analyzed by NCASI in order to further illustrate the points reiterated above. NCASI drew the following conclusions from their analysis[21]:

- Mills Reporting Percent Removal in Biotreatment Systems
    - Only 4 mills have reported percent removals in biotreatment systems that (a) are representative of Phase 1 compliance and (b) can be compared against the current requirement of 92%. This is too limited a list from which to draw substantive conclusions on over-performance.
    - Additionally, the percent removal data do not indicate control levels in excess of current requirements (when compared against the **actual** $F_{bio, methanol}$ of 94%).[22]

[21] These conclusions (and the ones for unbleached mills and steam strippers below) address performance data as it pertains to condensate treatment. More detailed comments on the inherent variability in condensate collection levels, and compliance strategies used to accommodate the same, are provided in Section IV.C3.

- Information from such a limited list of mills is not an adequate basis for revising the current percent removal standards

- Unbleached mills reporting mass treatment levels (lb/ODTP)
  - Only 3 facilities remain on the list with reported ***lb/ODTP treatment levels reflective of Phase 1 compliance.*** Data from such a limited number of facilities is not an adequate basis for revising the numerical condensate treatment standards.

- Bleached mills reporting mass treatment levels (lb/ODTP)
  - For facilities employing Steam Strippers, reported treatment levels reflect equipment performance during one or two initial performance tests. These datasets reflect performance immediately following commissioning or scheduled maintenance and reflect safety factors inherent in equipment design. These factors are incorporated during equipment design and are essential to ensure ongoing compliance at the level of the current standard (i.e., 92%).
  - Given the limited number of mills remaining on this list, it is inappropriate to use treatment information available from these mills as the basis to revise the condensate treatment standards.

The details of this analysis are included in Attachment 4.

3. Variability in Condensate Collection

The amount of methanol generated and subsequently collected in condensate streams varies significantly between mills. This variability is driven by process type and final product quality (batch vs. continuous pulping, unbleached vs. bleached, bleaching sequences, and oxygen delignification). Studies have also shown that, for any given mill, there is significant day-to-day variability in methanol content of condensate streams. Consequently, mills need a reasonable averaging time to demonstrate compliance with the collection requirements. Facilities have used site-specific data on variability and, in many cases, a statistical calculation methodology, to demonstrate the need for this averaging period. The majority of the facilities use either a 15-day or 30-day averaging period to demonstrate compliance with these requirements.

[22] The need to demonstrate "treatment equivalency" for non-methanol HAPs means that in order to demonstrate an ***effective*** methanol treatment efficiency of 92% ($F_{bio, adjusted}$), the ***actual*** methanol treatment efficiency ($F_{bio, methanol}$) would have to be at 94%. Details provided in Attachment 4.

A statistical approach was outlined by NCASI, during the original rulemaking, to calculate the averaging periods required to demonstrate compliance. The methodology and factors affecting this calculation are detailed in Attachment 7. The Relative Standard Deviation (RSD) for methanol collection is calculated from mill-specific data. The averaging period needed to demonstrate compliance is calculated for the following scenario:

- Mill over-collecting condensates by 10%, and
- Demonstrating compliance with a 95% compliance probability.

This approach can also be extended to other compliance probabilities AND over-collection levels. In order to address the issue from the perspective of over-collection and to illustrate its importance in demonstrating compliance, Table 4 below extends this analysis to include the following:

- Facility utilizes a 15-day averaging period to demonstrate compliance
- For a given RSD, the levels of over-collection required to demonstrate compliance at different compliance probabilities are calculated
- This exercise is repeated for varying RSD levels

Table 4: Over-collection levels to demonstrate compliance with lb/ODTP collection requirements (Basis: 15-day averaging period)

	% Compliance Probability				
RSD	**95%**	**96%**	**97%**	**98%**	**99%**
20	9	10	11	12	14
25	12	13	14	15	18
30	15	16	17	19	22
35	17	19	20	23	27

As an example, a facility with an RSD of 30, in site-specific condensate methanol content, would have to do the following:

- Over-collect methanol by 22% to demonstrate compliance with a 99% compliance probability

- In other words, a bleached mill would have to collect 13.5 lb/ODTP and an unbleached mill would have to collect 8.8 lb/ODTP in order to demonstrate compliance with reasonable assurance 99% of the time
- In order to demonstrate compliance with a 99% probability, even with a 15-day averaging period, a facility needs anywhere from 14 to 27% of methanol over-collection depending on the Relative Standard Deviation (RSD) of collection data.

Table 4 provides a snapshot of daily variability in methanol content in condensates at four mills, again illustrating the need for over-collection to demonstrate compliance with high % compliance probabilities, *at the level required by the current standard*.

Table 5: Condensate Collection Characteristics at four kraft mills

	Condensate Collection Characteristics		
Source	Avg. Daily Collection, lb/ODTP	Standard Deviation (SD)	RSD
Mill A (Bleached)	12.7	3.2	25.1
Mill B (Unbleached)	9.5	3.1	32.5
Mill C (Bleached)	15.1	3.4	22.4
Mill D (Bleached)	17.7	4.4	25.0

Given (a) the above discussed variability in methanol collection and (b) the requirement to demonstrate compliance *at all times*, the above analysis illustrates the following:

- Over-collection is an essential part of the compliance strategy used by mills.
- Over-collection levels and averaging times serve to increase compliance certainty with the condensate collection requirements.
- Therefore, numerical average data on collection levels that exceed currently promulgated levels (11.1 lb/ODTP and 7.2 lb/ODTP for bleached and unbleached mills, respectively) *should not be interpreted as performance* at levels exceeding the current standard.

4. Treatment System Variability

In addition to the factors already mentioned, the proposed increase to the treatment standard inappropriately fails to address the need to account for treatment system variability in both biological treatment systems and steam strippers.

Biological Treatment Systems

During the original development of the standards, four HAPs were identified in pulping condensates: methanol, propionaldehyde, acetaldehyde, and MEK (the latter is no longer a HAP, by definition, but is still included in this rule). For the HAPs other than methanol, technology did not exist to measure concentrations below 1 ppm. Given that the concentration of these three compounds is typically below 1 ppm in ASBs, during the timeframe of the original rulemaking, there were uncertainties in quantifying and estimating the biotreatment efficiencies for these compounds. Facilities were therefore given the following option to demonstrate "treatment equivalency" for non-methanol HAPs:

- As a worst case, assume 0% treatment efficiency for non-methanol HAPs in biotreatment systems.
- In lieu of treating these non-methanol HAPs, demonstrate equivalency by treating an additional quantity of methanol equivalent to the amount of non-methanol HAPs.

Industry agreed to the development of an "r-factor" – the mass ratio of non-methanol HAPs to methanol HAPs - as a means to establishing this treatment equivalency. More details on the r-factor approach have been provided as part of NCASI Interim comments.[23]

When using a nominal average "r-factor" of 0.02 (based on NCASI studies), this treatment equivalency demonstration means that the **actual** $F_{bio, methanol}$ has to be 94% in order to achieve an adjusted F_{bio} of 92%. This compliance aspect is essentially written into the rule and not an option. Therefore, ASBs, as currently regulated, have to operate at a higher standard w.r.t methanol removal than strippers.

NCASI reviewed the reported treatment efficiencies in the ICR responses. A compilation of data on "intra-facility" variability in ASB performance, extracted from the 2011 Pulp and Paper ICR, was provided as part of interim comments submitted by

[23] *Interim comments on rationale and methodologies used to evaluate and propose increased treatment requirements for kraft condensates in the Pulp and Paper ITR,* NCASI Memo to Ms. Robin Dunkins, Mr. John Bradfield, Mr. Bill Schrock, February 17, 2012. – Provided as Attachment 4.

NCASI, dated February 18, 2012 (Attachment 4). The average “intra-facility” variability in $F_{bio, methanol}$ was about 5% according to this data.

- As it pertains to biological systems, this level of operational variability suggests that these systems would periodically operate at levels below the required 92%.
- As noted above, these mills must treat condensates at a minimum level of 94% for methanol to achieve the 92% treatment level for all HAPs.
- With an inherent efficiency variability of 5%, mills would need to operate at higher treatment efficiencies in order to maintain continuous compliance.
- Now, if these mills are required to increase treatment of all HAPs from 92 to 94%, the **actual** methanol removal efficiency would now have to be 96%
- After accounting for operational variability, it is unrealistic to mandate a 96% **actual** methanol removal in ASBs. EPA has not performed as analysis on whether this level of *ongoing control* is feasible, and it is unclear whether upgrades to systems would even be feasible or effective if implemented.

Steam Strippers

Steam strippers used for Subpart S compliance were designed and sized based on the collection and treatment requirements. These units are maintained to stay above the required treatment levels for compliance margin purposes (based on surrogate parameters). As previously mentioned, the reported efficiencies for steam strippers are generally based on the 3-run initial performance test (conducted when units were new or after maintenance and that represents an optimized performance level of the unit and not a sustained performance level). The results reported are expected as the unit should perform at or near the peak of system design during the performance test as this is generally when the unit is “clean” and operating at its highest efficiency and not representative of the minimum efficiency the unit can sustain between maintenance outages/cleanings. While the units can have higher “peak” efficiencies, most were designed to achieve a continuous treatment efficiency of 92%. If the performance tests results were not over 92% with a good margin of safety, a facility could not have confidence that the unit would be able to continuously meet the treatment standards. .

5. Increase in Treatment Efficiency to 94% Is Not Appropriate or Justified

EPA has not justified or supplied information in the docket that documents or justifies the proposed increase in treatment efficiency to 94%. The documentation states that based on EPA’s analysis “the average percentage removal of kraft condensates was

96.2 percent."[24] This is the sole basis for the proposed increase in treatment requirements. The Agency did not evaluate the control technologies utilized for compliance with this Subpart and the ability for these systems to perform at higher efficiencies. Nor did it identify the changes needed to the MACT floor technologies to achieve these higher efficiencies. As noted in these comments, EPA has misinterpreted the ICR data and not taken into account system variability, the need for compliance margin, or the higher standard currently required by wastewater treatment systems. Therefore, it is inappropriate for the Agency to propose a higher standard without evaluating the current limits of the control systems in place or documenting how facilities will comply with the proposed standards.

D. EPA Has Underestimated the Economic Impact of the Proposed Rule

EPA is required to consider costs under 112(d)(6). EPA estimated the capital cost of the proposed modifications to the condensate standards at $36 million and projected annual costs of $ 4.1 million ($1,000/ton HAP), based on 7 mills needing to upgrade their biological treatment systems and 8 mills needing to upgrade their steam strippers[25]. AF&PA believes the capital cost to meet an increase in required treatment efficiency from 92 to 94% would be closer to $300 million ($152 million annually, or $38,000/ton HAP) (for an increase in condensate treatment only, using the AF&PA methodology for the equivalent lb/ODTP treatment (10.4/6.8 lb/ODTP), and not the lb/ODTP limits (12.8/8.3 lb/ODTP) proposed by EPA that are not achievable without additional collection). In addition, most of the emission reductions would be methanol, which EPA's own risk analysis shows does not present a risk and is of relatively low toxicity.

EPA did not include any information in the preamble to the Dec. 27, 2011 proposed rule or in the docket describing how EPA expected mills to comply with the new standards. Therefore, AF&PA carefully examined what would be necessary to comply with the proposal. It should be noted that all cost estimates in these comments are based on the best information available given the limited time to gather data during the 60 day comment period. These are based on conservative estimates of upgrades and number of units affected and not detailed mill-by-mill engineering estimates. Even with

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[24] "Summary of Kraft Condensate Control Technology Review," EPA Memorandum to Docket – EPA-HQ-OAR-2007-0544-0128, John Bradfield and Kelley Spence, October 23, 2011, page 2.

[25] "Costs and Environmental and Energy Impacts for Subpart S Risk and Technology Review" Appendix B-2, EPA Docket HQ-OAR-2007-0544-0124, Memo from Thomas Holloway, Katie Hanks, & Corey Gooden of RTI to John Bradfield & Bill Schrock, U. E. EPA, November 17, 2011. ("EPA 11/17/2011 Cost Document").

these caveats, the estimates are an order of magnitude higher than EPA's. These estimates are somewhat different from those presented to OAQPS on January 12, 2012 because AF&PA made further refinements and gained more information from member companies.

EPA estimated that a change in treatment efficiency from 92 to 94% would result in the reduction of 4,000 tons of HAPs from the industry per year. (See 76 Fed. Reg. 81345, 81349.) This estimate assumes that all 97 mills achieve a 0.2 lb/ODTP HAP reduction, at a production rate of 1,000 ODTP per mill per day.[26] However, EPA estimates only 15 mills will be required to spend capital to comply with the proposed standard. (Id.) The 15 mills for which EPA generated an estimated compliance cost would only achieve a total estimated annual HAP reduction of 547 tons (0.2 lb/t x 1000 tpd x 365 d/yr x 15 mills / 2000 lbs/t). Therefore, if EPA's assessment of the number of mills that would need to make upgrades to meet the proposed 94% reduction requirement and the cost for them to do so were inaccurate, the correct estimated cost/ton would be $7490/ton, rather than the $1000/ton stated by EPA. But even that cost per ton (to control mostly methanol) is much lower than what AF&PA believes would be the true cost per ton of increasing required condensate treatment from 92% to 94% efficiency, as shown below.

1. Cost Impact To Comply with 94% Treatment Efficiency (assuming 2% nominal change in lb/ODTP limit as identified by AF&PA)

As noted above, AF&PA believes that Agency incorrectly calculated the proposed lb/ODTP treatment standards that are equivalent to 94%. For the purposes of this estimate, it is assumed that the treatment standards equivalent to 94% are 10.4/6.8 lb/ODTP (bleached/unbleached). AF&PA estimates that total capital costs would be approximately $320 M, with annual costs of $152 million, or $38,000/ton (using the same 4,000 tons of reductions identified by EPA).

[26] See EPA 11/17/2011 Cost Document.

Table 6: Costs of Proposed Condensate Treatment Standards (assuming nominal 2% change in treatment efficiency)

	Capital Cost	Annualized Capital[27]	Annual Energy Cost	Annual Maintenance Cost	Total Annual Cost
Stripper Upgrade	$ 94 M	$ 8.8 M	$ 8 M	$ 3 M	$ 20 M
Current Strippers (Energy Only)			$ 8 M	$ 3 M	$ 11 M
Aeration	$ 230 M	$ 21.6 M	$ 90 M	$ 9 M	$ 121 M
Nutrient Addition				$ 2 M	$ 2 M
Total Cost	**$ 324 M**	**$ 30.4 M**	**$ 106 M**	**$ 17 M**	**$ 154 M**

The costs developed by AF&PA are based on the following (See Attachment 5):

- Upgrades to both steam strippers and wastewater treatment systems will result in control systems that can achieve the required treatment efficiencies.
    - Achieving higher treatment efficiency in steam strippers will require more energy, trays, and steam contact area per incremental percent reduction. .
    - Estimates assume the 10% downtime provision for steam strippers remains in place; otherwise a back-up control device (at a minimum) will be needed, which would significantly raise costs.
    - For wastewater treatment systems, it was assumed that an increase in aeration and nutrient addition would be sufficient to achieve the requirements. For reasons describes above, however, wastewater treatment systems are currently required to target treatment levels close to 99% to comply with the current standard of 92%. As required efficiency increases, upgrading the wastewater treatment systems will become technically infeasible and cost prohibitive. In many if not most cases, it will not be feasible to respond to increased required treatment efficiency through upgrading the condensate collection and wastewater treatment system, and the mill would most likely decide to install a new stand-alone steam stripper, at much higher cost than estimated. However, to be conservative, AF&PA assumed that all 39 mills that utilize only the WWTS as a condensate control devices will only need increased aeration and nutrient addition to achieve a 94% control efficiency.

[27] Capital costs annualized using the same 0.094 capital recovery factor EPA used, see EPA 11/17/2011 Cost Document. p. 4.

- The cost EPA assumed for steam stripper upgrades is $2.7 M each. We used $2.9 M based on information from member companies.
- Strippers can either be stand-alone units or integrated. Based on some initial input from members, AF&PA identified 10 integrated units. Since the total number of strippers being utilized for Subpart S compliance is 52, it was assumed that 20% of strippers that required upgrades were integrated and the remaining 80% were stand-alone units. As it is unlikely that integrated units can be upgraded in the same way as stand-alone units, the estimated unit costs are twice the cost for a stand-alone unit.
- EPA assumed 8 strippers would require upgrades to meet the 94% treatment efficiency requirement. AF&PA believes that 27 mills would actually require upgrades, based on the need for a margin of safety for compliance at 96% removal. Therefore, we assumed that mills that only have a stream stripper for condensate control and reported a treatment efficiency at or below 96% (23 mills) would need upgrades. We also assumed that 50% of the mills that have dual treatment systems (6 mills that utilize both steam stripping and biological treatment and the 2 mills that utilize steam stripping and recycling) that reported treatment efficiencies at or below 96% would need steam stripper upgrades, for a total of 27 mills that would require steam stripper upgrades.
- Capital costs for increased aeration were based on the average cost for four different mills. In addition to the capital costs outlined above, each mill would have an increase in operating costs.
    - Additional energy to operate steam strippers at a higher efficiency
    - Additional energy to operate more aerators in the wastewater treatment system.
    - Additional maintenance for steam strippers to maintain higher treatment efficiencies
    - Additional maintenance for aeration and nutrient addition equipment
    - Not only will these daily activities add more cost to implement the proposed changes, but it will also increase emissions from combustion units required to generate additional energy in the form of steam and/or electricity. EPA has not accounted for these additional costs or energy impacts in its evaluation.

In considering whether to make the existing MACT standards more stringent pursuant to CAA section 112(d)(6), EPA must take into consideration the cost of achieving additional emission reductions and non-air-quality health and environmental impacts and energy requirements. See *NRDC v. EPA*, 529 F.3d at 1084. EPA has not done so, even with respect to EPA's greatly understated estimate of the expenditures required. Additionally, in Executive Order 13563 President Obama directed EPA to assure, to the extent allowed by law, that the benefits of any new rule justify its costs and that EPA chose regulatory approaches that minimize the net burden imposed. EPA can and should consider such factors in a technology review under CAA section 112(d)(6). Requiring an expenditure of more like $38,000 per ton of methanol removed is not at all cost-effective. Requiring a diversion of $300,000,000 of capital from other productive investments to address an insignificant risk, and with it increasing mills' energy needs for the higher steam stripper performance, is not a reasonable action under section 112(d)(6).

2. Cost Impact To Comply with Proposed Pound-per-Ton Removal Limits)

For the purposes of this estimate, it is assumed that the treatment standards are those published in the December 27, 2011 Federal Register, and that mills wishing to use the compliance option based on demonstrating the mass of HAP removed per ton of pulp produced would have to demonstrate the 12.8/8.3 lb/ODTP (bleached/ unbleached) removal rates in the proposal (rather than the nominal increase in removal rates associated with increasing condensate treatment efficiency from 92% to 94%, described above). AF&PA estimates that total capital costs would be approximately $830 M, and annualized capital costs plus operation and maintenance costs would be over $200 M, or <u>50 times greater</u> than EPA estimated.

Table 7: Costs of Proposed Treatment Standards (lb/ODTP requirements)

	Capital Cost	Annualized Capital	Annual Energy Cost	Annual Maintenance Cost	Total Annual Cost
Stripper Upgrade	$ 94 M	$ 8.8 M	$ 8 M	$ 3 M	$ 20 M
Current Strippers (Energy Only)			$ 8 M	$ 3 M	$ 11 M
Aeration	$ 230 M	$ 21.6 M	$ 90 M	$ 9 M	$ 121 M
Nutrient Addition				$ 2 M	$ 2 M
HVLC Collection to Single Treatment Device	$ 510 M	$ 47.9 M			$ 48 M
Total Cost	**$ 834 M**	**$ 78.3 M**	**$ 106 M**	**$ 17 M**	**$ 202 M**

As explained above, the proposed lb/ODTP standard for condensate treatment would require additional collection of condensates. This is based on the investments described above, plus the following:

- Currently 38 mills utilize the Clean Condensate Alternative in section 63.447 for MACT I Phase II. Of those 38 mills, 34 demonstrated compliance through collection of additional condensates, which will need to be increased. If those mills are required to demonstrate an increased removal of HAPs in condensate of approximately 25%, as EPA has proposed, then based on their current configurations the mills using the CCA likely could not continue to rely on the CCA to comply with the new lb/ODTP removal requirements. Therefore, it is assumed that all mills currently using the CCA will need to collect HVLC gases and route them to a single control device. This cost is estimated at $15 million per mill. This cost assumes the 4% venting provision for HVLC systems remains in place; otherwise a back-up control device (at a minimum) will be needed, at substantial additional cost.

Again, in considering whether to make the existing MACT standards more stringent pursuant to CAA section 112(d)(6), EPA must take into consideration the cost of achieving additional emission reductions and non-air-quality health and environmental impacts and energy requirements. EPA has not done so, even with respect to EPA's greatly understated estimate of the expenditures required. Imposing a cost of approximately $200,000,000 per year to achieve only an incremental reduction in emissions of mostly methanol would not be cost-effective. Requiring a diversion of $834 million in capital from other productive investments to address an insignificant risk, and with it increasing mills' energy needs for the higher steam stripper performance, is not a reasonable action under section 112(d)(6).

E. Need for Flexibility

As noted above, based on the residual risk analysis, implementation of MACT was successful in reducing emissions and health risks from the Pulp and Paper Subpart S Subcategory. Part of the success of the program is due to the flexibility of compliance alternatives. There are currently three collection and four treatment compliance approaches along with the CCA and "equivalency-by-permit" options. Every mill is different in its approach to achieve compliance with the standard. These differences include:

- The quantity and quality of the condensates generated at the Mill
- The compliance approach for MACT I Phase 2 (collect HVLC streams or use the CCA option),
- The control devices and options used to achieve the treatment standards (dual treatment systems, over-collection of condensates to compensate for lower treatment efficiencies, etc.), and
- Pulping technology options (e.g., continuous and batch digesters), heat balances; sulfidity, equipment arrangements, ambient conditions, space limitations, receiving water constraints, water supply limitations

Maintaining flexibility is imperative to ensure that mills can maintain compliance (minimize emissions and residual risk) and manage energy use while staying competitive in a global marketplace. The proposal to raise the treatment standard from 92% to 94% jeopardizes compliance for facilities that designed their collection and treatment systems to achieve compliance with the current standard. .The proposed treatment standards of 12.8/8.3 lb/ODTP (bleached/unbleached) threaten to negate the lb/ODTP treatment compliance approach as well as the CCA and equivalency by permit (EBP)[28] MACT I, Phase 2 compliance alternatives. While the rule offers other options for collection and treatment, mills cannot easily convert compliance approaches without significant costs. The industry spent over $1 billion to achieve compliance with the pulp and paper MACT standards, and the end result was an acceptable level of residual risk as stated in the preamble: "we conclude that the current standard, before the amendments proposed here are put in place, protects public health with an ample margin of safety" (See 76 Fed. Reg. 81344). It is not reasonable and is legally unwarranted to make changes to the standards that have significant financial impacts and remove flexibility, when there is acceptable residual risk and minimal benefit to the environment from further tightening the standards. EPA failed to make an adequate demonstration in its analysis and record for changes of these magnitude, and thus current requirements should be retained.

V. Excess Emission Provisions

Subpart S requires that various processes in the pulp mill be enclosed and vented into a closed-vent system and routed to a control device. The regulations provide that periods of excess emissions must be reported but will not be considered a violation if, for each semi-annual reporting period, the time of excess emissions (excluding periods of startup, shutdown, or malfunction) divided by the total process operating time does not exceed 1% for control devices used to reduce emissions from the LVHC system and 4% for control devices used to reduce emissions from the HVLC system (or used for both LVHC and HVLC systems). *See 40 C.F.R. § 63.443(e)*. For control devices used to treat pulping process condensates from specified pulp mill processes with a steam stripper, the excess emission provision (including periods of startup, shutdown, or malfunction) is 10% of total operating time during a semiannual period. *See 40 C.F.R. § 63.446(g).* In addition to continuous monitoring of the control devices, the regulations require indicators on closed-vent system bypass lines, periodic inspections for leaks, procedures for prompt repair of defects in the enclosures or piping, inspection and maintenance recordkeeping, and so forth.

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[28] Under §63.94, a facility can propose an alternative compliance approach that would be equivalent (plus other benefits) to compliance with the standard. It is similar to the CCA in that it offers flexibility, but it allows the facility to determine the approach. For example, a facility could decide to control the vents of the Black Liquor Oxidation System (BLOx) as part of the EBP approach.

In addition to conducting the eight-year review of developments in control technologies under Clean Air Act section 112(d)(6) and the residual risk review under Clean Air Act section 112(f) for the Pulp and Paper category, EPA has indicated recently that it is considering eliminating or modifying the excess emission provisions in 40 C.F.R. § 63.443(e) and 40 C.F.R. §63.446(g) (See 76 Fed Reg 81346). It would be improper and unlawful to do so. Moreover, EPA would need to publish a proposed rule for public comment before it could change the excess emission provisions.

AF&PA appreciates EPA granting an extension until June 27, 2012 to provide information related to excess emission provisions.[29] This time will be critical for NCASI to undertake the survey described in their letter to Robin Dunkins.[30] Although we could defer providing any information to you on this issue, we wanted to share our legal views and general observations about their need and use. We will provide additional comments on the subject before June 27, 2012.

Industry was not aware of the potential for this evaluation until approximately one month before the rule was published. As such, there has been little coordination between the Agency and AF&PA to discuss the justification for these provisions or the implications of changing them. Therefore, in addition to filing subsequent comments, AF&PA would like to work with the Agency and set up meetings to discuss these issues, as they are complex, and an efficiency will be gained through coordination to assist the Agency in comprehension of these systems and their limitations and to develop realistic conclusions.

A. Legal Arguments

1. Current Excess Emission Provisions Represent MACT and Were Included in the MACT "Floor"

The excess emission provisions in the current Subpart S regulations reflect EPA's careful determination, after years of study of a large quantity of emissions information and public comments, that the MACT "floor," representing the emissions of the "best performers," includes emissions during unavoidable periods of releases of uncontrolled or partially controlled pulping process vent gases and unavoidable sewering of untreated or partially treated pulping process condensates (See 63 Fed.

[29] February 22, 2012 letter from EPA Assistant Administrator Gina McCarthy to AF&PA Vice President Paul Noe.

[30] See e-mail dated February 15, 2012 from Vipin Varma of NCASI to Robin Dunkins of EPA's Sector Policies and Programs Division.

Reg. 18504, 18529 (April 15, 1998)). “EPA established appropriate excess emission provisions to approximate the level of backup control that exists at the best-performing mills and the associated period of time during which no control device is available.” *Id*. After “an analysis of the public comments and the available data regarding excess emissions and the level of backup control in the industry,” EPA determined that the “best-performing mills achieve a one percent downtime in their LVHC system control devices” and “best-performing mills achieve a four percent downtime in the control devices used to reduce emissions from their HVLC system to account for flow balancing problems and unpredictable pressure changes inherent in HVLC control systems.” *Id*. “The allowances address normal operating variations in the LVHC and HVLC system control devices for which the equipment is designed. The variations would not be considered startup, shutdown, or malfunction under the Part 63 General Provisions….” (See 63 Fed. Reg. 18530). The 10 percent excess emission provisions for steam strippers systems “accounts for stripper tray damage or plugging, efficiency losses in the stripper due to contamination of condensate with fiber or black liquor, steam supply downtime, and combustion control device downtime.” *Id*.

EPA adopted the excess emission provisions after reviewing extensive data from continuous monitoring systems and considering industry comments that although some mills had backup combustion devices as part of their LVHC control system, venting of pulping gases is an essential safety practice (because of their explosion hazard) even for those systems with backup control devices, since the startup of, and transfer of vent gases to, the backup controls cannot be immediate or automatic for safety reasons, and operating variability in the control devices themselves was unavoidable for process and other reasons. See, e.g., Pulp, Paper and Paperboard Industry – Background Information for Promulgated Air Emission Standards – Final EIS, EPA-453/R-93-050b (October 1997) (“BID”) at 4-81, 4-82 to 4-84; AF&PA April 18, 1994 comments on the proposed MACT standards for Pulp and Paper Mills, p. MACT-61 (events resulting in venting of NCGs are “integral to process variability,” and combustion devices will “predictably” not perform at their design efficiency ”some small percentage of the time, even when they are being operated properly and all equipment is in order”); id. p. MACT-173-74. For HVLC systems, few mills had backup controls that could handle the large volume of vent gases, so any standard that required the use of backup devices would have been beyond the MACT “floor” and would not have been cost-effective due to the low concentration of pollutants in the large gas stream (See 63 Fed. Reg. 18529; BID at 4-81 to 4-82; AF&PA April 18, 1994 comments at MACT-61 (degree of venting allowance needed is “independent of the availability of backup combustion devices because of the safety and engineering concerns”); *id*. at MACT-174 (backup combustion devices for HVLC systems could be an additional cost of $1 billion).

In short, the MACT determinations that EPA made when promulgating the Subpart S emission standards correctly concluded that available technology involves unavoidable periods where not all vent gases or condensates can be routed to the control device, and/or when the control device is inoperable or necessarily operating at a reduced rate. The Subpart S emission standards (including the excess emission provisions) were designed to reflect the performance of the MACT technology and the actual performance of the "best performing" mills. Without the excess emission provisions, the remainder of the Subpart S emissions standards would impose limitations not achieved even by the "best performers" and not demonstrated as achievable at any facility. This plainly is not what Congress intended. See, e.g., *Sierra Club v. EPA*, 353 F.3d 976, 980 (D.C. Cir. 2004); *Sierra Club v. EPA*, 167 F.3d 658, 665 (D.C. Cir. 1999).

2. There Is no Technical Justification for Eliminating the Excess Emission Provisions

EPA is supposedly carrying out Congress' directive in Clean Air Act section 112(d)(6) that, at least every eight years, EPA review whether "developments in practices, processes, and control technologies" necessitate revision of MACT emissions standards. Nothing has changed about the technology available to control volatile HAP emissions at pulp mills that eliminates the unavoidable excess emissions during the events that EPA accurately described when promulgating the current MACT standards. Absent such new technology, there is no statutory predicate for EPA to go back and change the MACT standards at this time. *Cf. NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008) (rejecting contention that CAA section 112(d)(6) requires EPA to "start from scratch" and develop new MACT standards).

But even if the section 112(d)(6) technology review were an opportunity to second guess and revise the existing MACT standards, EPA has no technical basis for eliminating the Subpart S excess emission provisions. An agency cannot simply change its mind and reach a diametrically opposed conclusion from the determination made in a prior rulemaking. Rather, EPA must demonstrate sufficient basis for changing its prior conclusions; in this case, technical justification for concluding that mills with MACT controls do not experience the unavoidable variability described by EPA in promulgating the Subpart S regulations and accommodated by the excess emission provisions. See, e.g., *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 129 S. Ct. 1800, 1811 (2009) ("a reasoned explanation is needed for disregarding facts and circumstances that underlay…the prior policy"); *Transactive Corp. v. United States*, 91 F.3d 232, 237 (D.C. Cir. 1996).

There is no health or environmental imperative for eliminating the excess emission provisions in Subpart S. EPA has just completed an assessment of the risk to human health and the environment from Subpart S emissions, for its "residual risk" review. The conclusion of that assessment is that there is no significant risk from those emissions, including excess emissions allowed under the Subpart S regulation. The emissions data that EPA used in its risk modeling included emissions during bypassing of control equipment or other excess emissions covered by the Subpart S excess emission provisions.

3. Intervening Court Decisions Do Not Justify Eliminating the Excess Emission Provisions

The Subpart S NESHAPs were never judicially challenged, and the time for such a challenge under CAA section 307(b) has long passed. Even if there were some portion of an opinion in one of the many cases challenging other NESHAPs that was contrary to the approach EPA took in promulgating the Subpart S NESHAPs, that would not provide a means nor a justification for reopening the Subpart S standards that were never challenged on that grounds. See *id*. and, e.g., *Sierra Club v. EPA*, 353 F. 3d at 986 (MACT standards judged on the adequacy of EPA's explanation in the particular rulemaking, not on what EPA did based on a different record in a different rulemaking). But in any event, none of the holdings in those other cases undercuts EPA's determination to include the current excess emission provisions in Subpart S.

EPA may believe that elimination of the excess emission provisions is justified or required by the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), *cert. denied*, 130 S. Ct. 1735 (2010), which vacated the "exemption" for excess emissions during SSM events contained in the 40 C.F.R. Part 63, Subpart A General Provisions for emission standards for hazardous air pollutants. EPA suggests that the excess emission provisions are "arguably at odds with" that decision (See 76 Fed. Reg. at 81346). To the contrary, the D.C. Circuit's *Sierra Club* decision is not inconsistent with, and would not justify EPA's retroactive elimination of, the Subpart S excess emission provisions.

First, the *Sierra Club* decision interpreted the NESHAPs General Provisions, not the Subpart S NESHAPs or indeed any categorical NESHAPs. Secondly, the decision addressed an exemption for startups, shutdowns, and malfunctions, while the Subpart S excess emission provisions for pulping vent gases specifically does not address excess emissions during startup, shutdown, and malfunction (see 40 C.F.R. § 63.443(e)), and the provision for pulping condensates only covers such events because EPA did not have data to distinguish those situations from "normal stripper operating emissions" (See 72 Fed. Reg. 18529-30).

Thirdly, the *Sierra Club* decision rejected the General Provisions' blanket, open-ended exemption for emissions during startup, shutdown, and malfunction periods, finding it to be inconsistent with Congress's intention that "there must be continuous section 112-compliant standards" for sources subject to MACT standards, rather than periods where no standard of any kind applies. See 551 F.3d at 1027. The problem with the General Provisions SSM exemption, in the Court's eyes, was that it allowed sources to be exempt from any standard at all, and that it was not derived (by EPA's admission) applying the factors in CAA section 112(d) or 112(h). See *id*. at 1027-28, 1030. The *Sierra Club* opinion did not address a situation, such as the Subpart S standards, where EPA finds that the MACT standard, which applies continuously, must account for periods of higher emissions during unavoidable operational variability to accurately reflect the available technology and the best performers' emissions. See BID at p. 1-41 ("EPA established excess emission allowances to approximate the level of downtime and number of backup control devices that exist at the best-performing mills. The Excess emissions allowances are designed to account for periods when the control device is inoperable and when the operating parameter values established during the initial performance test cannot be maintained due to problems with the process."). (EPA's statement, in the preamble to the proposed rule, that the excess emission provisions of the current regulations "create time periods during which a source does not have to comply with a CAA section 112-compliant standard" (see 76 Fed. Reg. 81 346) is simply contrary to the record for the existing Subpart S rulemaking.)

B. Provisions Are Consistent with the Clean Air Act

As stated above, EPA lacks authority to go back and re-assess the existing MACT standards for reasons unrelated to CAA sections 112(d)(6) and 112(f). But even if EPA did, the excess emission provisions in the existing Subpart S regulations are entirely consistent with the Clean Air Act and with past EPA practice. First, they represent the performance of the best-performing mills, as EPA explained when it adopted the provisions. In fact, without the excess emission provisions, the Subpart S standards would violate CAA section 112. Section 112(d) standards based upon the performance of the best-performing facilities are supposed to represent "the emissions control that is achieved in practice" by the best performers, which means that the best-perfoming mills would not violate the standards, which "only results if 'achieved in practice' is interpreted to mean 'achieved under the worst foreseeable circumstances.'" *Sierra Club v. EPA,* 167 F.3d 658, 665 (D.C. Cir. 1999). The courts (and EPA) have recognized that there is variability in the performance of control technologies, which needs to be accounted for in establishing emission limitations based on the MACT floor. See, e.g., *Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855, 862-865

(D.C.Cir.2001). As the record reflects, it is certainly foreseeable that even the best performers would experience violations of the MACT standards, due to process variability and control technology limitations, without an excess emission allowance.

EPA implies that the excess emission provisions in the existing Subpart S regulations somehow are inconsistent with the D.C. Circuit's vacatur of the NESHAP General Provisions SSM exemption because they do not provide a numerical limitation on emissions during certain periods (See 76 Fed. Reg. at 81346). But nothing in *Sierra Club v. EPA* said that MACT standards have to be the same at all times; to the contrary, the Court recognized that they might not be. See 551 F.3d at 1021, 1027.

The excess emission allowances are no different in principle from the averaging periods that EPA applies almost universally in setting the MACT standards: a source complies with the average emission limitation even though there are times during the averaging period when the source's emissions are much higher than the rate specified in the standard. Also, EPA has included excess emission provisions analogous to those in Subpart S in NSPS issued under CAA section 111, even though the same definition of "emission limitation" and "emission standard" (relating to limiting emissions of air pollutants on a continuous basis) applies to NSPS. For example, in the NSPS for Kraft pulp mills, EPA recognized the complex factors affecting recovery furnace operations and provided an excess emission allowance (40 C.F.R. § 60.284(e)), in addition to the startup, shutdown, and malfunction provision in 40 C.F.R. § 60.8(c),

In effect, elimination of the excess emission provisions would put pulp and paper mills in a "Catch-22" situation: the MACT standards would no longer accommodate the excess emissions that EPA knows will occur regularly during normal mill operations, as a result of process variability and control equipment operations and availability. Yet those same events would appear to be ineligible for the "affirmative defense" that EPA proposes as a means of addressing excess emissions that occurr despite a source's proper design and operation, since the "affirmative defense" is only available for excess emissions that result from unforseeable and infrequent events (See proposed 40 C.F.R. § 63.456(a)). This would be unreasonable, arbitrary and capricious, and not in any way required by the Clean Air Act or judicial precedent.

C. Provisions Are Necessary due to Inherent Process Variability, Design, and Technology Reasons

Provisions for a small amount of LVHC and HVLC system venting and stripper downtime were developed as part of the MACT "floor," based on the fact that even the best-performing units could not meet the standards at all times. As the technology for the collection and treatment of HAPs under Subpart S has not changed, neither has the capability for mills to operate without needing these provisions. These provisions are necessary due to process variability and not for situations defined as startup, shutdown, or malfunction (SSM). These events generally are not due to situations where some equipment has broken down and must be repaired to correct the situation, but are due to process variability and safety interlocks which have caused a situation that requires a release.

1. LVHC Systems

LVHC NCG gases are potentially explosive and cannot be burned safely without supplemental fuel. Most mills have both a primary and back-up control device[31] for the treatment of LVHC gases. These gases must be incinerated with support fuel and be interlocked to failsafe on loss of support fuel, combustion air, and/or boiler load. The flame safety system will not permit the gases to be admitted until the burner is operating on supplemental fuel and ignition is proven. Therefore, for gases to be introduced into any control device, several conditions, also known as permissives, must be met and the system has a series of interlocks that will not allow the introduction of gases unless all conditions are satisfied. These conditions are required for both safety and protection of process equipment. The safety interlocks are required by both Factory Mutual Insurance and the National Fire Protection Association for burning of these non-condensable gases. Also, when these gases are burned in a recovery furnace, there are safety guidelines issued by the Black Liquor Recovery Advisory Committee. Depending on the control device, the system may have anywhere from nine to fifteen interlocks.

The most common cause of an LVHC release is due to the loss of a flame or burner permissive for the control device. These events are typically short in duration and the situation quickly resolves itself. An example is an intermittent loss of burner in the destruction device due to loss of flame or flame scanner detection temporarily during cleaning of oil gun(s) on oil fired unit. Safe destruction of LVHC gases requires the presence of a burner in the destruction device for safety reasons to assure combustion of the gases. In most cases, the permissive allows a return to normal operation in less than five minutes. In cases where this does not occur, the mill would try to transfer treatment of the gases to the back-up control device.

In situations where the back-up control device is not immediately available (i.e., due to maintenance, the back-up system is not “hot”, etc.), the mill must analyze the situation and decide how to minimize emissions. If the mill anticipates the permissive will allow a return to normal operation in a reasonable amount of time, the facility will continue to operate rather than to implement an emergency shutdown that could result in higher

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[31] Common control devices for LVHC gases include power boilers, lime kilns, stand-alone thermal oxidizers, and recovery furnaces.

emissions. If this is not the case, the mill will shutdown the Subpart S sources. Most states recognize this situation in that they allow facilities to run for a period of 1 – 4 hours (depending on the state) with the control device down before requiring notification and corrective action. The following list contains examples of events that can cause the isolation of the destruction device and venting of the LVHC NCG stream:

- Low steam supply pressure to the inductor, or
- Low steam flow to the inductor, or
- Low inductor outlet NCG flow, or
- Low inductor inlet vacuum, or
- High temperature downstream of inductor (flashback), or
- NCG nozzle pressure is inadequate (ensures proper furnace penetration), or
- Loss of main NCG header rupture disc, or
- A pressure instrument detects a high pressure event, or
- Main vent or double block and bleed valve vent valve not showing closed by limit switch, or
- Main auxiliary-fuel valve failure to open, or
- Loss of destruction device BMS permissive, or
- Low destruction device temperature, or
- Dedicated destruction devices:
    - Loss of quencher permissives
    - Loss of scrubber permissives
    - incinerator—quencher outlet temperature high-high alarm
- Any other condition relating to the safe operation of a destruction device

Another cause of unplanned releases is process variation. During these events, there is a vent at the process source until the operator or process logic control system can verify that there has not been an explosion in the system and the permissives will allow collection of the vent. In these situations, the system is operating within its design parameters and repairs are not necessary. An example is a paper machine trip which causes a domino effect throughout the mill (i.e., the machine trip causes a swing in the steam header pressure which results in over pressurization at the pulping equipment and a vent to open to relieve the pressure and prevent an explosion). The NCG system (LVHC or HVLC) will also automatically vent gases to atmosphere for any of the following process reasons associated with collection of individual sources which also typically cause the collection system main vent location to open by-passing the control device:

- High temperature, high pressure, or bypass rupture disc ruptured

2. HVLC Systems

The HVLC system is similar to the LVHC system in causes of venting events. "The best-performing mills achieve a four percent downtime in the control devices used to reduce emissions from their HVLC system to account for flow balancing problems and unpredictable pressure changes inherent in HVLC systems" (See 63 Fed. Reg. Vol. 72 at 18529 (April 15, 1998)). The main difference is that most HVLC systems do not have back-up control devices. Therefore, when the permissive prevents treatment of the gases, the mill must decide if emissions will be best minimized by waiting for the control device to become available or shutting down the HVLC sources. The following list contains examples of events that can cause the isolation of the destruction device and venting of the HVLC NCG stream:

- Loss of HVLC fan, or
- Low HVLC fan outlet flow, or
- Low HVLC fan inlet vacuum, or
- High temperature downstream of HVLC fan (flashback), or
- Loss of main NCG header rupture disc, or
- A pressure instrument detects a high pressure event, or
- HVLC vent valve not showing closed by limit switch, or
- Loss of destruction device burner management system permissive, or
- Low destruction device temperature, or
- Any other condition relating to the safe operation of a destruction device.

EPA recognized that most of the MACT "floor" mills controlling HVLC sources did not have back-up control devices, and therefore EPA provided for a longer excess emission provision under the rule. It should be noted that due to the volume of HVLC gases, the control options are typically limited to either a stand-alone incinerator, power boiler, or recovery furnace, and the gases are injected as combustion air.

3. Stripper Systems

Under the existing MACT standards, for both steam strippers and stand-alone biological treatment systems that treat only condensates periods of excess emissions are not violations provided that such periods do not exceed 10 percent of the total process operating time in a semi-annual reporting period. (See 40 C.F.R. § 63.446(g).) This provision was included in the current rule because the MACT "floor" mills did not have back-up control devices and could not treat condensates at all times. The 10 percent excess emission allowance includes SSM events, and it should continue to include these events because there is no backup for these systems. "The appropriate excess emissions allowance for steam stripper systems was determined to be 10 percent. The provision accounts for stripper tray damage or plugging, efficiency losses in the stripper due to contamination of condensate with fiber or black liquor, steam supply downtime, and combustion control device downtime. This downtime provision includes all periods when the stripper systems are inoperable including scheduled maintenance, malfunctions, startups, and shutdowns." (See 63 Fed. Reg. 18530 (April 15, 1998)). These systems require maintenance, and when there are problems with their operation, the systems can require significant work to get them back to serviceable condition.

D. Other Information Requested on Releases

1. Emission Estimates

EPA requested information on the estimated emissions that occur during periods covered by the excess emission provisions. It is not possible to quantify emissions on a site- or event- specific basis. We are not aware of any successful measurements of releases from vents during a release. Emissions will vary based on the cause, location, and source of the release. Emissions will vary not only between mills and sources but between the same sources at the same mill under different circumstances. NCASI has developed limited data sets for main vents (vents immediately prior to the control device that include gases from all collected sources) under normal operations. However, site-specific data cannot be collected for the releases listed above as the events cannot be anticipated, the events are typically short in duration, and it is unsafe to perform sampling. The reasons EPA gave for not setting emission limits in the original standards have not changed. "At proposal EPA did not have sufficient data to establish a mass emission limit or a mass emission reduction percentage across each mill."

Since proposal, EPA obtained site-specific information that was used to develop emission factors for various systems at a mill. However, these emission factors represent average or typical systems and are not specific to each mill. While EPA believes such information may be used to estimate national impacts, it is not adequate to determine the MACT "floor" level of control (i.e., the factors are not representative of the actual emissions at each mill but may be used to represent typical emissions from all mills). Actual mass emission levels or mass emission reductions would still be required. Information on the controls for various systems at each mill was available to EPA. Therefore, EPA decided to develop MACT "floors" on a unit (i.e., system) basis." See EPA-453/R-93/050b, October 1997, page 4-6.

Estimating total source category emissions associated with the excess emission provisions is very difficult, for the same reasons. During the extended comment period that EPA has allowed for comment on the excess emission provisions of the Subpart S standards, AF&PA, NCASI, and industry representatives will be exploring ways in which the industry might respond to EPA's request for emission estimates.

2. Work Practices Currently Employed

Under Subpart S, mills were required to develop SSM Plans. Mills use these plans and standard operating procedures to define the work practices mills must follow to minimize emissions during a release.

3. Procedures To Monitor Releases

Depending on the process and system design, mills monitor the location and time of releases by pressure (most popular), valve position, temperature at the vent location or flow meters. Facilities record this information either electronically or in log books and report events as currently required under Subpart S.

4. Ventless Transfer Systems

Some systems can be designed for ventless transfer between the primary and back-up control device; however, these systems cannot prevent venting 100% of the time. It is noted that these systems would only experience ven less transfer if all the conditions are met such that the interlocks do not prevent introduction of the gases to the alternate treatment device. However, some units cannot be designed for ventless transfer. Examples include:

- Systems with recovery furnaces, to assure the burner is not plugged. Light-off of the igniter must be initiated at the burner front, and then only after inspecting the burner opening in the furnace wall to ensure that there is no plugging
- Systems that have different types of boilers as the Primary and Back-up Control Devices (i.e., one boiler is under positive pressure and the other boiler is under negative pressure)
- Systems such as oxidizers that were installed as Back-up Control Only (these units are typically not maintained in a "hot" state to immediately accept gases to minimize fuel burning and emissions, and for energy conservation)

E. Response to EPA's Questions on Provision Options

As noted above, AF&PA believes that the excess emission provisions should be maintained in the rule. These provisions are necessary for technological reasons due to system design for safety reasons and process operating variability – not due to a desire not to be penalized for excess emissions during periods of SSM. Prior to the revision of the standard, EPA must propose a new rule and allow for a comment period. Although AF&PA does not believe a change to the provision is required, if the EPA moves forward, the only acceptable alternative is a work practice. The Clean Air Act states "if it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard for control of a hazardous air pollutant or pollutants, the Administrator may, in lieu thereof, promulgate a design, equipment, work practice, or operational standard, or combination thereof,"[32]. In order for an emission standard to be infeasible the Administrator must determine that "the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations."[33]

1. Technological Limitations

Development of a numerical emissions standard (other than tracking vent time) is not feasible due to limitations in technology. As discussed above, there are no data available to quantify site-specific emissions from the vents of LVHC and HVLC systems. In addition, the emissions impact of stripper downtime is not clearly understood as condensates would generally be sewered to the wastewater treatment system. There may be losses to the air from any sewers that are open to the atmosphere prior to introduction to the biological treatment system, but these are unknown.

Even if time were allowed to collect additional data, it is not possible to measure the emissions from these events, as they do not occur under normal operating conditions, the exact time and location of the event cannot be anticipated, and the events are generally short in duration. In addition, collection of these gases is not always possible as the locations are not always accessible and sampling of NCG gases outside the collection system would be dangerous.

For these reasons, there is not sufficient data available to develop a numerical emission standard.

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[32] Clean Air Act, Section 112(h)(1)

[33] Clean Air Act, Section 112(h)(2)(B)

2. Economic Limitations

If the EPA were to eliminate the excess emission provisions, mills would need to install duplicate systems for collection and treatment of both NCG gases and condensates. This includes:

- Installing equipment to send HVLC gases to a backup control device (assuming the facility has an available control device that can be used as a backup)
- Installing redundant HVLC and LVHC gas collection systems, and/or
- Installing back-up steam strippers

AF&PA estimates that the costs to install these systems is $1.6 billion, which is cost-prohibitive and unnecessary given that EPA has determined that the risks associated with the current rule, which included emissions during venting, is acceptable. Even with these installations, there is no guarantee that a mill would be able to prevent all incidents of stripper downtime and/or venting due to process variability and safety concerns.

Table 8: Capital Cost Estimate for Redundant Systems

	Capital Cost
HVLC Redundant Control Costs	$ 500 M
Redundant LVHC/HVLC Collection Systems	$ 700 M
Back-up Strippers	$ 400 M
TOTAL	$ 1.6 B

Details of these costs are in Attachment 5.

VI. Performance Testing

A. Stripper Testing

EPA has proposed to require performance testing for facilities complying with standards in § 63.446 using steam strippers. Specifically, the EPA proposes to require testing once every 5 years. Currently, facilities that use strippers are required to conduct an IPT and then monitor surrogate parameters against limits developed during the IPT. It is noted that strippers are efficient systems when properly operated and maintained and the industry believes that the monitoring of surrogate parameters is appropriate to indicate continuing stripper removal efficiency. However, we do not object to EPA's proposal to require performance testing every 5 years, as this will provide additional compliance documentation. (Note also that AF&PA objects to the proposal to change performance testing requirements to give EPA seemingly unfettered discretion to specify conditions for performance testing, as discussed in Section VIII.D. of these comments, below.

B. Sampling and Reporting Methods for Biological Treatment

In the preamble to the rule, EPA requests comments on the appropriateness of re-deriving the equation in Subpart S to demonstrate compliance with the condensate standards for biological treatment. Specifically, since methyl ethyl ketone (MEK) was removed from the hazardous air pollutant (HAP) list in 2005 and the current equation in Subpart S requires the sampling and analysis of MEK, should the equation be re-derived without MEK (See 76 Fed. Reg. 81347-81348). Evaluation of this equation will not affect the residual risk assessment and has nothing to do with whether the technology has changed. AF&PA recommends that this equation should not be re-derived. AF&PA along with NCASI spent a significant amount of time and effort during the original rule development to derive equations that would best demonstrate compliance with the standard based on conservative estimates. As previously noted, the approach assumes that non-methanol HAPs are not biologically treated and therefore the facility must treat an additional quantity of methanol. As this is a conservative approach and actually requires additional treatment by each facility, it results in lower emissions.

C. Repeat Air Emission Testing

In the preamble to the rule, EPA states that the Agency <u>does not</u> propose additional emissions testing for facilities that comply with the clean condensate alternative (CCA) approach, due to the complexity of these compliance demonstrations (See 76 Fed. Reg. 81347). AF&PA agrees with this decision, since these compliance demonstrations generally require the testing of both gas and liquid streams on multiple operating systems. This testing requires significant time and resources that are not easily coordinated. During the IPT for each facility utilizing CCA, the site had to demonstrate that the CCA approach would result in lower emissions than the traditional compliance approach for high-volume low-concentration (HVLC systems). Facilities also conduct monitoring to ensure continuing compliance. Thus, although this is an alternate approach, it is a conservative option and actually results in a higher treatment standard and thus lower emissions.

VII. Startup, Shutdown, and Malfunction (SSM)

AF&PA believes that the approach EPA is taking fails to account adequately for emissions that occur during SSM periods. EPA bases its actions on an incorrect reading of the D.C. Circuit's *Sierra Club v. EPA* decision and on unreasonable or insufficiently supported assumptions about SSM events and emissions during SSM periods. EPA proposes to change regulations that have been in place for many years and whose SSM provisions were never challenged in court, without any justification of its authority to do so and without any apparent factual analysis of the statutory criteria for standard-setting.

EPA has for decades recognized, in technology-based standards under the Clean Air Act and other statutes, that in many cases it is not feasible with the identified technology to achieve the same emission limitations established for normal operations during SSM periods. Historically, EPA has therefore applied different requirements during SSM events. EPA has not justified departing from that practice in the Proposed Rule. Nor has EPA made any attempt to demonstrate that the amended standards it is proposing reflect the performance actually achieved by best-performing existing sources or meet the statutory criteria for establishing beyond-the-floor maximum achievable control technology ("MACT") standards. Applying the same emission standards during SSM periods is not compelled by the statute nor by applicable case law, including the *Sierra Club v. EPA* decision EPA relies on, and EPA has several options for setting MACT standards for such periods, including establishing a design, equipment, work practice, or operational standard under CAA section 112(h) (hereafter referred to as "work practice standards").

EPA should revise the proposed standards to better account for SSM events, rather than try to rely on an "affirmative defense" to make up for its failure to do so. The affirmative defense EPA describes in the Proposed Rule inappropriately shifts the burden to the source to disprove alleged violations during malfunctions. In addition, the restrictions and requirements EPA proposes for the affirmative defense are unreasonable and impracticable. If EPA persists in relying on a defense contained in the standards in lieu of promulgating proper standards that apply during SSM periods, the affirmative defense in the Proposed Rule would at a minimum require substantial modification and streamlining.

A. EPA Does Not Have Authority to Amend Existing MACT Standards To Make Them More Stringent

While EPA does not make the distinction clearly in the Proposed Rule, the Proposed SSM Provisions, unlike the remainder of the Proposed Rule, are changes to existing MACT standards that EPA promulgated previously pursuant to CAA sections 112(d)(2) and (3) for the NESHAP category. The Clean Air Act does not contemplate, however, EPA returning to previously issued MACT standards to fill "gaps" or re-determine the MACT "floors." Rather, Congress established two distinct procedures for establishing standards more stringent than the original MACT standards: the eight-year review for new developments in control technology under CAA section 112(d)(6), and the review of MACT standards to determine whether more stringent limitations are necessary to protect human health under the CAA section 112(f)(2) "residual risk" review.

EPA's authority under CAA section 112(d)(6) is 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." EPA did not invoke its section 112(d)(6) authority to support the Proposed SSM Provisions (See 76 Fed. Reg. at 81328), but even if it had, section 112(d)(6) does not provide broad authority to reconsider aspects of previously issued MACT standards unrelated to "developments in practices, processes, and control technologies." Thus, EPA cannot simply revisit and redo a MACT determination long after it has been issued, as EPA attempts to do with the Proposed SSM Provisions. EPA cannot merely change its mind about what standards are required to comply with CAA sections 112(d)(2) and (3), nor can it recalculate a MACT "floor" based on subsequent performance. *Cf. NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008) (rejecting contention that CAA section 112(d)(6) requires EPA to "start from scratch" and develop new MACT standards).

Reassessing existing NESHAPs now, that were based on the MACT "floor" years ago, and imposing more-stringent requirements, would be inconsistent not only with the statute's careful provision of technology-review and residual-risk authority to follow establishment of MACT standards, but also with Congress's desire for finality evident in the judicial review provisions of CAA section 307(b). Challenges to MACT standards needed to be raised within 60 days of their promulgation. This provision ensures that regulated entities, EPA, and the public know what emission limitations will apply to a source, rather than having those limitations be subject to flux. In the instant case, facilities regulated by the NESHAPs long ago made capital investment decisions and developed and honed their operating procedures to meet the existing MACT standards. The CAA does not allow EPA simply to revisit the analysis and decisions involved in developing emission standards that meet the requirements of CAA sections 112(d)(2) and (3).

Moreover, as discussed in greater detail below, even if EPA did have authority to go back and change the existing MACT standards, it would have to justify why the decisions reflected in the current standards are wrong and why the new standards meet the required criteria that EPA must satisfy in issuing MACT standards under CAA sections 112(d)(2) and (3). EPA has not made either showing in the Proposed Rule. EPA also would be required, under Clean Air Act section 112 and Executive Order 13563, to assess the costs and benefits of eliminating the SSM provisions in the current Subpart S standards. EPA has made no attempt to do so, nor has the Agency even identified what changes pulp and paper mills might make to their facilities in response to the elimination of the SSM provisions.

B. The Proposed SSM Provisions Are Not Required in Order To Be Consistent with *Sierra Club v. EPA*

EPA has recognized for decades that often it is unreasonable to require sources to meet technology-based emission standards, such as NSPS promulgated under CAA section 111, during SSM periods. See 40 C.F.R. § 60.8(c). That understanding has been a critical piece of most MACT standards as well, through incorporation by reference of the NESHAP General Provisions SSM requirements, inclusion of specific provisions for SSM events in the categorical MACT standards, or both. Despite that fact, in the Proposed Rule EPA proposes that established emission limitations in the affected NESHAP, which EPA has issued under CAA section 112 (which is modeled in part on section 111), would now be applicable at all times, even during SSM events. See, e.g., proposed sections § 63.443 and § 63.459.

EPA suggests that its treatment of excess emissions during SSM events in the Proposed Standards is appropriate, even "required," in order to make the standards "consistent with" the D.C. Circuit's decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008), *cert. denied*, 130 S. Ct. 1735 (2010), which vacated the exemption[34] for excess emissions during SSM events contained in the 40 C.F.R. Part 63, subpart A General Provisions for emission standards for hazardous air pollutants under CAA

[34] Although the D.C. Circuit (and EPA in the preamble to the Proposed Rule) referred to the provision vacated in the *Sierra Club* decision as an "exemption" from hazardous air pollutant standards during SSM events, in fact other portions of the NESHAP General Provisions impose various requirements that apply to sources during SSM events (including the obligation to minimize excess emissions), and in anticipation of and following SSM events (including requirements to prepare a plan to address SSM events and to report SSM events).

section 112 (See 76 Fed. Reg. at 81345). The D.C. Circuit's *Sierra Club* decision does not, however, compel or even support EPA's adoption of the Proposed SSM Provisions.

First, the *Sierra Club* decision interpreted the NESHAPs General Provisions. It did not by its terms address what EPA may or may not include in category-specific MACT standards.

Secondly, the *Sierra Club* decision did not say that the same emission limitations that EPA has derived for normal operations must also apply during SSM events. While a blanket, open-ended exemption from any standard under Section 112 is inconsistent with the *Sierra Club* panel's holding that, for section 112 maximum achievable control technology (MACT) standards, "there must be continuous section 112-compliant standards" (551 F.3d at 1027), *Sierra Club* does not preclude EPA from applying different standards during SSM events than apply during normal operations. In fact, the opinion acknowledges that section 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 can establish MACT standards consistent with CAA section 112 "without necessarily continuously applying a single standard."[35]

There is ample precedent for EPA applying a different standard during SSM events. The language that the D.C. Circuit considered dispositive in interpreting EPA's standards-setting authority under section 112 — the statement in the CAA section 302 definition of "emission limitation" and "emission standard" that it "limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis" — has been in the statute since 1977. Throughout that time, EPA has not required sources to meet NSPS emission limitations under CAA section 111 established for normal operations during SSM events. See 40 C.F.R. § 60.8(c). In fact, Congress enacted the continuous basis" language in section 302(k) knowing that EPA's emissions standards under section 111 exempted SSM periods. There is nothing in the legislative history of the 1977 amendments to the CAA that suggests Congress intended to overturn that

[35] 551 F.3d at 1027. "Indeed, this reading is supported by the legislative history of section 302(k)." *Id.* 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). Moreover, since it was addressing only a generic SSM exemption, the *Sierra Club* decision did not consider whether EPA, in the context of individual categorical standards, could determine that it is infeasible to apply the same limits, or any limits on the mass or concentration of pollutants emitted at all, during SSM events, or that it would lead to absurd results to do so.

practice.[36] Moreover, court decisions both before and after the Clean Air Act Amendments of 1977, some of which are cited below, have affirmed the appropriateness of including special SSM provisions in standards issued under section 111—despite the "continuous basis" language in the definition of "emission limitation." Similarly, there is nothing in the legislative history of the Clean Air Act Amendments of 1990 that suggests Congress meant something completely different when it used the same defined terms, "emission standard" and "emission limitation," in directing EPA to establish MACT standards in the 1990 Amendments.

Thirdly, the *Sierra Club* decision did not address whether EPA could use a "design, equipment, work practice or operational standard," as authorized under CAA section 112(h) and included in the definition of "emission limitation" and "emission standard" in CAA section 302(k), in lieu of a numerical emission limitation during SSM events. EPA told the Court that the General Provisions SSM exemption struck down in *Sierra Club* was not an alternative standard based on the work practice standard authority. See 551 F.3d at 1028. Indeed, EPA argued in that case that section 112(h) was irrelevant to its authority to exempt excess emissions during SSM events. *Id*. at 1030 (Randolph, J. dissenting).

Thus, EPA cannot hide behind the *Sierra Club* decision as a justification for ignoring an inability of even the "best performers" to achieve during SSM events the emission limitations EPA has established for normal operations. Moreover, the approach EPA is proposing would not establish "continuous section 112-compliant standards" that the *Sierra Club* decision concluded are required. See 551 F.3d at 1027. Under CAA

[36] Rather, the "continuous basis" language inserted in 1977 related to a debate in Congress about whether sources should be allowed to use temporary or intermittent pollution control technologies, as the D.C. Circuit recognized in *Sierra Club v. EPA*, 551 F.3d 1019, 1027 (D.C. Cir. 2008), *cert. denied*, 130 S. Ct. 1735 (2010), citing *Kamp v. Hernandez*, 752 F.2d 1444, 1452 (9th Cir.1985). See also Conference Report on H.R. 6161 (the CAA Amendments of 1977), H. Rep. No. 95-564 (August 3, 1977) at 129 (requirement to use "continuous emission controls" "clarifies that intermittent or alternative control measures are not permissible means of compliance"), 172; S. Rep. No. 94-717 (March 29, 1976) at 78 (definition of "emission limitation" being amended to clarify that "[i]ntermittent controls or dispersion techniques are unacceptable as a substitute for continuous control of pollutants" and contrasting intermittent controls, which vary based on predicted changes in pollutant dispersion due to meteorological predictions, with continuous controls such as flue-gas cleaning equipment); see also *Nat'l Lime Ass'n v. EPA*, 627 F.2d 416, 434 n.54 (D.C. Cir. 1980) ("The 'intermittent' controls that concerned Congress were any of those which entailed temporary reductions in emissions when weather conditions were poor."). The language about "continuous reduction" in the definition of "emission standard" did not address what emission limitations apply during SSM periods, nor EPA's established practice of exempting excess emissions during SSM events from the performance standards applicable to normal operations. In fact, the legislative history indicates Congress was aware that alternative emission limitations might at times be necessary, even though the emission limitations were established based on the capability of "continuous controls" like scrubbers. See, e.g., S. Rep. No. 94-717 at 78 ("It is recognized that the source controls may not be available to achieve the full reduction required of a particular source under particular circumstances. In such case, supplementary programs can and should be developed. But this flexibility occurs only after imposition of the continuous emission limitation.").

section 112(d)(2), MACT emission standards must be “achievable.” Moreover, if EPA sets the emission standards based on the “best performing 12% of units in the category” (the MACT “floor”), those limitations must on average be “achieved” by the best performers. See CAA section 112(d)(3); *Sierra Club v. EPA* (standards based on the MACT “floor” must be achievable “under the worst foreseeable circumstances”).

An emission limitation that applies during SSM events does not meet the requirement of CAA section 112(d)(2) that “emission standards” under that section be “achievable” if in fact EPA has not demonstrated that the limitation is “achievable” with available technology, “taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements.” Similarly, 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 under CAA section 112(d)(3) unless EPA can show that those best performers actually meet that emission limitation during SSM events. The Proposed Rule would not establish “continuous section 112-compliant standards” because, as discussed below, EPA has not demonstrated that the emission limitations in the existing MACT standards, if they also applied during SSM events, would comply with section 112 when applied to SSM periods.

That plain-language reading of the applicable statutory requirements is echoed by extensive case law. The courts have long recognized that a “technology based standard discards its fundamental premise when it ignores the limits inherent in technology.” *NRDC v. EPA,* 859 F.2d 156, 208 (D.C. Cir. 1988). For example, the D.C. Circuit recognized, in *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 398 (D.C. Cir. 1973), a decision reviewing standards under CAA section 111, that “‘start-up’ 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. Similarly, in *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 432 (D.C. Cir. 1973), *cert. denied,* 416 U.S. 969 (1974), another section 111 case, the court held that SSM provisions are “necessary to preserve the reasonableness of the standards as a whole.” *Id*. at 433. In *National Lime Ass’n v. EPA*, 627 F.2d 416 (D.C. Cir. 1980), another case reviewing emission standards promulgated under CAA section 111, the court held that the analogous CAA requirement that NSPS be “achievable” means that the standards must be capable of being met “on a regular basis,” including “under most adverse circumstances which can reasonably be expected to recur,” including during periods of SSM. 627 F.2d at 431 n.46.

Courts have reached a similar conclusion when considering the analogous Clean Water Act requirements that EPA establish technology-based effluent limitations based on the best available control technology. In one such case the court held that where EPA knew 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 had 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).[37]

The 1977 CAA amendments if anything support the conclusion that emission standards need to deal with the inability of a source to meet the normal emission limitations during particular circumstances. Moreover, the *National Lime Ass'n* decision discussed above, which relied in part on the cases EPA referenced in the preamble, and which directly addresses the need for emission limitations that address reasonably anticipated adverse circumstances, post-dates the Clean Air Act Amendments of 1977 by three years.

As noted above, the *Sierra Club* decision does not prevent EPA from adopting emission standards for SSM periods that are different from those required during periods of normal operation. Nor does the *Sierra Club* decision mean 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. The *Sierra Club* decision only rejected EPA's assertion that it had discretion to decide not to impose any emission standard covering 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 CAA

[37] The *Weyerhaeuser Co. v. Costle* decision EPA cites in the preamble to the Proposed Rule, 590 F. 2d 1011 (D.C. Cir. 1978), does not support EPA's position (See 76 Fed. Reg. 72535). In that case, the court was discussing a "technology forcing" standard, rather than one, like MACT, that is to be based on what is already being "achieved" or has been demonstrated to be achievable. Also, the SSM events that EPA acknowledges are expected to occur at sources subject to the Proposed Standards are a far cry from the "'uncontrollable acts of third parties,' such as strikes, sabotage, operator intoxication, or insanity" that the Court was considering in the passage quoted by EPA, (See 76 Fed. Reg. 7535, col. 1). Industry is not requesting that the MACT standards provide relief from numerical emission limitations during those unusual types of events. Perhaps most importantly, the *Weyerhaeuser* 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*.

section 112(d) or a design, equipment, work practice, or operational standard under section 112(h)).[38]

Thus, despite EPA's implications to the contrary, the *Sierra Club* decision expressly recognized that different standards, including non-numerical standards, may (and in some cases must) apply during non-standard operating conditions, such as SSM.

C. EPA Must Fully Justify Applying the Same Emission Limitations During Startup and Shutdown as During Normal Operations

In the preamble to the Proposed Rule, EPA does not say that it is precluded from adopting different emission limitations that would apply during startup and shutdown periods. Rather, EPA states that "Nothing in the record suggests that the operations (and attendant emissions) are significantly different during startup or shutdown than during normal operations. Periods of startup, normal operations and shutdown are all predictable and routine aspects of a source's operations" (See 76 Fed. Reg. 81346).

As an initial matter, this falls far short of the "reasoned analysis" that an agency must supply before changing a prior decision. See, e.g., *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983) ("an agency changing its course by repealing a rule is obligated to supply a reasoned analysis for the change"); *Williams Gas Processing-Gulf Coast Co. v. FERC*, 475 F.3d 319, 326 (D.C. Cir. 2006) ("it is axiomatic that agency action must either be consistent with prior action or offer a reasoned basis for its departure from precedent") (internal quotation marks and brackets omitted). In promulgating the Subpart S regulations, EPA specifically considered the need for special provisions to address higher emissions occurring during startup and shutdown (as reflected in EPA's decision to include startup and shutdown periods in the excess emission provision for condensate treatment but not for LVHC and HVLC NCG controls (See 63 Fed. Reg. 18529-30). If EPA wishes to change its prior determinations with respect to startup and shutdown provisions, it would have to explain how the Agency erred in arriving at those prior determinations, or how available information has changed since that time. The cursory treatment of this issue in the preamble to the Proposed Rule certainly is not sufficient justification for reversing EPA's prior determinations with respect to startups and shutdowns.

[38] 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 challenged 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.

As EPA has acknowledged in other rules, there are numerous reasons why a source might not be able to comply, during periods of startup or shutdown, with emission limitations established based on performance during steady-state operation, even if the control devices used are started up before the process units and are operational during the shutdown phase of a process. For example, a control device may be less efficient until it reaches its design operating temperature, or it may be less efficient when the pollutant concentrations in the gases to be treated are lower than during steady-state operation (as they often will be when a process is starting up or shutting down) (See 68 Fed. Reg. 1276 at 1287-88 (Jan. 9, 2003)). On the other hand, until a manufacturing process reaches steady-state operation, that process may generate substantially higher emissions, either on a total mass basis or on a mass per unit of production basis (See 76 Fed. Reg. 63878, 63883 col. 2 (Oct. 14, 2011)).

EPA claims that ""Nothing in the record suggests that the operations (and attendant emissions) are significantly different during startup or shutdown than during normal operations" (See 76 Fed. Reg. 81346). There is no indication, however, that EPA has actually analyzed sufficient data on emissions during startup and shutdown to justify that conclusion, as opposed to merely assuming it is correct. EPA cannot conclude that special provisions for emissions during startup and shutdown are not needed based on "mere speculation." See *NRDC v. EPA*, 859 F.2d 156, 210 (D.C. Cir. 1988). The default assumption must be that they *are* needed. EPA previously determined, in establishing the existing Subpart S standards, that the best performers on which the MACT standards were based may not achieve those standards during startup and shutdown. EPA cannot simply change its mind about this sort of assessment without providing a factual analysis supporting EPA's new conclusion that MACT standards can be achieved during all startup and shutdown periods as well. See, e.g., *Transactive Corp. v. United States*, 91 F.3d 232, 237 (D.C. Cir. 1996). AF&PA doubts that emissions data representative of startup and shutdown events exist that would be sufficient for EPA to conduct a reasoned analysis to demonstrate the achievability of the MACT emission limits established for normal operations during startup and shutdown events (contrary to EPA's prior rulemaking), because of likely limitations in the available data.

There are several reasons why adequate data often do not exist to allow EPA to conclude that an emission limitation established for normal operations also represents the performance of the best demonstrated control technology during startups and shutdowns. To the extent emissions data come from required performance tests, the applicable regulations generally prohibit testing during SSM conditions, and require that data not be used for compliance purposes if obtained during a startup, shutdown, or malfunction event.[39] To the extent EPA evaluates emissions data collected through continuous monitoring, the applicable regulations often require or allow the source to exclude from its reporting of continuous monitoring data those data reflecting SSM conditions. Also, atypical pollutant concentrations and other stack conditions that may exist during startup and shutdown can result in the continuous monitoring system producing unusable data because the pollutant concentration may be outside of the monitoring equipment's span or the stack conditions may not meet monitoring system QA/QC parameters, or the data may be truncated on the high end because of limitations of the monitoring equipment.[40]

These factors would cause EPA to understate emissions occurring during startup and shutdown. An additional problem is that it can be unclear whether a condition that leads to excess emissions should be characterized as a startup or shutdown event or a malfunction event. Without a clear demarcation (both in EPA regulations and in practice), EPA could be analyzing data sets that exclude events that were treated as malfunctions but that EPA would say should be included in calculating average performance as startup or shutdown conditions.

While EPA may not be able to calculate average HAP emissions during startup and shutdown periods, EPA certainly has available to it information that indicates that pulp and paper mills utilizing the MACT "floor" technologies and complying with the Subpart S standards during normal operations would not be able to comply during at least some startup and shutdown conditions. The simplest example is the requirement in 40 C.F.R. § 63 .443(c) that emissions from specific processes be vented into a closed-vent system and routed to a control device. As explained above, because these gases can be explosive, they cannot be routed to an incineration device unless the concentration and volume of the vent gas and the conditions in the incineration device meet certain conditions necessary to prevent explosions ("permissives"). When pulping processes are starting up or shutting down, the NCGs generated by the process may not meet permissives for a period of time, and the NCGs will have to be vented for safety reasons due to the increased variations in the process during starting up and shutting down. The same thing is true of startup or shutdown of a primary or

[39] See, for example, the NESHAPs General Provisions, which state that performance tests can only be conducted under representative conditions and which specify that: "Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test…." 40 C.F.R. § 63.7(e)(1); see also 40 C.F.R. § 60.8(c) (same for performance testing for NSPS).

[40] Note that data from periods when the monitoring system is outside of control limits are required to be excluded from emission averages under the NESHAPs General Provisions. See 40 C.F.R. § 63.8(c)(7)(ii).

backup incineration device (which may be a boiler, recovery furnace, lime kiln, or other combustion unit that is also part of the pulp mill operation), during which the conditions in the incineration device may not meet permissives for a period of time and it will be necessary to bypass the NCGs around that device to avoid explosion.

Another clear example has to do with requirements in 40 C.F.R. § 63.453 to monitor operating parameters in lieu of or in addition to monitoring emissions. Operating parameters established to represent proper operation during normal operating conditions will often be different from the operating parameters that apply when a unit is being started up or shut down.

In short, EPA already is aware of information that supports its determination in the original Pulp and Paper MACT rulemaking that these standards applicable to normal operations are not representative of performance (even of the best performers) during startup and shutdown conditions. AF&PA is aware of no information supporting EPA's suggestion in the preamble to the proposed rule that the opposite is true, and it does not appear from the record that EPA has conducted (or could conduct) any analysis to overturn its prior determination.

D. EPA Is Required To Take Malfunctions into Account When Adopting Emission Standards

EPA asserts that "EPA's approach to malfunctions" in setting emissions standards "is consistent with CAA section 112 and is a reasonable interpretation of the statute" (See 76 Fed. Reg. 81347). EPA offers very little support for that assertion, however, other than stating its own, often counterintuitive, conclusions. For example, EPA says it "has determined that CAA section 112 does not require that emissions that occur during periods of malfunction be factored into development of CAA section 112 standards" (See 76 Fed. Reg. 81346). EPA makes little effort to justify that assertion. EPA's statement that "[t]here is nothing in CAA section 112 that directs the agency to consider malfunctions in determining the level 'achieved' by the best-performing or best controlled sources when setting emission standards," (See 76 Fed. Reg. 81326), has it backward. There is nothing in CAA section 112 that allows EPA to ignore malfunctions and set MACT standards based on a level of emissions that even best-performing sources only achieve part of the time.

EPA likewise offers a backwards, results-driven rationale for ignoring malfunctions, which directly contravenes congressional intent that MACT "floor" standards be based on what the best sources actually achieve: "accounting for malfunctions could lead to standards that are significantly less stringent than levels that are achieved by a well-performing non-malfunctioning source" (See 76 Fed. Reg. 81347). EPA cannot ignore the requirement that MACT "floor" standards reflect performance actually achieved, just because EPA would like the standards to be more stringent than that actual performance reflects.

EPA acknowledges that even properly designed and operated equipment will sometimes exceed emission limitations that were based on steady-state operation, due to malfunctions (See 76 Fed. Reg. 81347). Even the best-performing units in the source category covered by the Proposed Rule (like any technologies), are subject to a wide variety of potential malfunctions (e.g., power failures, equipment breakdowns) (See 76 Fed. Reg. 81346). The operators of these processes and equipment must treat malfunctions as very distinct events from steady-state operations, depending on the severity of the malfunction, requiring anything from shutdown of the unit to emergency fire response actions. AF&PA agrees with EPA's conclusion that the factual complexity of differing processes and of the severity, frequency, and duration of malfunctions makes standard-setting difficult (See 76 Fed. Reg. 81346). In addition, it is often infeasible to gather emission data during malfunctions – either for standard-setting or for compliance-demonstration purposes. Malfunctions are by definition unexpected and infrequent, so it is not possible to plan to have test equipment in place to measure emissions when one occurs. Even if test or monitoring equipment is in place, emissions during malfunctions often are not routed to a stack where they can be measured, and upsets during stack testing invalidate the test results under EPA's approved test methods.[41]

Rather than supporting EPA's decision to ignore the fact that SSM events can lead to higher emissions even at well-operated facilities with the best control equipment, these findings should lead EPA to its authority under CAA section 112(h) to prescribe alternative design, equipment, work practice or operational standards where it is not feasible to set or enforce a numerical emission limit. EPA cannot rationally defend its articulated view that applying the concept of "best performing" is inconsistent with a source experiencing a malfunction (See 76 Fed. Reg. 81346). This ignores that there are work practices – such as monitoring operating parameters to identify a malfunction and stopping or cutting back the process accordingly – that represent the best practices for minimizing emissions during a malfunction. While the measures that represent these best practices will depend on facility-specific issues, such as process design, pollution control train, and other factors, they nonetheless represent "the maximum degree of reduction in emissions of the hazardous air pollutants...achievable...through application of measures, processes, methods,

[41] EPA acknowledged these potential obstacles to measuring emissions during SSM events in the preamble to final emission standards for medical waste incinerators, (See 74 Fed. Reg. 51368, 51394 (Oct. 6, 2009)): ("It would be very difficult to do any meaningful testing during such an event because the exhaust flow rates, temperatures, and other stack conditions would be highly variable and could foul up the isokinetic emissions test methods (thus invalidating the testing).")

systems or techniques" and reflect "the emission control that is achieved in practice by the best controlled similar source[s]" CAA § 112(d)(2) and (3).

EPA claims that it somehow “presents significant difficulties” to attribute malfunctions to a “best performing” source (See 76 Fed. Reg. 81346). To the contrary, it “presents significant difficulties” when EPA ignores the undisputed existence of malfunctions even at best-performing sources, and claims falsely that the best performing sources “achieve” emission levels that they undisputedly do not achieve part of the time. Since EPA describes malfunctions as being sometimes unavoidable or “not reasonably preventable,” despite proper design and maintenance of equipment, there is no basis for EPA’s conclusion that malfunction events are not representative of best-performing sources (See 76 Fed. Reg. 81346). True, one goal (although not “*the* goal”) “of best performing sources is to operate in such a way as to avoid malfunctions of their units” (See 76 Fed. Reg. 81347). But that is all the more reason why EPA must acknowledge the fact that those sources nevertheless experience malfunction events, rather than assume those emissions away.

By proposing MACT standards that EPA recognizes even the best-performing existing sources cannot achieve part of the time, EPA is going beyond the MACT “floor”, yet without making the demonstrations that the statute and case law require the Agency to make in order to impose beyond-the-floor MACT standards. This is especially obvious when one considers the multitude of conditions EPA proposes to impose on sources during malfunctions, in order to be excused from civil penalties: EPA makes no attempt to justify those conditions as reasonable “taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements….” See CAA section 112(d)(2).

Nor does EPA present any substantiation for its belief that “[a]pplying the concept of ‘best controlled’ or ‘best performing’ to a unit that is malfunctioning presents significant difficulties” in setting CAA section 112 standards (See 76 Fed. Reg. 81346). It is indefensible for EPA to acknowledge that malfunctions are inevitable, even for the best performing sources, and yet refuse to include emissions data representing malfunctions in calculating the MACT “floor” (See 76 Fed. Reg. at 81346), and then require that those MACT “floor” limitations be met even during malfunctions.

If it is possible to gather sufficient representative data reflecting emissions during malfunctions, then EPA is obligated to consider those data in its MACT “floor” calculations for steady-state operating conditions. To the extent EPA had access to continuous monitoring data for emission units covered by the NESHAP, EPA could have conducted analyses of emissions levels during malfunction events.[42] Also, many types of sources are required by many state agencies to submit deviation reports or malfunction reports when they experience a malfunction that causes an exceedance of an applicable limitation. EPA does not appear to have made any attempt to obtain and analyze such reports, in order to assess what type of requirement might reasonably apply to the subject emission units during malfunctions.

There are several options EPA could use for setting MACT standards under CAA section 112 that would apply during malfunction events. For example, EPA might be able to establish an emission limitation that applies at all times, but that has an averaging time of sufficient duration that short, infrequent spikes in emissions due to malfunctions would not cause the source to exceed the emission limitation (while at the same time ensuring that the source does not operate in a way that causes frequent, lengthy excursions above the normal controlled emission rate). EPA also could use the flexibility accorded by CAA section 302(k) (defining "emission limitation" and "emission standard" to include "any requirement relating to the operation or maintenance of a source to ensure continuous emission reduction, and any design, equipment, work practice or operational standard promulgated under" the CAA) to address emissions during malfunction events through operational requirements rather than by applying the same limits on pollutant concentrations in exhaust gases that apply during normal operations. EPA could have concluded, as explained above, that it has grounds to exercise its authority under CAA section 112(h) to promulgate a design, equipment, work practice, or operational standard, or combination thereof, because it is not feasible to prescribe or enforce an emission standard. EPA might also use several of these approaches in combination.

There is no indication in the Proposed Rule that EPA gave much, if any, consideration to these types of options. In short, there are ample reasons to reject EPA's conclusory assertions that it cannot take malfunctions into account when setting MACT standards for the subject source category. EPA's failure to evaluate these options thoroughly renders the Proposed Rule arbitrary and requires EPA to develop a new proposal.

[42] Even if the continuous monitoring data are for parameters not regulated by the Proposed Standards, analysis of monitoring data for those other parameters during malfunction events might form a reasonable basis for EPA's assessment of what standards are achieved or achievable during malfunctions.

E. The Proposed Affirmative Defense Is Not a Substitute for Addressing Malfunction Events in the Emission Standards Themselves

EPA acknowledges that the sources subject to the NESHAPs covered by the Proposed Rule sometimes will be unable to comply with the Proposed Standards because of malfunctions, even if their equipment is properly designed and maintained, through no fault of the source (See 76 Fed. Reg. 81347). Rather than promulgate an emission standard that eliminates that situation, so that the regulated emission sources will be subject to differentiated requirements, achievable with the identified best technology during malfunction events, EPA offers instead an “affirmative defense.” The proposed affirmative defense shifts the burden to the source to prove that a myriad number of criteria are met and actions were taken by the source (which criteria bear no direct relation to the statutory factors for MACT standards under CAA sections 112), in order to avoid “civil penalties.” Inclusion of the affirmative defense does not cure EPA’s failure to set emission standards that are achievable during SSM events. The Proposed Standards, incorporating the affirmative defense, still do not represent emission limitations “achieved” by best-performing existing sources under CAA section 112(d)(3), nor do they meet the criteria for establishing beyond-the-floor emission standards under CAA section 112(d)(2).

It is unclear where EPA finds the legal authority in the CAA to shift the burden to the regulated community of proving (or disproving) essential elements of an alleged violation. The statute is silent as to the issue and “the ordinary default rule [is] that plaintiffs bear the risk of failing to prove their claims.” *Shaeffer v. Weast*, 546 U.S. 49 (2005), *quoting* McCormick on Evidence §337, at 412 (“The burdens of pleading and proof with regard to most facts have and should be assigned to the plaintiff who generally seeks to change the present state of affairs and who therefore naturally should be expected to bear the risk of failure or proof or persuasion”); C. Mueller & L. Kirkpatrick, Evidence § 3.1, p. 104 (3d ed. 2003) (“Perhaps the broadest and most accepted idea is that the person who seeks court action should justify the request, which means that the plaintiffs bear the burdens on the elements in their claims”). While the Supreme Court has recognized exceptions such as affirmative defenses, courts retain the authority to establish such rules unless Congress acts to delegate that authority.

In this instance, EPA has not provided any statutory authority, nor any real justification, for requiring a source to prove its innocence, including fully demonstrating its innocence within 45 days of the event, without even being charged. Rather, if EPA adopts an approach along the lines of the proposed affirmative defense, it should be stated instead in terms that, once a source has claimed that its excess emissions were related to a malfunction, it will not be considered to be in violation of the standards unless the enforcement authority demonstrates that the source is not entitled to claim the malfunction.

In addition, having determined to include an affirmative defense in the Proposed Rule, EPA offers no defensible rationale for excluding startup and shutdown events from the proposed affirmative defense. As noted above, EPA has for decades recognized in NSPS regulations that it may not be possible for a source to meet normally applicable emission limitations, even using the best demonstrated technology, during startup, shutdown, and malfunction events. . During periods of startup and shutdown the process is inherently more variable due to changes in operating conditions required as part of the startup and shutdown sequence.   If EPA persists in its proposal not to provide less-stringent separate emission limitations for startup and shutdown of the regulated units, and if in fact excess emissions from those units cannot reasonably be avoided during a startup or shutdown, not because of failure of a process or equipment but because of the nature of conditions while starting up or shutting down the source, there is no rational basis for EPA not to provide the same kind of affirmative defense that it proposes to provide for malfunctions.

Even if the proposed affirmative defense was not unreasonably restrictive, as discussed in the following portion of these comments, being able to assert a defense obviously is not the same as complying with emission limitations that are properly set in accordance with CAA section 112. Even though a source believes it qualifies for the affirmative defense, it may be considered to have violated the standards—and may have to report violations, certify noncompliance, etc.—until there has been an enforcement proceeding and the source has successfully asserted the affirmative defense. The affirmative defense places the source in the position of proving its innocence, rather than EPA or another enforcement authority having to prove that the source violated the CAA.

Furthermore, it is not even clear what the affirmative defense covers. In the Proposed Rule, EPA states that the affirmative defense is “to a claim for civil penalties for exceedances of such standards that are caused by malfunction, as defined in § 63.2**.”**[43]   Is the term “civil penalties,” which is not defined in the Proposed Rule, intended to apply as well to a “civil administrative penalty” imposed by EPA under CAA section 113(d)? (The term “civil penalty” in other contexts means only penalties imposed by a court.) Does the affirmative defense apply to “noncompliance penalties”

[43] Proposed 40 C.F.R. § 63.456

under CAA section 120 (which apply, *inter alia*, to noncompliance with a section 112 NESHAP)? To meet the purported purpose of the affirmative defense, which is to provide relief from emission limitations that cannot be met at times even with equipment that is properly designed and maintained (see 76 Fed. Reg. 81347), the affirmative defense would need to apply to civil and administrative penalties, including noncompliance penalties.[44]

It is unclear as well how the affirmative defense would apply to enforcement actions by state and local governments, or to private citizen enforcement actions under CAA section 304. The preamble to the Proposed Rule, for example, speaks only in terms of application of the affirmative defense in an EPA enforcement action.[45] An affirmative defense should clearly state that it is applicable to enforcement actions by states or citizen-suit plaintiffs, as well.

The Proposed Rule states that: "The affirmative defense shall not be available for claims for injunctive relief." Proposed § 63.456. EPA does not give any explanation for why the affirmative defense would not apply to injunctive relief. If in fact the excess emissions associated with the equipment or process failure are not reasonably preventable, then there is no apparent reason why an affirmative defense to a claim for injunctive relief should not be available, as well. In fact, as a matter of law, injunctive relief may not be available in cases where a civil penalty cannot be imposed. See *Sierra Club v. Otter Tail Power Co*., 615 F.3d 1008 (8th Cir. 2010) (under concurrent remedy doctrine, injunctive relief for a CAA violation is barred when civil penalty is barred by statute of limitations).

Maintaining liability for injunctive relief renders the affirmative defense particularly ineffective with respect to citizen suits. If the source is even potentially subject to injunctive relief, and therefore could be required to pay the citizen-plaintiff's attorneys fees even if the source successfully demonstrated that it otherwise qualified for the affirmative defense, then the affirmative defense would not accomplish EPA's stated objective of providing relief in situations where the emission limitations cannot be met despite proper design and operation of process and control equipment.

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[44] In the preamble to the Proposed Rule, EPA states that, if a source cannot prove its entitlement to the affirmative defense, "appropriate penalties could be assessed in accordance with section 113 of the CAA (see also 40 CFR 22.27)" (See 76 Fed. Reg. 81347). This does not answer the questions stated above. The Proposed Rule, therefore, is unclear on this key issue of what the affirmative defense is intended to cover.

[45] See 76 Fed. Reg. 81347 ("In any judicial or administrative proceeding, the Administrator would be able to challenge the assertion of the affirmative defense….") (emphasis added).

EPA has not addressed these and other apparent limitations and shortcomings of the affirmative defense, which make it an entirely inadequate substitute for setting MACT standards that include provisions for SSM events. Moreover, EPA has provided no analysis that would supersede its long-standing determination that it is not desirable to rely on enforcement, rather than regulatory language, to address the inability to comply with technology-based standards during SSM events (See 37 Fed. Reg. 17214, (Aug. 25, 1972)) (establishing SSM provision in NSPS). The courts have adopted the same view. See, e.g., *National Lime*, 627 F.2d at 431 n.46 ("the flexibility appropriate to enforcement will not render 'achievable' a standard which cannot be achieved on a regular basis, either for the reasons expressly taken into account in compliance determination regulations (here startup, shutdown and malfunction), or otherwise.").[46]

At a minimum, then, EPA should state that the affirmative defense applies to civil penalties, civil administrative penalties, noncompliance penalties, and injunctive relief, in an action brought by EPA, a state, or a citizen-suit plaintiff. EPA also should reword the "affirmative defense," so that it states that a source "will not be deemed in violation of" the MACT standards for excess emissions or other deviations from the standards, associated with a startup, shutdown, or malfunction event, unless the event, and the source's response to the event, do not meet the criteria spelled out in the regulations.[47] Configured in that way, this provision for malfunction should be called something other than an "affirmative defense," such as an "alternative standard for SSM events."

F. 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 relief. 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. If EPA does that, it may be unnecessary to state also that the

[46] See 37 Fed. Reg. 17214 (Aug. 25, 1972) (establishing SSM provision in NSPS). See also *Marathon Oil Co. v. EPA*, 564 F.2d at 1273 (explaining why EPA's statement that it would not take enforcement action against sources that exceeded effluent limitations because of upset events was "not an adequate response" to the argument that standards that cannot be met during unavoidable upsets fail to reflect available technology). Also for these reasons, EPA's statements in the Proposed Rule preamble that EPA will "determine an appropriate response" to reported exceedances of the Proposed Standards, based on whether the exceedances were avoidable, minimized, etc. (which seems to be in addition to providing the affirmative defense) are not in any way a substitute for EPA setting the standards at an achievable level to begin with (See 76 Fed. Reg. 81347).

[47] *Compare, e.g.*, 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).

affirmative defense relieves the source from liability for all types of penalties and injunctive relief (save criminal penalties), but that should be the clear effect of qualifying for the affirmative defense.

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 the source 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.

Additionally, many aspects of the affirmative defense would make it unavailable as a practical matter for many, if not most malfunctions. EPA needs to substantially revise and streamline the proposed affirmative defense for it to be of practical value.

Several of the conditions for establishing an affirmative defense in proposed 40 C.F.R. § 63.456(a) list numerous items which may be appropriate considerations in determining whether excess emissions during a malfunction should be considered a violation, but which ought not to be listed as mandatory criteria, all of which have to be met in order for a source even to raise an affirmative defense. For example, proposed § 63.456(a)(1)(i) requires that the excess emissions must have been "caused by a sudden, infrequent, and unavoidable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner…." There is no apparent reason why a "sudden" and "unavoidable" equipment failure or process upset leading to emissions greater than the MACT emission limitation should be considered a violation of the standards if it is not "infrequent," even though it is "not part of a recurring pattern indicative of inadequate design, operation, or maintenance" and "[c]ould not have been prevented through careful planning, proper design or better operation and maintenance practices." See proposed § 63.456(a)(1)(ii)&(iv).

A number 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 (§ 63.456 (a)(1)(ii)), whether a recurring malfunction is a result of "inadequate design"(§ 63.456(a)(1)(iv)), whether repairs were made "as expeditiously as possible" (§ 63.456(a)(2)), whether the source took "all possible steps" to minimize the impact of the excess emissions (§ 63.456(a)(5)), *and* whether emissions control systems "were kept in operation if at all possible"(§ 63.456(a)(6))?

In some cases, it may have been possible to prevent the malfunction, or to have further reduced the excess emissions, if the source had spent huge amounts of money with little emission reduction 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 subjectively 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.[48]. In effect, EPA or the court may impose an extreme version of MACT during malfunction periods, without any application of the beyond-the-floor factors in CAA section 112(d)(2). At a minimum, the vague and unqualified descriptors in the criteria for demonstrating the affirmative defense will inevitably lead to varying conclusions as to whether a violation has occurred, resulting in inconsistency from one jurisdiction to the next.

Proposed § 63.456(a)(6) requires, as a condition for the affirmative defense, that all emissions "control systems were kept in operation if at all possible." The phrase "if at all possible" should not be used because it is an extreme term that bears no relation to good air pollution control practices. Additionally, this provision should be qualified, as EPA has qualified similar provisions in the NESHAP General Provisions in 40 C.F.R. § 63.6. For example, these conditions should be qualified with caveats that the operation must be consistent with safety and good air pollution control practices, that it does not require the source to make further efforts to reduce emissions below what the standards require, and that it does not require regular operation of backup or standby pollution control equipment.[49] In an analogous setting, EPA has long recognized, in the General Provisions applicable to NSPS, that it is appropriate to require sources to operate the affected facility and related air pollution control technology "to the extent practicable…consistent with good air pollution control practice for minimizing emissions" during SSM periods, not "if at all possible." See 40 C.F.R. § 60.11(d)); see also, e.g., 40 C.F.R. § 63.480(j)(4) (during SSM events, Group I Polymer & Resin plants are required to use "to the extent reasonably available, measures to prevent or minimize excess emissions to the extent practical."). EPA cannot abandon those rational approaches and adopt the kind of absolute requirements implied by the

[48] In contrast, EPA has included provisions in other NESHAPs explicitly recognizing that back-up control devices are not required. See, e.g., 40 C.F.R. § 63.480(j) ("Back-up control devices are not required, but may be used if available.").

[49] EPA also determined it was appropriate to include those kinds of caveats in its regulation requiring proper operation and maintenance of wastewater treatment facilities, in 40 C.F.R. § 122.41(e).

Proposed Rule, without an explanation of why it is necessary and appropriate to do so. Indeed, EPA recently agreed to insert language in several NESHAPs to clarify that the general duty to minimize emissions “does not require the owner or operator to make any further efforts to reduce emissions if levels required by this standard have been achieved” (See 76 Fed. Reg. 22566, 22583, col. 3 (April 21, 2011)).

Proposed § 63.456(a)(4) would preclude a facility from taking advantage of the affirmative defense if the malfunction involved bypassing control equipment or a process and the bypass was not “unavoidable to prevent loss of life, severe personal injury, or severe property damage.” This language is stated in such strong terms that it may be difficult or impossible for a source to demonstrate that it meets this criterion, even though bypassing the control equipment or the process was an appropriate exercise of good air pollution control practices. For example, a bypass can constitute the best air pollution control practice in response to an upset in order to prevent excess emissions, e.g., to avoid fouling of pollution control equipment media that in turn would result in reduced pollution control equipment efficiency or increased pollution control equipment downtime. 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? Besides the unclear and subjective nature of these criteria, there is nothing inherent to standards under CAA section 112 that requires a source to avoid bypassing control equipment to such a degree. Lastly, it is not apparent, and EPA has not attempted to explain, why the CAA would disfavor bypassing “a process” in this way.

Under proposed § 63.456(a)(5) a source claiming the affirmative defense must prove that: “All possible steps were taken to minimize the impact of the excess emissions on ambient air quality, the environment and human health.” In addition to the subjective term “all possible steps,” this provision again presents a disconnect between the absolute and extreme requirement of the affirmative defense and the provisions of the CAA designed to attain ambient air quality standards and protect human health and the environment. The CAA does not require sources to take “all possible steps” to control emissions, even to minimize the impact of hazardous air pollutant emissions on human health under CAA section 112(f). In addition, it is unclear how this criterion for qualifying for the affirmative defense differs from proposed § 63.456(a)(3) which requires that the frequency, amount, and duration of excess emissions “were minimized to the maximum extent practicable.” Unless EPA explains what additional showing would be needed by § 63.456(a)(5), that paragraph should be eliminated.

The requirement in proposed § 63.456(a)(9) that the source "have prepared a written root cause analysis to determine, correct and eliminate the primary causes of the malfunction and the excess emissions resulting from the malfunction event at issue" again does not implement the statutory criteria for standard-setting under section 112. Moreover, read literally it would mean that a source could never take advantage of the affirmative defense if the source was unable to determine the primary cause of the malfunction or was unable to correct that cause. EPA has defined a malfunction as an event that is "unavoidable" and unforeseeable, and "not reasonably preventable." See proposed § 63.456(a)(1)(ii)&(iii)and 40 C.F.R. § 63.2. It therefore should be expected that in many cases the primary cause(s) of the malfunction will not be ascertainable, or it will not be possible to identify a way to ensure the malfunction will not recur.[50] In addition, requiring the facility to eliminate the primary causes of the malfunction, without regard to "taking into consideration the cost of achieving such" elimination and the "non-air quality health and environmental impacts and energy requirements" associated with its elimination is unreasonable and entirely inconsistent with the criteria for standards established under CAA section 112(d).[51]

Finally, the requirement in proposed § 63.456(b) to notify the Administrator by telephone or fax as soon as possible, but no later than two business days after the malfunction begins, and then to submit a written report within 45 days of the initial occurrence of the malfunction that demonstrates, "with all necessary supporting documentation," that the source met all of the multitude of criteria for the affirmative defense, is unreasonable and unnecessary. It is novel at best for a person to be determined to have acted unlawfully unless the person has submitted his entire defense before he is even notified of a potential enforcement action. In many cases, it would be obvious to the enforcement authority, based on the kind of short malfunction or deviation report 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

[50] EPA has long acknowledged this reality in the General Provisions applicable to NSPS, which requires that written reports of excess emissions include the "nature and cause of any malfunction, if known…." See 40 C.F.R. § 60.7(b)(2) (emphasis added). It would be arbitrary and capricious for EPA not to include similar language here.

[51] For example, it might be theoretically possible to eliminate the excess emissions associated with the malfunction by installing totally redundant pollution control equipment, or pollution control equipment with far more capacity than needed for normal operations. But this would not reflect the performance of the best performers on which the MACT "floor" is to be based, nor would it appear to take cost and other factors into consideration as the statute requires for beyond-the-floor MACT standards. Moreover, the proposed requirement to eliminate "the primary causes of the malfunction" and not just to eliminate "the excess emissions resulting from the malfunction event" lies entirely outside of EPA's authority under the CAA, which is limited to establishing and enforcing emission limitations, not dictating plant operations.

sources and regulators, to require a complete justification of the affirmative defense before the enforcement authority has indicated any need for further investigation.

Since the affirmative defense is only available if all criteria are met, including the 48-hour and 45-day notifications, and since sources will have no way of knowing whether there might be an enforcement action or citizen suit at some point in the future addressing the period affected by a malfunction, sources will need to submit notifications of the malfunction, with all the supporting documentation, whenever a malfunction defense could be claimed. This will swamp EPA and state agencies with unnecessary paperwork, and for no clear benefit. (Note that, if EPA ultimately were to conduct a rulemaking to eliminate the excess emission provisions discussed in Section V above, despite AF&PA's arguments for retention of those provisions, there would be even more oral and written reports under the proposed affirmative defense. As explained above, the events covered by the excess emissions may occur often and, although they may last only a few minutes, a mill would have no way of knowing whether those incidents might later be part of an enforcement action, so the mill may feel compelled to report each of them under the affirmative defense notification requirements.)

AF&PA notes that EPA recently proposed almost identical affirmative defense requirements in its proposed reconsideration of various provisions of the Chemical Manufacturing Area Source Rule (see 77 Fed. Reg. 4522, January 30, 2012), but omitted the 2-day notification requirement. AF&PA hopes this indicates that EPA has been persuaded by comments submitted by the SSM Coalition (of which AF&PA is a member) and others that the 2-day notification requirement is onerous and burdensome. AF&PA also understands that EPA may be revisiting some of the other requirements in the affirmative defense provisions in order to further reduce the burden on facilities. AF&PA requests that, at a minimum, EPA abandon the 2-day notification requirement in the final pulp and paper RTR rule, consistent with its proposal for the provisions for Chemical Manufacturing Area Source Rule.

Additionally, allowing only 45 days to provide the kind of extensive documentation required by the affirmative defense as currently written, including a completed root cause analysis, is unreasonable. As we pointed out above, EPA's whole "guilty until proven innocent" approach of requiring complete documentation that an event qualifies for the affirmative defense at the time of the event is unnecessary and burdensome. But if EPA persists in requiring such reporting ninety days is the minimum time that should be allowed for the written report, unless EPA substantially streamlines the criteria for the affirmative defense, consistent with these comments.

Note that the proposed 45-day period for submitting a written report demonstrating that the source qualifies for the affirmative defense commences on the date of “the initial occurrence of the exceedance of the standards.” See proposed § 63.456(b). This presents several problems. Much of the required content of that written report could not be created until the malfunction event ceased—which could be many days after the malfunction commenced. For example, if a biological wastewater treatment system stops providing sufficient HAP removal efficiency, it may take days to identify the nature of the problem, and then it could take weeks to reestablish a sufficient microorganism community to again meet treatment requirements. This could make the amount of time the source would have, in practice, to prepare the report much less than 45 days.

Also, the provision in the Proposed Rule for requesting and obtaining an extension of the reporting deadline of up to 30 days would provide little practical relief: the source would have to submit the report within 45 days unless the EPA Administrator (or his or her authorized representative, see 40 C.F.R. § 60.2) granted the extension request before the expiration of the initial 45-day period, which is not likely to happen until shortly before, if not after, the report would otherwise be due. At a minimum, the rule should provide that a request for extension of the reporting deadline that the Agency has not acted on within 10 days is considered granted.

Because of the problems associated with the timing of required reporting described above, AF&PA requests that malfunction reporting be required on a semi-annual basis for malfunctions that occurred during the preceding six months (the same frequency as similar reports pursuant to NESHAPs and Title V permit requirements). This would enable EPA to review the source’s compliance history and the measures being taken to address malfunctions without imposing unworkable reporting deadlines (or potentially encouraging sources to bombard the Agency with reports for malfunctions that may not ultimately result in the source exceeding the 30-day average emission limitation). Nowhere has EPA justified departing from its conclusion, reflected in the current Subpart S standards, that semi-annual reporting of malfunctions is sufficient. See 40 C.F.R. § 63.455(a).

G. General Provisions that Should No Longer Be Referenced

In the preamble on page 81346, the Agency requests comments “on whether there are any such provisions that we have inadvertently incorporated or overlooked” in reference to the proposed changes in SSM language. While AF&PA takes issue with the proposed changes as noted above, the organization has reviewed the rule and is not aware of any cases where the proposed rule is inconsistent with the intent of the Agency’s actions.

VIII. Other Comments

A. The Proposed Concentration Limit for Condensate Treatment for Bleached Mills Is Inconsistent with the Background Documents

In the preamble to the proposed rule (76 Fed. Reg. 81345) and EPA's memo dated October 23, 2011, Table 2 states that the equivalent concentration for bleached mills is 248 ppmw[52]. However, in the proposed rule, the concentration is listed as 210 ppmw[53]. The proposed rule needs to be modified to be consistent with the analysis in the docket.

B. The New Requirement for Electronic Reporting of all Monitoring Data Is Burdensome and Unnecessary

EPA has included a new reporting requirement in the December 2011 proposed amendments to the rule that will be excessively burdensome to industry. This requirement is not justified. Proposed § 63.455 (h)(2) and (3) states that within 60 days of completing each performance test and CEMS performance evaluation test, the owner/operator must submit the test data to the EPA's Central Data Exchange (CDX) by using the Electronic Reporting Tool (ERT) when the data and methods are compatible with the ERT.

Performance tests conducted under Subpart S are unique and unlike traditional stack tests. The data collected and the standards that must be met are specific to the systems used to collect and treat condensates. There is no reason for EPA to require the submittal of this test data. Facilities are required to submit performance test data to regulatory agencies and provide certifications on their semi-annual compliance reports that they have performed the required monitoring and will provide information on any deviations from the testing requirements. Additional performance test reports provide no useful purpose, environmental or otherwise, to anyone and are an additional administrative burden on operating facilities. The ERT continues to be revised and updated due to various flaws. It is unreasonable to put sources at risk of violations (late reporting) because of EPA reporting tool issues or availability.

.A number of states already specify that performance test results be submitted in an electronic format. EPA should remove its reporting format requirement from the rule and

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52 Summary of Kraft Condensate Control Technology Review," EPA Memorandum to Docket – EPA-HQ-OAR-2007-0544-0128, John Bradfield and Kelley Spence, October 23, 2011, page 7.

53 76 Fed Reg 81354, Proposed Rule § 63.443(4)

work more closely with states to develop a universal reporting system that is not costly or redundant, does not require, different electronic reporting formats, and that is not problematic and labor-intensive for data entry. As proposed, the rule's requirement is an extra, excessive burden for mills and stack testing vendors. EPA needs to defer any electronic collection of data until the CDX and WebFIRE systems are fully functional, user-friendly, and streamlined with States.

C. Compliance Deadline

1. Electronic Reporting Effective Date Is Incorrect

In the preamble to the rule, on page 81349 under "E. Compliance Dates" it states that electronic reporting is "effective upon promulgation of the final rule." However, the revised language of the rule in 40 CFR § 63.335(h)(2), states that "As of January 1, 2012 and within 60 days after the date of completing each performance test, you must submit performance test data, except opacity data, electronically to EPA's Central Data Exchange (CDX) by using the Electronic Reporting Tool (ERT)…" This language is confusing in that it could be concluded that once the rule is effective, all test reports since January 1, 2012, should have been submitted within 60 days of testing prior to the rule being effective.

2. Compliance Deadline Should Be Three Years for All Rule Changes

In the preamble to the rule, EPA proposes that "existing facilities must comply with all of the requirements in this action (other than affirmative defense provisions and electronic reporting, which are effective upon promulgation of the final rule) no later than three years after the effective date of this rule" (See 76 Fed. Reg. 81349). EPA should not promulgate a final rule containing significant new requirements with two compliance dates, and three years is the appropriate compliance deadline for all new requirements. For example, to eliminate the SSM provisions of the existing rule, which apparently would be effective immediately upon promulgation of the final rule. EPA has not really assessed the effect of eliminating that provision, but it could require mills to make significant changes to their HAP collection and treatment systems, such as installing redundant equipment not currently required, which would take significant time for design, engineering, acquisition, and installation. There would be no justification for making such a change in the existing regulations effective immediately, as EPA has proposed (See proposed sections 63.443(e) and 63.446(g).

D. EPA's Proposed Requirement that the Administrator Specify Test Conditions Is Unreasonable

Proposed section 63.457(o) states that performance tests shall be conducted under "such conditions as the Administrator specifies to the owner or operator based on representative performance of the affected source for the period being tested. Upon request, the owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of performance tests."

Depending on what "conditions" the Administrator specifies it may be impossible to conduct performance testing in the time frame required, while simultaneously meeting all the conditions the Administrator or her designee may specify. This new provision makes it unnecessarily difficult to develop testing protocols and successfully conduct performance tests. A performance test should be conducted under normal operating conditions, taking into account real-world constraints and considerations. For example, the actual load or capacity to which any digester, pulp washing line, or bleach plant (and their supporting steam stripper or wastewater treatment plant) can operate depends on the capacities of tanks holding pulp and the demand for pulp from pulp and paper machines (unless the pulp is discharged to the sewer, a highly undesirable outcome). A number of other short-term process fluctuations and unplanned events can have an impact on pulp production and supporting operations. Mills provide stack test notice 60 days in advance and plan for stack tests in good faith to run under conditions that represent normal operation. Normal operation includes many load conditions and load mixes at mills with multiple lines. The language in the rule should simply require that performance tests be conducted under normal operating conditions.

Special conditions and alternative operating scenarios (such as running only one scrubber in a series of two scrubbers) are addressed in Part 70 operating permits, which also address the compliance demonstration requirements for these scenarios

IX. Conclusion

AF&PA appreciates the opportunity to submit these comments on the proposed revisions to the NESHAP for the Pulp and Paper Industry. We agree with EPA's conclusions that current risks are acceptable and no advances in controls have occurred. However, we strongly disagree with EPA's proposed changes in the emission limits including the lb/ODTP limits which are based on a misinterpretation of industry data, are very costly (9 to 23 times more expensive than EPA estimates), and not cost-effective as section 112(d)(6) requires. In addition, the excess emission allowances should be retained as essential to the safe operation of mills (we plan to provide more information on venting experiences by June 27, 2012). As a result, EPA should retain the current requirements in Subpart S.

AF&PA stands ready to assist as EPA continues its work on this rule. If you have any questions about these comments or need additional information, please do not hesitate to contact Tim Hunt at 202-463-2588.

TAB 2

American Forest & Paper Association

July 27, 2012

Ms. Gina McCarthy
Assistant Administrator for Air & Radiation
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: Docket ID No. EPA–HQ–OAR–2007-0544, National Emission Standards for Hazardous Air Pollutants From the Pulp and Paper Industry (76 Federal Register 81328, December 27, 2011)

Dear Assistant Administrator McCarthy,

The American Forest & Paper Association ("AF&PA") appreciates the opportunity to submit supplemental comments on the Proposed National Emission Standards for Hazardous Air Pollutants From the Pulp and Paper Industry (76 Fed. Reg. 81,328, December 27, 2011) (the "Proposed Rule"). These comments provide additional information in response to EPA statements and requests for comments in the preamble to the Proposed Rule concerning the provisions of the existing Pulp and Paper MACT standards, 40 C.F.R. Part 63 Subpart S, related to excess emission allowances for periods of venting of non-condensible gases (NCGs) and steam stripper downtime, and related provisions for equipment startup, shutdown, and malfunction. See 76 Fed. Reg. at 81,346.

These comments supplement comments AF&PA filed on the Proposed Rule on February 27, 2012 (the "AF&PA RTR Comments"). The Proposed Rule raised issues about the excess emission allowance provisions that had not been discussed with EPA during the development of the Proposed Rule and asked numerous questions about industry practices that called for the collection of additional information. In your February 22, 2012 letter to me, EPA agreed to consider information regarding excess emission allowances, including the results of a survey to be conducted by the National Council for Air and Stream Improvement, Inc. (NCASI) and "any other relevant information" received by June 27, 2012, in deciding how EPA should proceed with the excess emission allowance provisions.

These comments submit the results of that NCASI survey, which was developed with input from EPA's Office of Air Quality Planning and Standards, in the attached NCASI report, "The Collection and Transport of Noncondensible Gases (NCG) in

NCG Systems at Pulp and Paper Mills." The NCASI Report also provides important explanatory information about the production process and pollution control operations at pulp mills that is critical for an understanding of why the existing Subpart S standards are written the way they are and of the implications of any changes EPA might make to those standards. The following discussion further explains some of the key implications of the NCASI Report and presents AF&PA's position on what actions EPA is authorized to and should take with respect to the Subpart S standards.

AF&PA believes that the information and arguments supplied here strongly support the conclusion that the excess emission allowances and related provisions of the current Subpart S regulations were consistent with the Clean Air Act and with the performance of best-performing mills representing the "MACT floor" when they were promulgated, and that they continue to be so today. We want to emphasize that the OAQPS staff, none of whom were involved in the development of the existing Subpart S regulations, have made a great effort to understand the complexity of chemical pulp mill operations and of the various compliance options the regulations currently provide and the reasons for those options. After your staff have considered the information submitted here, AF&PA is ready and willing to continue our dialogue and attempt to further EPA's understanding of the regulated facilities.

Background

The National Emission Standards for Hazardous Air Pollutants for the Pulp and Paper Industry, 40 C.F.R. Part 63 Subpart S, require that various processes in the pulp mill be enclosed and vented into a closed-vent system and routed to a control device. The regulations provide that periods of excess emissions must be reported but will not be considered a violation if, for each semi-annual reporting period, the time of excess emissions (excluding periods of startup, shutdown, or malfunction) divided by the total process operating time does not exceed 1% for control devices used to reduce emissions from the low volume, high concentration system and 4% for control devices used to reduce emissions from the high volume, low concentration system (or used for both LVHC and HVLC systems). 40 C.F.R. § 63.443(e). For control devices used to treat pulping process condensates (wastewaters) from specified pulp mill processes, the excess emission allowance (including periods of startup, shutdown, or malfunction) is 10%. 40 C.F.R. § 63.446(g). In addition to continuous monitoring of the control devices, the regulations require indicators on closed-vent system bypass lines, periodic inspections for leaks, procedures for prompt repair of defects in the enclosures or piping, inspection and maintenance recordkeeping, and so forth.

As explained in the AF&PA RTR Comments, the excess emission allowance provisions in the current Subpart S regulations reflect EPA's careful determination, after years of study of a large quantity of emissions information and public comments, that the "MACT floor," representing the emissions of the "best performers," includes emissions during unavoidable periods of releases of uncontrolled or partially controlled pulping process vent gases and unavoidable sewering of untreated or partially treated pulping process condensates. See 63 Fed. Reg. 18,504, 18,529 (April 15, 1998). "EPA established appropriate excess emission allowances to approximate the level of backup control that exists at the best-performing mills and the associated period of time during which no control device is available." *Id*. After "an analysis of the public comments and the available data regarding excess emissions and the level of backup control in the industry," EPA determined that the "best-performing mills achieve a one percent downtime in their LVHC system control devices" and "best-performing mills achieve a four percent downtime in the control devices used to reduce emissions from their HVLC system to account for flow balancing problems and unpredictable pressure changes inherent in HVLC control systems." *Id*. "The allowances address normal operating variations in the LVHC and HVLC system control devices for which the equipment is designed. The variations would not be considered startup, shutdown, or malfunction under the Part 63 General Provisions…." 63 Fed. Reg. at 18,530 (emphasis added). The 10 percent excess emission allowance for steam strippers systems "accounts for stripper tray damage or plugging, efficiency losses in the stripper due to contamination of condensate with fiber or black liquor, steam supply downtime, and combustion control device downtime." *Id*.

EPA adopted the excess emission allowances after reviewing extensive data from continuous monitoring systems and considering industry comments that although some mills had backup combustion devices as part of their LVHC control system, venting of pulping gases is an essential safety practice (because of their explosion hazard) even for those systems with backup control devices, since the startup of, and transfer of vent gases to, the backup controls cannot be immediate or automatic for safety reasons, and operating variability in the control devices themselves was unavoidable for process and other reasons. See, e.g., Pulp, Paper and Paperboard Industry – Background Information for Promulgated Air Emission Standards – Final EIS, EPA-453/R-93-050b (October 1997) ("BID") at 4-81, 4-82 to 4-84. For HVLC systems, few mills had backup controls that could handle the large volume of vent gases, so any standard that required the use of backup devices would have been beyond the MACT floor and would not have been cost-effective due to the low concentration of pollutants in the large gas stream. See 63 Fed. Reg. at 18,529; BID at 4-81 to 4-82. See also BID at p. 1-41 ("EPA established excess emission allowances to approximate the level of downtime and number of backup control devices that exist at the best-performing mills. The Excess emissions allowances are designed to account for periods when the control device is inoperable and when the operating parameter values established during the initial performance test cannot be maintained due to problems with the process.").

In short, the MACT determinations that EPA made when promulgating the Subpart S emission standards correctly concluded that available technology involves unavoidable periods where not all vent gases or condensates can be routed to the control device, and/or when the control device is inoperable or necessarily operating at a reduced rate. The Subpart S emission standards (including the excess emission allowances) were designed to reflect the performance of the MACT technology and the actual performance of the "best performing" mills. Without the excess emission allowances, the remainder of the Subpart S emissions standards would have imposed limitations not achieved even by the "best performers" and not demonstrated as achievable at any facility. The NCASI Report submitted with these comments reinforces those conclusions.

The Proposed Rule

In the December 27, 2011 Proposed Rule, EPA proposed a significant change to the excess emission allowance provisions of the Subpart S standards: EPA proposed to remove the parenthetical clause in 40 C.F.R. § 63.443(e), "(excluding periods of startup, shutdown, or malfunction)." The effect of this proposed change would be to make the excess emission allowance provisions of the Subpart S standards for NCG systems significantly more stringent, because not only would normal operating variations in the LVHC and HVLC system leading to excess emissions have to fall below 1 percent or 4 percent, respectively, of the operating hours, but in addition periods of startup, shutdown, and malfunction (which were not intended to be addressed by the excess emission allowance provisions, see 63 Fed. Reg. at 18,530, quoted above) would have to be less than those percentages, as well.

EPA stated, in the preamble to the Proposed Rule: "In proposing the standards in this rule, the EPA has taken into account startup and shutdown periods and is not proposing a different standard for those periods. Nothing in the record suggests that the operations (and attendant emissions) are significantly different during startup or shutdown than during normal operation. Periods of startup, normal operations and shutdown are all predictable and routine aspects of a source's operations. However, by contrast, malfunction is defined as a "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 * * *" (40 CFR 63.2). The EPA has determined that CAA section 112 does not require that emissions that occur during periods of malfunction be factored into development of CAA section 112 standards." 77 Fed. Reg. at 81,346.

In addition, in the preamble to the Proposed Rule EPA indicated that it was considering changing or removing the excess emission allowance provisions of the Subpart S rule more generally: "We request comment on whether these provisions should be removed or modified in the final rule, as the provisions create time periods during which a source does not have to comply with a CAA section 112-compliant standard, which we believe is arguably at odds with [*Sierra Club v. EPA, 551 F.3d 1019 (D.C. Cir. 2008), cert. denied, 130 S. Ct. 1735 (2010)*]." 76 Fed. Reg. at 81,346. EPA explained that the excess emission provisions for LVHC, HVLC, and steam stripper systems were intended to reflect the performance of best-performing mills [and therefore reflective of the "MACT floor"], but EPA did not offer any explanation of how it could remove those excess emission provisions without violating Clean Air Act requirements that EPA must either base MACT standards on the performance of the best-performing mills or justify beyond-the-floor standards. See *id*. EPA sought considerable information about how the excess emission allowances in the existing Subpart S. standards are used, how facilities distinguish between routine venting and malfunctions, etc. *Id*. These comments and the attached NCASI Report attempt to respond to those questions. See NCASI Report – discussion in item # 3, p.23.

<u>EPA Lacks Authority To Change the Excess Allowance Provisions</u>

As a threshold matter, AF&PA wishes to reiterate its position, expressed in the AF&PA RTR Comments, that the Clean Air Act does not authorize EPA to revise the excess emission allowance provisions, either by eliminating those provisions or adding additional conditions to them, as EPA has indicated it is contemplating, or by removing the exclusion for SSM periods and thereby forcing mills to use the 1% and 4% venting allowances for SSM periods as well as for routine operating events that trigger intermittent NCG venting, as EPA has proposed.

The Proposed Rule generally reflects EPA's efforts to consider whether additional emission limitations are necessary to address residual risk, under CAA section 112(f), and whether changes to the MACT standards are "necessary" in light of "developments in practices, processes, and control technologies," under CAA section 112(d)(6). EPA has determined that the minimal residual risk after implementation of the MACT standards does not justify additional requirements under section 112(f). With respect to the technology review under section 112(d)(6), nothing has changed about the technology available to control volatile HAP emissions at pulp mills that eliminates the unavoidable excess emission the events that EPA accurately described and addressed when promulgating the current MACT standards—a fact confirmed by the NCASI Report. Absent such new technology, there is no statutory predicate for EPA to go back and change the MACT standards at this time. *Cf*. *NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008) (rejecting contention that CAA section 112(d)(6) requires EPA to "start from scratch" and develop new MACT standards). To the contrary, Congress (1) did not provide for periodic review and revision of MACT standards (other than the 8-year technology review under CAA section 112(d)(6)), as it has for many other types of standards under the Clean Air Act and other environmental statutes, and (2) made the MACT standards subject to a strict 60-day deadline for seeking judicial review, under CAA section 307(b), so that sources would have certainty about what standards they face.

Note that, even if the Clean Air Act allowed EPA to second-guess and revise the existing MACT standards, EPA has no technical basis for eliminating the Subpart S excess emission allowances. An agency cannot simply change its mind and reach a diametrically opposed conclusion from the determination it made in a prior rulemaking. Rather, EPA must demonstrate sufficient basis for changing its prior conclusions; in this case, technical justification for concluding that mills with MACT do not experience the unavoidable variability accommodated by the excess emission allowance. See, e.g., *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502 (2009) ("a reasoned explanation is needed for disregarding facts and circumstances that underlay…the prior policy"); *Transactive Corp. v. United States*, 91 F.3d 232, 237 (D.C. Cir. 1996).

In the case of standards under CAA section 112(d), EPA not only would have to have a substantial technical basis for reversing its conclusions reflected in the current Subpart S standards, it also would have to demonstrate that the revised standards would reflect the MACT "floor" or are justified as "beyond-be-floor" requirements. As AF&PA's RTR Comments showed, EPA has not made any effort to show that the elimination of the SSM portion of the NCG venting allowances in 40 C.F.R. § 63.443(e) would be consistent with the performance of the best-performing mills that characterized the MACT floor when the Subpart S standards were promulgated (or the current best-performers, for that matter). Nor has EPA assessed elimination of the SSM provision as a beyond-the-floor technology.

The same would be true of eliminating or narrowing the excess emission allowances for NCG systems and steam strippers. Before EPA could propose such a change to the Subpart S. standards, EPA would have to show how emission limitations that did not include those excess emission allowances reflect the MACT floor (despite EPA's conclusion in 1998 to the contrary) or are justified as a beyond-the-floor requirement.

<u>The Excess Emission Allowances Have a Firm Basis in Fact and Law</u>

In the preamble to the Proposed Rule, EPA stated that the existing Subpart S excess emission "provisions create time periods during which a source does not have to comply with a CAA section 112-compliant standard, which we believe is arguably at odds with *Sierra Club*." 76 Fed. Reg. at 81,346. That is simply wrong, on several levels.

First, the *Sierra Club* decision interpreted the NESHAPs General Provisions, not the Subpart S NESHAPs or indeed any categorical NESHAPs. Secondly, the decision addressed an exemption for startups, shutdowns, and malfunctions, while the

Subpart S excess emission provisions for pulping vent gases specifically does not address excess emissions during startup, shutdown, and malfunction (see 40 C.F.R. § 63.443(e)).

Thirdly, the *Sierra Club* decision rejected the General Provisions' blanket, open-ended exemption for emissions during startup, shutdown, and malfunction periods, finding it to be inconsistent with Congress's intention that "there must be continuous section 112-compliant standards" for sources subject to MACT standards, rather than periods where no standard of any kind applies. See 551 F.3d at 1027. The problem with the General Provisions SSM exemption, in the Court's eyes, was that it allowed sources to be exempt from any standard at all, and that it was not derived (by EPA's admission) applying the factors in CAA section 112(d) or 112(h). See *id*. at 1027-28, 1030. The *Sierra Club* opinion did not address a situation, such as the Subpart S standards, where EPA finds that the MACT standard, which applies continuously, must account for periods of higher emissions during unavoidable operational variability to accurately reflect the available technology and the best performers' emissions. In fact, the *Sierra Club* decision explicitly acknowledged that it may be appropriate for MACT standards to have different limitations for different situations. See 551 F.3d at 1021; *id*. at 1027 (standard may "'assure continuous emission reduction' without necessarily continuously applying a single standard").

The excess emission allowances in the existing Subpart S rule are no different conceptually than other emission standards EPA has established for scores of sources that are expressed as an average calculated over a day, a month, or longer.[1] MACT standards that require a source to meet a particular emission rate measured as, e.g., a 30-day average do not require that the source emit at any specific rate during each hour of operation, so long as the 30-day average is below the limit. EPA effectively recognized this in the preamble to the Proposed Rule, asking whether the events currently covered by the excess emissions allowances in the Subpart S rule can be addressed through an emission standard with a longer averaging time. See 76 Fed. Reg. at 81,346. Such emission limitations expressed as averages, about which there can be no reasonable question as to their validity under CAA section 112, are no more (or less) compliant with the D.C. Circuit's

[1] Many MACT standards, including "all past part 63 NESHAPs affecting the chemical and refining sectors," use daily averaging periods (see 77 Fed. Reg. 17,898, 17,963 (March 26, 2012), and it is not uncommon for MACT standards to allow averaging over a month or a year. See, e.g., 40 C.F.R. §§ 63.491(c), 63.3522 (MACT standards for Surface Coating of Metal Cans requires demonstration of compliance with limit on HAP content of coatings, or emission rate if using control equipment, as a rolling 12-month average determined on a monthly basis); 40 C.F.R. § 63.2840 (MACT standards for Vegetable Oil Production require facilities to meet limit on gallons of HAP lost per ton of oilseeds processed, expressed as ratio of actual gallons lost during previous 12 months to allowable); 68 Fed. Reg. 19375, 19378 (Apr. 21, 2003) (Reinforced Plastic Composites Production) (compliance based on weighted HAP emission factor based on a 12-month rolling average calculated monthly).

interpretation that MACT standards must meet a section 112-compliant standard at all times than are the Subpart S standards, which require that, e.g., LVHC systems stay within the specified limits at least 99% of the time for each six-month period.[2]

To put it another way, If one assumes that six months equals 180 days or 4320 hours, the 1% excess emission allowance the existing Subpart S standards provide for LVHC systems means that a mill would be allowed, at most, to exceed the emission limitations for LVHC systems a little over 43 hours in a six-month period. Even if the mill's LVHC NCG emissions were not controlled at all during those 43 hours, and even if the mill's LVHC system were emitting just at the Subpart S emission limitation of 98% volatile HAP reduction for the remaining 4277 hours, that would still be equivalent to an average 97% reduction of volatile HAPs during the six-month period. Since EPA has issued many MACT standards that allow averaging over a day, a month, or more, EPA has no basis for claiming there is something inconsistent with the Clean Air Act about the excess emissions allowances in the Subpart S standards, which are functionally equivalent to, e.g., a 97% reduction standard for LVHC gases, expressed as a six-month average.[3] In fact, EPA has specifically used averaging times to accommodate process variability, as it did with the excess emission allowances in the Subpart S rule, in other MACT rulemakings.[4]

Without the excess emission provisions, the Subpart S standards would not comply with CAA section 112. Section 112(d) standards based upon the performance of the best-performing facilities are supposed to represent "the emissions control that is achieved in practice" by the best performers, which means that the best-performing mills would not violate the standards, which “only results if ‘achieved in practice’ is

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[2] EPA has promulgated numerous other MACT standards that are even more directly comparable to the excess emission allowances in Subpart S, in that they allow a source to exceed the numerical limit with a certain frequency. See, e.g., NESHAPs for Catalytic Cracking Units at Petroleum Refineries, 40 C.F. R. pt. 63 subpt. UUU Table 6 (sources subject to NSPS must “maintain[] each 6-minute average [opacity] at or below 30 percent except that one 6-minute average during a 1-hour period can exceed 30 percent”)—effectively a 10% excess emission allowance.

[3] EPA also has issued many New Source Performance Standards under CAA § 111 that are expressed in terms of long averaging times, and which rely on the same definition of “emission limitation” that the *Sierra Club* court relied on in striking down the NESHAP General Provisions. See, e.g., 40 C.F.R. § 60.72a (emission limit for Nitric Acid Plants expressed “as a 30-day emission rate calculated based on 30 consecutive operating days”) 77 Fed. Reg. ___ (signed May 14, 2012).

[4] See, e.g., 66 Fed. Reg. 44217, 44225 (Aug. 22, 2001) (Boat Manufacturing) (“one of our objectives was to provide flexibility to use some higher HAP materials by adopting the averaging provisions and using weighted-average HAP contents in setting the MACT for each operation.”); 65 Fed. Reg. 15,690, 15,699 (March 23, 2000) (Secondary Aluminum) (3-day, 24-hour rolling average selected to accommodate variations in cycle times and schedules).

interpreted to mean 'achieved under the worst foreseeable circumstances.'" *Sierra Club v. EPA*, 167 F.3d 658, 665 (D.C. Cir. 1999). The courts (and EPA) have recognized that there is variability in the performance of control technologies, which needs to be accounted for in establishing emission limitations based on the MACT floor. See, e.g., *Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855, 862-865 (D.C.Cir.2001). As the record (including, now, the NCASI Report) reflects, it is certainly foreseeable that even the best performers would experience violations of the MACT standards, due to process variability and control technology limitations, without an excess emission allowance.

It should be emphasized that the excess emission allowances in the current Subpart S standards do not result in periods where emissions from NCG and condensate streams are subject to no restrictions at all. Obviously, a mill could only tolerate a small amount of equipment downtime or unavoidable venting and still stay under the percentage allowances. The Subpart S regulations contain numerous obligations that continue to apply irrespective of the excess emission allowances, e.g., indicators on closed-vent system bypass lines, periodic inspections for leaks, procedures for prompt repair of defects in the enclosures or piping, inspection and maintenance recordkeeping, and so forth. In addition, the mill's operation remains subject to the "general duty" in 40 C.F.R. § 63.6(e) to operate and maintain the affected sources, and associated air pollution control and monitoring equipment, consistent with safety and good air pollution control practices for minimizing emissions. Similar requirements apply under the laws and regulations of many states, and the mill may also be subject to state emission limitations, or limitations under NSPS or other applicable regulations, that restrict emissions from the mill. (See, e.g., reference to the State of Maine's TRS control regulations in the NCASI Report at p.30) Moreover, since the NCG and condensate systems have the potential for causing releases of objectionable odor to the community, as well as potentially harmful worker exposures, kraft pulp mills must continually strive for reducing emissions from those streams. The potential for triggering releases of reportable quantities under the Emergency Planning and Community Right-to-Know Act provides yet another restraint on venting. The venting events described in the NCASI Report therefore represent the minimal emissions that are unavoidable using best practices, and subject to the restraints not only of the Subpart S standards but also numerous other requirements or incentives for the mills to minimize emissions.

Finally, even if the current Subpart S standards were inconsistent with the *Sierra Club* decision, which the discussion above shows they clearly are not, that fact alone would not allow EPA to change the excess emission allowance provisions in the Subpart S rule. The Subpart S NESHAPs were never judicially challenged, and the time for such a challenge under CAA section 307(b) has long passed. Even if the rationale that the D.C. Circuit used in overturning a different regulation in one of the many cases challenging other NESHAPs is arguably inconsistent with the approach EPA took in promulgating the Subpart S NESHAPs, that would not provide a means or a justification for reopening the Subpart S standards that were never challenged on that grounds. See *id*. and, e.g., *Sierra Club v. EPA*, 353 F. 3d at 986 (MACT standards must be judged on the adequacy of EPA's explanation in the particular rulemaking, not on what EPA did based on a different record in a different rulemaking).

In short, the excess emission allowance provisions of the existing Subpart S standards not only are permissible under the Clean Air Act, they are necessary. The MACT floor performance includes unavoidable periods when mill operations preclude compliance with the limitations EPA established for steady-state operations, and so to reflect that performance the MACT standards need to accommodate those periods. EPA already has assessed—as past court decisions, including even the recent Sierra Club decision, have indicated it must—whether different emission limitations need to apply to those periods of operational variability and has addressed that need through the excess emission allowances in existing sections 63.443(e) and 63.446(g). No further EPA action is necessary.

<u>The Excess Emission Allowances Are *Not* Unauthorized Exemptions for Malfunctions</u>

In recent discussions with EPA OAQPS staff, EPA's default position seems to be that, with the possible exception of startup and shutdown periods, any venting of NCGs or sewering of condensates under the excess emission allowance provisions of the existing Subpart S standards is the result of a "malfunction," and therefore cannot be allowed by MACT standards. This is wrong on several levels. First, it is directly contrary to EPA's analysis of the facts in support of the current MACT standards, in which EPA stated: "The allowances address normal operating variations in the LVHC and HVLC system control devices for which the equipment is designed. The variations would not be considered startup, shutdown, or malfunction under the Part 63 General Provisions…." 63 Fed. Reg. at 18,530. From everything AF&PA is aware of, EPA's current, diametrically opposite conclusion is not based on any new analysis of data, making it necessarily arbitrary and capricious.

Secondly, both AF&PA's RTR Comments and the NCASI Report submitted with these comments explain, with real-world examples, why the excess emission allowances are necessary to reflect actual performance of even the best-performing mills, because of unavoidable fluctuations in the production processes and the NCG and condensate collection and treatment systems. See AF&PA RTR Comments at pp.53 - 57; NCASI Report at pp.15 - 20. EPA has not presented, and could not present, any factual basis to the contrary.

An easy-to-understand example is availability of a thermal destruction device used to comply with the emission standards for NCGs (and for off-gases from steam strippers used to treat condensates). In the original Subpart S rulemaking, EPA recognized that most mills did not have backup equipment for incinerating HVLC gas streams, and even if backup equipment was available for treating LVHC gas streams, there would be a period of uncontrolled emissions when switching to a backup thermal destruction device. The primary thermal destruction device might be unavailable for a number of reasons that have nothing to do with malfunctions, such as routine maintenance, the temporary loss of NCG burning permissives even though the device itself is operational, or, if a piece of process equipment is used as the primary thermal destruction device, because the associated process is not operating or is starting up or shutting down. Similarly, a steam stripper will, over time, have to be taken offline because of the temporary unavailability of the thermal destruction device, as described above, or to remediate ordinary clogging of the stripper trays (during which time the condensates typically are routed to the mill's wastewater treatment system, see NCASI Report at p.29). Even the best-performing mills do not have redundant stream strippers to avoid these periods when the stripper has to be offline.

These periods are not periods of malfunction, as defined in 40 C.F.R. § 63.2, because they are not "infrequent," they do not represent a "failure" of equipment "to operate in a normal or usual manner," and they are not "reasonably preventable." As recently as this March, EPA has reiterated that it is appropriate, in comparable situations, to establish alternative MACT standards, rather than claiming, as the preamble to the Proposed Rule implied, that such situations cannot be accommodated by MACT standards and must not only be considered malfunctions but also be treated as violations.[5] The NCASI Report presents numerous examples, in addition to and further explaining the examples in the AF&PA RTR Comments, about why the NCG or condensate collection and treatment systems at a pulp mill may not be able to meet the Subpart S emission limits and performance standards due to routine events that are part of expected process and pollution control variability and for which the system is designed. See, e.g., NCASI Report at pp. 15 - 20.

EPA's position in the original Subpart S rulemaking that the excess emission allowances are necessary "to address normal operating variations in the LVHC and HVLC system control devices for which the equipment is designed" and would not be considered malfunctions, 63 Fed. Reg. at 18,530, is consistent as well with

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[5] See 77 Fed. Reg. at 17,923 ("As in current rules, we are proposing to require different standards for periods of planned routine maintenance of the control device. We are not proposing to require compliance with the same standard at all times because the cost of such a requirement would be unreasonable. Instead, we are proposing to prohibit the addition of material to the storage vessel during periods of planned routine maintenance and to limit the time of planned routine maintenance to less than 360 hr/yr. If you need more than 240 hr/yr, you would be required to keep a record documenting why 240 hours is insufficient and the steps you took to minimize the additional time for planned routine maintenance.")

information the industry provided in comments on the proposed Subpart S. regulations. AF&PA's comments stated that the definition of "malfunction" and the malfunction exemption in the NESHAPS General Provisions would not cover the excess emissions for which an allowance was sought for "the process venting we have described since these episodes are not generally considered by the industry or regulatory officials to be malfunctions, in the sense that that term conveys technical limitations of pollution control equipment. These are truly situations of process variability. Thus, the agency must provide for excess emissions venting during these minimal periods of process equipment downtime." AF&PA Comments, April 18, 1994, at MACT-64. Nothing has changed, and in fact the information in the NCASI Report provides further support for this conclusion. NCASI Report at pp. 15 – 20. EPA has no factual basis for concluding otherwise.

Note that EPA has recognized similar situations, where a facility experiences non-standard operating conditions which are not malfunctions. For example, in proposed National Uniform Emission Standards for Storage Vessel and Transfer Operations, Equipment Leaks, and Closed Vent Systems and Control Devices, March 26, 2012, 77 Fed. Reg. 17,898, proposed 40 C.F.R. § 65.925 recognizes that "nonstandard batches" can occur in chemical processing that do not represent "malfunctions":

> Nonstandard batch means a batch process that is operated outside of the range of operating conditions that are documented in an existing operating scenario, but is still a reasonably anticipated event. For example, a nonstandard batch occurs when additional processing or processing at different operating conditions must be conducted to produce a product that is normally produced under the conditions described by the standard batch. A nonstandard batch may be necessary, as a result of a malfunction, but it is not itself a malfunction.

77 Fed. Reg. at 17,984.

Finally, even if none of the facts presented in AF&PA's 1994 comments, the AF&PA RTR Comments, and the NCASI Report existed, and EPA instead had some basis for asserting that all of the (non-startup or -shutdown) events covered by the excess emission allowances in the existing Subpart S rule are malfunctions, that alone still would not justify deleting the excess emission allowance provisions from the rule. Despite EPA's implication, nothing in the 2008 *Sierra Club* decision said that malfunctions cannot be considered when setting emission standards. Nor did the decision say that MACT standards cannot accommodate malfunctions, through a separate numerical standard under CAA section 112(d) or through a design, equipment, work practice or operational standard under CAA section 112(h).[6] To

[6] As AF&PA's RTR Comments noted, in the Proposed Rule EPA did not even consider the latter, which made EPA's proposed decision to treat all malfunctions as *per se* violations arbitrary and capricious.

the contrary, the *Sierra Club* decision acknowledged the possibility of having more than one MACT standard that would apply to different circumstances and of having design, equipment, work practice, or operational standards that applied in lieu of limitations on the amount or concentration of pollutants emitted. See 551 F.3d at 1021, 1027-28.

<u>The Excess Emission Allowances Are Necessary To Address Periods of Startup and Shutdown</u>

The current Subpart S emission standards contain an exemption for excess emissions of NCGs related to startup and shutdown (and malfunction). EPA determined that this exemption was necessary in addition to the excess emission allowance in 40 C.F.R. § 63.443(e). Excess emissions during startup and shutdown are not exempted from the pulping condensate steam stripping requirement, but only because EPA did not have data to distinguish those situations from “normal stripper operating emissions.” See 72 Fed. Reg. at 18,529-30. In the preamble to the Proposed Rule, however, EPA stated, without explanation, that it had “taken into account startup and shutdown periods and is not proposing a different standard for those periods. Nothing in the record suggests that the operations (and attendant emissions) are significantly different during startup or shutdown than during normal operation.” 76 Fed. Reg. at 81,346. This appears to be just an arbitrary, unsupported rejection of EPA’s prior factual determinations.

In any event, it is inaccurate. Supplementing information in the docket for the original Subpart S rulemaking, the NCASI Report documents that startup and shutdown conditions at pulp mills are unlike normal operations and create distinct situations in NCG and condensate collection and treatment systems that result in intermittent venting episodes. NCASI Report at pp. 21 - 23. Additionally, startup or shutdown of a production process can result in unusual variability in the NCG or condensate system, resulting in higher emissions during startup or shutdown conditions, including intermittent venting, than occur during steady-state operations. *Id*.

EPA has repeatedly acknowledged that it has authority under CAA section 112 to promulgate different emission limitations for startup and shutdown periods than for steady-state operations. See, e.g., 75 Fed. Reg. 54,970, 54991-92 (Sept. 9, 2010) (Portland Cement); 76 Fed. Reg.72,220, 72,794 (Nov. 25, 2011) (proposed alternative limits for startup and shutdown in the Mineral Wool and Wool Fiberglass Manufacturing source category) So the Agency’s position for the Pulp and Paper Proposed Rule has to be not that it is precluded from establishing separate emission standards for startup and shutdown, but only that there is no need for such standards to accurately reflect the performance of the best performers. As explained above, the facts do not support that conclusion.

Since EPA is permitted to establish separate emission standards for startups and shutdowns, unless the Agency has a clear justification for departing from its decisions in the original Subpart S rulemaking, EPA should not disturb the provisions of the existing rules that address emissions during startup and shutdown. If EPA ignores the admonitions above about revising MACT standards and wishes to revise the standards that apply during startup and shutdown, EPA should develop, and propose for public comment, standards that reflect the criteria in CAA section 112(d) or in section 112(h). If EPA retains the excess emission allowances currently in the Subpart S regulations, it may be possible to fold startup and shutdown periods (as well as malfunctions) into the excess emission allowances for NCG systems, as EPA already did for steam strippers.

The NCASI Report Shows the Subpart S Excess Emission Allowances Are Justified

The NCASI NCG survey was conducted in order to answer specific questions raised by the EPA, in the December 27, 2011 proposal, on intermittent NCG venting that occurs during routine operations and is covered under the venting allowances in the existing Subpart S regulations. The NCASI report also provides a summary of the main characteristics NCG systems. While it is true that each individual NCG system is unique in the types of sources it collects, its configuration, and its accommodation of site-specific constraints, the same basic principles apply in designing and operating these systems. With this heterogeneity and complexity in mind, facilities were requested to provide qualitative information, based on prevailing process knowledge and experience, on the types of events triggering these intermittent venting episodes. Additionally, facilities were also requested to identify operating conditions or threshold operating parameters used to differentiate SSM venting events from those occurring during routine operation. ***A total of 81 kraft mills responded to the survey***. The NCASI report, provided as item #1 in the Appendix, analyzes the survey responses and draws collective conclusions on the types of events triggering intermittent venting.

Survey responses indicate that routine venting events can largely be attributed to process variability. As facilities have gained more experience in operating NCG systems, they have progressed along the learning curve in managing some of this process variability. However, it is impossible to eliminate all sources of process variability – hence the term inherent. Inherent process variability is an expected facet of day-to-day continuous operations, cannot be mitigated through better equipment design, and is inevitable. In fact, system designers expect this inherent variability – this is the reason why they design "fail-safe" / "fail-open" control systems to alarm and subsequently vent when the potential for unsafe conditions exist within these systems. This is the same reason why insurance companies and technical committees like the Black Liquor Recovery Boiler Advisory Committee provide comprehensive recommendations on how best to design and operate these systems.

The primary objective of the NCG control system and associated interlocks is to (a) prevent NCGs from approaching flammability limits, (b) minimize the potential for unsafe conditions in the transport system and at the thermal destruction device, and (c) maintain safety and system integrity and prevent explosions. The network of alarms designed into NCG systems serves to provide operating boundaries for facilities and greatly minimizes venting episodes. These alarms also facilitate the secondary, but equally important, objective of minimizing the release of TRS compounds that cause objectionable odor in the community. In spite of tight control and operation, circumstances do arise that result in the tripping of vent thresholds. Given the primary objective of promoting safety and preventing explosions, facilities have no option but to mitigate these conditions using “fail-safe” strategies, viz., through intermittent venting.

Key takeaways from the NCASI survey are summarized below. More details and data are provided in the attached report.

1. ***Intermittent venting episodes can occur during routine or normal operation.*** These events are triggered by the expected inherent process variability and by transient conditions in the collection, transport, and conditioning equipment. This results in the tripping of safety and system integrity interlocks. These venting episodes and the events that trigger them are not malfunctions of associated equipment, because the systems continue to operate as designed and within expected ranges. These venting episodes are critical to maintaining system integrity and preventing catastrophic scenarios that could result in unsafe conditions for workers, equipment damage, and explosions.

   Inherent process variability is an expected component of day-to-day manufacturing processes. System designers expect this variability and design control/interlock systems to ensure safe operation in spite of this variability. If this variability were unexpected and uncharacteristic of these systems, there would be no need to design and implement “fail-open” control strategies.

2. ***Intermittent venting can also be caused by Startup and Shutdown (SS) events.*** In the context of the NCG system, Startup and Shutdown (SS) conditions are distinct and therefore unlike routine operations.

   – A subset of SS conditions trigger distinct interlocks and permissives within the NCG transport system or sub-systems, thus resulting in intermittent venting episodes.
   – Some of the intermittent venting during SS conditions can also be attributed to increased levels of process variability not expected or observed during routine operation.

   NCASI survey responses indicate that SS conditions trigger distinct scenarios within the process and within the NCG system. In other words, SS conditions are distinctly different from conditions that prevail during routine operation. Additionally, SS conditions result in unusually high levels of variability within the system, at levels that are not typically observed during normal operation. These high levels of variability during SS conditions cannot be avoided. It is therefore inappropriate to consider SS conditions to be similar to normal operation. EPA's premise in removing the SSM exclusions, specifically SS exclusions for NCG venting, was that "….nothing in the record suggests that the operations (and attendant emissions) are significantly different during startup or shutdown than during normal operation." 76 Fed. Reg. at 81,346. As discussed earlier, the survey results speak to the contrary, as it pertains to unit operations in pulp and paper mills and, specifically, NCG systems. NCASI survey responses indicate that SS conditions are indeed distinct as it pertains to the NCG collection and transport system and can trigger distinct operating conditions, non-steady-state operations, and interlock exceedances. Likewise, SS conditions affect steam stripper operations and justify the excess emission allowance covering steam stripper SS periods that is in the current Subpart S regulations.

3. ***The majority of mills use threshold parameters to differentiate routine operating periods from startup and shutdown (SS) periods. Others have defined specific actions that are required to be carried out in order to startup or shutdown a piece of equipment or process, thus differentiating the two.***

   NCASI survey responses indicate that facilities utilize varying approaches to distinguish SS periods from routine operation. While some facilities use threshold parameters, others make the distinction by assessing the completion of a pre-defined set of tasks before the process can be termed "normal and ongoing" as opposed to under "SS." Given the fact that SS conditions are distinct, clearly differentiated, and trigger distinct conditions within the NCG system, AF&PA contends that EPA needs to preserve the venting allowances for these periods. Eliminating the SS venting allowances would seriously jeopardize safety and system integrity. It would effectively undo a decade worth of hard work and learning that the industry has developed and implemented, in the design and safe operation of these systems.

4. ***Survey results indicate that problems related to transport system equipment (gas conditioning equipment, sensors, and fiber/liquor separation equipment) are as prevalent as malfunctions related to process equipment and thermal destruction devices.*** Given the ability to isolate sub-systems, the former are less disruptive to overall NCG system operation than the latter. Transport system equipment problems also can be triggered by inherent process variability. Adequate consideration of the triggering events is therefore justified, before classifying all these as malfunctions as defined by the rule.

NCASI survey results indicate that equipment malfunctions can fall into broadly variant categories. Those related to sensors, NCG conditioning and monitoring equipment etc., are distinctly different from those related to process equipment and control devices. The former are less disruptive, given the ability to isolate sub-systems and continue to operate the remainder of the system normally.

Additionally, some problems with NCG sensing and conditioning equipment are the direct result of process variability (like foam and fiber carryover, steam supply variability, etc.) and cannot be considered as events that are "sudden, infrequent, and not reasonably preventable." First, given that inherent process variability is not reasonably preventable, these events also would not be reasonably preventable. More importantly, these events also have the potential to recur given that they are directly caused by process variability, i.e. it would be impossible to assure that these events are infrequent. It is therefore inappropriate (and too simplistic) to group all these problems with transport system equipment into a single category.

AF&PA recommends that EPA draw additional distinctions when categorizing malfunctions and its applicability of affirmative defense provisions. Events related to transport system and conditioning system equipment that are attributed to process variability should not be categorized as malfunctions as defined in the rule.

5. ***Steam stripper downtimes do not reflect "no HAP control" scenarios.*** Facilities routinely route their condensates to biological wastewater treatment systems during steam stripper downtime periods and thereby continue to achieve high levels of treatment for methanol and major non-methanol HAPs.

6. ***A handful of states impose limits on the duration of individual LVHC system vents.*** An example is the 40 minute limit imposed by the state of Maine.[7] Individual LVHC system vents in Arkansas, Oregon, and Alabama are limited to 30, 60, and 240 minutes, respectively.

Other pertinent takeaways relating to specific technical and operational aspects of NCG systems are as follows:

7. ***Intermittent venting is a consequence of "Fail-safe" systems, interlocks, and system permissives.*** These interlocks and the resulting intermittent venting are an essential "first line of defense" against system failures and potential hazardous conditions, including catastrophic explosions. Some are attributed to inherent process variability, others to SS conditions, and a third category can be the result of malfunctions.

8. ***Interlocks and permissives are essential components of any NCG system.*** These protections are designed into systems in order to prevent equipment damage, injuries, and potential fatalities. These are integrated into system design and considered as "prerequisites of insurability" by insurance companies. As discussed earlier, the BLRBAC recommendations and Factory Mutual Guidelines on the design and operation of NCG systems, both illustrate the importance of these permissives. Their suggested guidelines are widely followed in designing these systems and in carrying out insurance audits.

9. ***Intermittent venting episodes that occur during normal operation frequently resolve themselves or can be resolved through effective system isolation.*** In fact, NCG system interlocks are designed to effectively isolate the source and prevent momentary exceedances from propagating throughout the system and causing a broader venting episode of the entire system. The ability to isolate and vent sub-systems protects overall system integrity and minimizes potential emissions.

[7] The State of Maine Department of Environmental Protection (Maine DEP), in comments filed for the RTR proposal, has opined that the EPA should maintain the venting allowances.

> Given the myriad of other state emission limitations, limitations under NSPS or other applicable regulations, etc. that constrain emissions from the mill, facilities have in place best operating and management practices to identify, as soon as practical, the source of an unresolved venting episode. These operating practices also include troubleshooting procedures, approaches to isolate sub-systems, and instituting corrective actions.

Possible Elimination of Excess Emission Allowances Is Extremely Costly and Unachievable

In the AF&PA RTR Comments, we presented the potential capital costs that might be imposed on mills if the current venting allowances were eliminated - $1.6 billion. The costs included redundant control costs and collection systems for both LVHC and HVLC systems as well as installation of back-up strippers. This analysis was done very quickly in light of the short comment period and reflected the best analysis possible given the available data and input from member companies.

Since February, we have had a little more time to gather information from member companies, discuss other control technology requirements and costs with EPA, and examine the EPA data base in more depth. This has allowed AF&PA to develop a revised estimate of the potential cost of eliminating the excess emission allowances - $750 million. As the cost estimate document explains (see Attachment 8), the number of mills affected and the unit cost of investments were lower for a couple of key categories of costs, especially upgrades to collection systems and existence of alternative control/combustion devices.

While the cost is lower, it is still a very significant cost for the industry, especially considering that EPA has concluded that risks from this source category (in an analysis that included emissions that occur under the current excess emission allowances) are acceptable and there is no legal reason to change the excess emission allowance. Furthermore, investment of these hundreds of millions of dollars will NOT eliminate all venting periods, since some are part of normal operations and cannot be prevented in all circumstances. Thus, our conclusion remains that elimination of the excess emission allowances is cost-prohibitive, unnecessary, and would severely impact the ability of pulp and paper mills to operate.

* * * * * *

AF&PA appreciates the opportunity to comment on these issues. AF&PA wants to acknowledge the tremendous effort that OAQPS staff has taken since the issuance of the proposal to better understand pulp and paper operations and how Subpart S has been implemented and works, since none of the current staff were involved in the original Subpart S rulemaking. They have made themselves available to discuss the data provided by our mills during the information collection request and the background analyses used to support the rule. As the attached information suggests, as well as our earlier comments, mill operations are very complex and each mill is unique given the array of equipment used, products made, and control options selected. AF&PA, NCASI and its member companies continue to stand ready to help explain the types and causes of venting that are inherent to our mill operations and provide information that is useful to the rulemaking proceedings.

Please direct any questions to Tim Hunt, AF&PA's Senior Director, Air Quality Programs, at (202) 463-2588 or at tim_hunt@afandpa.org.

Sincerely,

Paul Noe
Vice President for Public Policy

Enclosures

cc: Docket EPA-HQ-OAR-2007-0544
John Bradfield, EPA-RTP
Bill Schrock, EPA-RTP
Robin Dunkins, EPA-RTP
Peter Tsirigotis, EPA-RTP

LIST OF ATTACHMENTS

1. NCASI, The Collection and Transport of Noncondensible Gases (NCG) in NCG Systems at Pulp and Paper Mills: Background and Characteristics of NCG Systems and Summary of NCASI Survey Responses, June 27, 2012

2. Attachment A, NCASI Non Condensible Gas Venting Survey Questionnaire, May 2012

3. Attachment B, Recommended Good Practice Thermal Oxidation of Waste Streams in Black Liquor Recovery Boilers, The Black Liquor Recovery Boiler Advisory Committee (BLRBAC), February, 2012

4. Attachment C, NCASI, Experience with the Collection, Transport, and Burning of Kraft Mill High Volume Low Concentration Gases, August 2003

5. Attachment D, FM Global, Property Loss Prevention Data Sheets, January 2012

6. Attachment E, FM Global, Property Loss Prevention Data Sheets, May 2010

7. Attachment F, FM Global, Property Loss Prevention Data Sheets, May 2006

8. Cost Estimate for Elimination of Excess Emission Allowances, June 2012

    a. Attachment A to Cost Estimate, Excel File, Cost Estimate of Proposed Rules Changes to 40 CFR 63 Subpart S, Elimination of Excess Emission Allowances, June 2012

TAB 3

The Collection and Transport of Noncondensible Gases (NCG) in NCG Systems at Pulp and Paper Mills: Background and Characteristics of NCG Systems and Summary of NCASI Survey Responses

June 27, 2012

1.0 INTRODUCTION

Pulp and paper manufacturing utilizes an intricate network of interconnected processes. Unit operations are tied together by intermediate product flows, energy reuse, and chemical recovery cycles. Steam generated in power and recovery boilers is delivered to the process to satisfy system heat/energy demands. Recovered chemicals are brought back to the pulping and causticizing systems through the recovery cycle. There can be significant variability in operating rates, material throughputs, noncondensible gas generation, etc. at any one part of the mill. To some extent, throughput variability is ubiquitous and expected in continuous manufacturing operations. The interconnected nature of unit operations also contributes to variability. Many of these unit operations include multiple pieces of equipment, some operating in parallel, that create additional variability in flows, e.g., multiple batch digesters and blow tanks, operating on different cycles; multiple brownstock washers; and multiple pulp storage tanks feeding multiple paper machines.

Non-condensible gases (NCGs) generated in the pulping cycle are collected and transported in a complex and interconnected system, parts of which are under pressure while others are under vacuum. By virtue of their composition, these gases are potentially explosive and require extensive engineering controls to ensure safe handling. ***"Fail-safe" venting systems, interlocks, and permissives***[1] ensure that these gases are transported safely to the combustion device. These systems operate under very strict criteria designed to intermittingly vent to ensure that the system stays in balance and is operated without compromising worker safety or equipment integrity. There is also considerable heterogeneity in the components and configuration of NCG systems, viz., in the types and mix of sources collected, how the transport

[1] ***"Fail-Safe" Systems and Interlocks*** – An automatic control logic that results in an alarm or an automatic venting episode. Condition occurs when monitored parameter falls outside acceptable ranges. These systems are "fail-safe" because the venting event avoids a potential condition that compromises system integrity or results in an explosion. Non control logic / non computer controlled fail safe systems such as rupture disks, water loop seals, and P/V breakers, are also designed to vent if electronic systems fail. ***Permissives*** – A set of active conditions that need to be satisfied before NCG gases are introduced into the collection/transport system OR to the thermal destruction device, e.g., steam flow into steam ejectors and complete steam purge before introducing LVHC gases into transport system and control device.

and conditioning systems are configured to meet system-specific requirements and constraints, and the types of primary and secondary thermal destruction devices used.

As part of proposed amendments to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the pulp and paper industry [*FR 76 (247) 81328-81358, December 27, 2011*], EPA has proposed to eliminate language pertaining to Startups, Shutdowns, and Malfunctions (SSM) to be consistent with the Agency's interpretation of the ruling in Sierra Club v. EPA. (Sierra Club v. EPA, 551 F.3d 1019, DC Cir. 2008). Additionally, EPA has also requested comments on whether it would be appropriate to remove or modify currently available NCG venting allowances and steam stripper downtime provisions (40 CFR 63.443(e), 40 CFR 63.446(g), and 40 CFR 63.459(b)(11)(ii)) of the 1998 NESHAP). EPA has requested additional information on the characteristics and drivers of intermittent NCG venting and on how facilities differentiate venting that occurs during SSM periods from those that occur during normal operation (intermittent safety-related venting not related to SSM conditions). In response to EPA's request for information, NCASI has conducted a survey to better understand the drivers of intermittent NCG venting episodes at pulp and paper facilities.

2.0 NCASI SURVEY ON PULP AND PAPER NCG VENTING AND STEAM STRIPPER PRACTICES

The NCASI survey on NCG venting (NCASI survey) was distributed to NCASI and AF&PA member companies on April 30, 2012. The survey attempts to answer specific questions posed by EPA on the following aspects of NCG venting:

a. Events during routine or normal operation that trigger intermittent NCG venting
b. Startup, shutdown, and malfunction (SSM) events triggering intermittent NCG venting, and
c. Approaches used by facilities to differentiate normal operation (and associated venting episodes) from SSM conditions

Survey questions were reviewed by technical staff at EPA's Office of Air Quality Planning and Standards (OAQPS) prior to distribution. In response to a specific request by OAQPS during this review, the survey also requested information on other applicable restrictions imposed by States, if any, on recording, reporting, and classifying NCG venting episodes. The survey questionnaire is provided as **Attachment A**.

3.0 ORGANIZATION OF THIS DOCUMENT

This document provides a primer on the background and characteristics of NCG systems at pulp and paper mills, a compilation of available information on NCG constituents, and a discussion of the major design considerations involved in building and operating these systems. Secondly, industry responses to specific questions in the NCASI Survey are compiled along with associated observations and conclusions. In addition to summarizing the key takeaways from the NCASI survey, this report also includes the following documents in Addenda;

- Technical assessment report developed by the Black Liquor Recovery Boiler Advisory Committee (BLRBAC) on safety and control system considerations while burning flammable NCGs in recovery furnaces. This report further highlights the complexity of NCG transport systems and illustrates the need for adequately designed control systems to maintain system integrity and safety **(Attachment B)**.

- NCASI Special report 03-03 summarizing industry experience with HVLC systems. This report provides additional background information on NCGs and the various components that make-up LVHC and HVLC systems **(Attachment C)**.

- Selected compilations from Factory Mutual Insurance Company on recommended practices for the design, operation, and maintenance of chemical recovery furnaces, wood fuel boilers, and for the combustion of NCGs.[2] Specifically, FM global has provided suggested guidelines for the design of boiler pressure parts and burning of liquid fuels, gaseous fuels, and auxiliary fuels like NCGs. These documents are also used as guidelines when assessing insurability of systems (**Attachments D, E, and F)**.

4.0 BACKGROUND ON KRAFT MILL NCGs AND THEIR COMBUSTIBILITY[3]

Characterization studies carried out on kraft mill NCGs indicate that the main components are methanol, turpentine (predominantly α-pinene), hydrogen sulfide (H_2S), methyl mercaptan (CH_3SH), dimethyl sulfide (DMS) and dimethyl disulfide (DMDS). The sulfur compounds present in NCG are collectively referred to as total reduced sulfur (TRS) compounds. The NCGs are generated and released from pulping systems, turpentine recovery systems, brownstock washers, liquor evaporation, and liquor storage tanks.

4.1 Characteristics of combustible gases

The protection of personnel, public, and equipment remains in the forefront when designing collection and transport systems for NCGs, given its combustible components. Equipment designers evaluate the potential for explosions during the first step of the design phase. Several studies have been carried out in order to better understand the dangers

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[2] Designing piping for auxiliary fuel gas and LVHC gases – Data Sheets 6-5, Section 2.2 of 7-32, and 7-54
Designing ductwork for HVLC gases – Data Sheet 7-78.
Data sheets available for download at http://www.fmglobal.com/FMGlobalRegistration/Downloads.aspx

[3] Excerpts taken from NCASI Special Report 03-03 – "Experience with the collection, transport, and burning of kraft mill high volume low concentration gases," Vipin K. Varma, PhD, August 2003.

associated with transporting combustible gases. These studies indicate that the flammability and ignitability of combustibles are dictated by the five characteristics described below.

Lower Explosive Limit (LEL): The lower explosive limit (LEL) of a combustible component in a gas is defined as the minimum concentration by volume at which the gas ignites when provided with enough oxygen and an ignition source and continues to burn when the ignition source is removed.

Upper Explosive Limit (UEL): The UEL of a combustible component in a gas is the maximum concentration above which the gas will not ignite due to a lack of oxygen, even when provided with an ignition source.

Flammability Range: Combustible components in NCGs will ignite when their concentrations are in the range of percentages from the LEL to the UEL, if provided an ignition source.

Flame Propagation Speed: The speed at which the flame travels from the point of ignition, through a flammable vapor, along the length of a long pipe (such as the one used to transport NCGs to the combustion device).

Auto Ignition Temperature (AIT): The approximate lowest temperature at which a flammable gas or vapor-air mixture will spontaneously ignite without a spark or a flame.

4.2 Characteristics of Kraft Mill NCGs

Kraft mill NCGs are characterized based on the composition of the main constituents into four categories, viz., low volume high concentration (LVHC), high volume low concentration (HVLC), stripper off-gases (SOG), and chip bin vent gases. Extensive characterization studies have established the concentration ranges of main combustible components in these various streams.[4] The LEL and UEL values, flame speeds, and auto ignition temperatures for the main kraft mill NCG components are summarized in Table 1.[5] Main characteristics of these gases are summarized below.

LVHC gases (concentrated NCGs)

- Consist of relatively high concentrations of TRS compounds and air depleted of nearly half of its oxygen
- TRS compounds are typically present at concentrations in the flammable range i.e., between the LEL and UEL

[4] Burgess, T. L. 1998. Collecting and Burning Noncondensible Gases. Kraft Recovery Operations Short Course Proceedings. Section 4.2: 1-19. Atlanta, GA. TAPPI Press.
[5] Burgess, T. L., Kjerulf, E. B., and Tenn, T. I. 1984. Design Considerations for High Concentration Low Volume Noncondensible Gas Systems. TAPPI Journal 67(9): 92-96.

- Since these gases do not contain sufficient oxygen to allow for ignition, LVHC systems are designed with the objective of minimizing air ingression and thereby reducing the explosion hazard.
- LVHC gases are therefore transported using steam, instead of air, as the motive force.

Table 1. Combustion Properties of Kraft Mill NCGs in Air [5]

Compound	Explosive Limits, % volume		Flame Speed, ft/sec (m/sec)	Auto Ignition Temp, °F (°C)
	LEL	UEL		
H_2S	4.3	45.0		500 (260)
CH_3SH	3.9	21.8	1.8 (0.55)	
CH_3SCH_3 (DMS)	2.2	19.7		400 (206)
CH_3SSCH_3 (DMDS)	1.1	8.0		572 (300)
α-Pinene	0.8	6.0	500 (154)	487 (253)
Methanol	6.7	36.5	1.5 (0.5)	867 (464)

Stripper off-gases (SOG)

- Mixture of methanol, TRS compounds, turpentine[6] , and saturated steam
- Methanol concentrations in SOGs are typically greater than methanol concentrations in LVHC gases.
- Contain condensible components unlike in LVHC gases.

HVLC gases (dilute NCGs)

- Combustible components in HVLC gases, or dilute NCGs, are typically present at levels well below their individual lower explosive limits (LEL).
- Oxygen levels in HVLC gases approach that of atmospheric air.

Chip bin vent gases

- The combustible components in chip bin vent gases are also present at concentrations well below their respective LELs.

[6] Occasional carryover of turpentine in foul condensates

- Chip bin vent gases are different from HVLC gases in that they have the potential to contain significant quantities of turpentine, sometimes at concentrations approaching its LEL.

5.0 DESIGN AND OPERATING PHILOSOPHIES FOR NCG SYSTEMS [7, 8, 9]

5.1 NCG Collection and Transport Systems

The governing principles for designing NCG collection and transport systems have been established based on years of experience and are well documented in literature. The primary consideration in the design of kraft mill NCG systems is to prevent explosions. ***Explosions in collection and transport systems are caused by the coexistence of all three primary ingredients, viz., combustibles in the flammable range, sufficient oxygen, and an ignition source. Therefore, the strategy adopted for the design and operation of these systems is to prevent explosions by excluding one or more of the above-mentioned components from these systems at all times.*** Key design philosophies are summarized in the following section and additional details are provided in NCASI Special Report 03-03 and NCASI Technical Bulletin 469.

LVHC systems

As discussed earlier, LVHC systems typically include vent gases from turpentine recovery, blow heat recovery, evaporator hotwell, foul condensate storage tanks, and digester relief vents. The combustible components in these gases are typically present within the flammable range (between LEL and UEL). However, LVHC gases, as collected, generally have insufficient oxygen to cause ignition. Hence, the design philosophy for LVHC systems is to prevent air ingression and eliminate the explosion hazard by oxidant concentration reduction. Fans used for transporting LVHC gases have provided ignition sources in the past, due to hot spots in the casing, bearing failure etc. Consequently, steam ejectors are used as motive force for LVHC gases. This provides an additional line of defense against explosions by eliminating ignition sources and providing a safe motive force without air ingression. Condensate accumulation has been known to cause two-phase flows, in the presence of even minimal amounts of turpentine, leading to the buildup of static electricity that could generate a spark and lead to an explosion. Therefore, system designers incorporate an additional line of defense

[7] Allen, T. 2001. NCG handling and incineration concerns drive need for safe system design. Pulp and Paper 2001(3): 43-51.

[8] Barynin, J.A., Berg, L., and Lee, B. 1993. Recent trends in NCG disposal system design. Pulp and Paper Canada 94(12): 74-78.

[9] NCASI Technical Bulletin No. 469 – Collection and burning of kraft non-condensible gases – current practices, operating experience, and important aspects of design and operation, Parts I and II, 1985

against explosions by advising that the system be operated without condensate accumulation and with minimal turpentine entrainment. The latter involves optimal operation of the turpentine recovery system.

SOG Systems

Like LVHC gases, SOGs are collected and transported with minimal air ingression. SOG streams contain increased levels of methanol and saturated steam at temperatures higher than that of LVHC streams. SOG stream can occasionally contain turpentine due to its carryover into foul condensates. SOG streams do contain condensible components, as a result of which they are not combined with LVHC streams prior to incineration. The temperature differential between the streams could result in condensation of SOG constituents, thereby creating two-phase flows and the potential for buildup of static electricity. The prevalent practice is to collect and transport each stream using a dedicated system. Steam ejectors are used as motive forces when steam strippers are operated at or near atmospheric pressure. Some system designers exclude steam ejectors when the steam strippers operate under pressure and provide sufficient motive force at the collection source.

HVLC Systems

Unlike LVHC gases, HVLC gases contain significantly lower TRS concentrations and oxygen levels approaching that of ambient air. Sources of HVLC gases include brown stock washers, deckers, O_2 delignification systems, knotters, screens, intermediate storage tanks, filtrate tanks, and weak liquor storage tanks. The design philosophy with these gases is to eliminate the explosion hazard by ensuring that the combustibles remain at concentrations well below their LEL. This is accomplished by further diluting the sources with sufficient air to ensure that the TRS compound concentrations remain well below their LEL values. Fans are generally used as motive forces for HVLC gases. System designers advise that HVLC gases should not be combined with LVHC gases and SOG prior to incineration since the associated dilution may move the combustible concentrations in the LVHC stream, generally maintained above the UEL, into the flammable range.

Chip Bins

Vent gases from chip bins utilizing flash steam are different from LVHC gases because they contain higher levels of oxygen. They are also different from HVLC gases because they can potentially contain turpentine at levels approaching its LEL. System designers recommend that chip bin vent gases be collected as part of the HVLC system, because the increased levels of oxygen in these streams make it unsuitable to be collected along with LVHC streams. However, when pulping softwood, it is common practice to remove turpentine by passing these gases through a cooler or a condenser, before introducing them into the HVLC stream. This is because condensate accumulation and turpentine entry into the system can potentially create ignition sources. Since water and turpentine are immiscible, they decant in the pipeline, cause two-phase flows and may build sufficient static charges to ignite the turpentine as it cascades down a pipe run.

It is common practice to design NCG systems to operate at gas velocities above the flame propagation speed of the combustible components. Experience indicates NCG systems can be designed to operate at gas velocities greater than the flame propagation speeds of the TRS compounds and methanol. However, these systems cannot be operated at velocities greater than the flame propagation speed of turpentine. It has been reported that maintaining gas velocities between 50 and 100 ft/sec provides an adequate safety factor during operation. This is another reason why effective turpentine removal is critical when operating these systems. It is also recommended that all systems be adequately grounded in order to prevent the buildup of static electricity. Flow rate and temperature monitoring, with interlocks, immediately upstream of the combustion device protects against flame propagation hazards.

5.2 Thermal Destruction Devices

In addition to the safety considerations associated with the collection and transport of NCGs, system designers need to adequately design the NCG introduction system into the incineration device. Design considerations for NCG introduction (and control) systems for thermal oxidizers, boilers, recovery furnaces, and lime kilns are to ensure that the devices (a) are ready to receive NCGs, (b) can achieve complete combustion, and (c) are equipped with monitoring and control systems to prevent NCG introduction into unsafe combustion environments. As discussed earlier, BLRBAC has provided detailed recommendations on best practices and procedures while burning NCGs in recovery furnaces. Factory Mutual Insurance Company has developed a series of data sheets with recommendations on the construction of NCG systems, the control equipment and permissives that need to be in operation, and on how to operate and maintain boilers and recovery furnaces.[10]

LVHC gases can be transported from the collection point to the incineration device using the two approaches listed below.

a. Vapor phase transfer system

b. Conditioned gas transfer system

[10] Provided as Attachments D, E, and F

In a vapor phase system, NCGs are directly transported from the collection point to the incineration device. These systems are generally heavily insulated and heat traced using steam, in order to prevent the accumulation of condensible components like methanol, water, and turpentine. By contrast, the intent of a conditioned gas transfer system is to reduce the amount of water vapor and condensible components being incinerated. A conditioned gas transfer system includes the following additional components.

a. Gas cooler/Condenser

b. Mist eliminator

c. Indirect steam pre-heater to re-heat gases

The condensates from the cooler/condenser and mist eliminator are typically transferred to the foul condensate treatment system. [11] The gases are re-heated after the condensates are removed so that the operating temperature is increased and process upsets due to further condensation are minimized. Conditioned gas transfer systems are especially critical when burning NCGs in recovery furnaces, as discussed below.

The incineration of LVHC, HVLC, and SOG in recovery furnaces presents operational problems that far exceed the safety, gas flammability, and tube explosion concerns that designers tackle in the case of thermal oxidizers, conventional boilers, and lime kilns. A significant added concern is the possibility of furnace explosions. Furnace explosions can be broadly classified into the three categories listed below.[12]

a. Smelt-water explosion

b. Auxiliary fuel explosion, and

c. Pyrolysis gas explosion

Smelt-water explosions are attributed to the introduction of moisture into the furnace. Although a majority of these explosions are caused by the failure of boiler pressure parts inside furnaces, they can also be the result of introduction of moisture through LVHC, HVLC, and SOGs. Auxiliary fuel and pyrolysis gas explosions are caused by the uncontrolled ignition of auxiliary fuels or pyrolysis gases accumulating in the upper furnace region without being incinerated. LVHC gases are similar to auxiliary fuels in that they have significant heat value. Therefore, explosions can occur when these gases are introduced into the furnace in the absence of a controlled ignition source. Explosions are also possible when HVLC gases,

[11] Barynin, J.A., Berg, L., and Lee, B. 1993. Recent trends in NCG disposal system design. Pulp and Paper Canada 94(12): 74-78.

[12] Grace, T. M. Recovery Boiler Explosion Experience. 1992. TAPPI International Chemical Recovery Conference Proceedings 25-31. Atlanta, GA. TAPPI Press.

generally maintained well below their LEL limits, get concentrated in the furnace to within flammability limits and accumulate without being completely destroyed.

5.3 NCG System Interlocks and Permissives

The primary objective of safety interlocks in NCG systems is to isolate and vent portions of the system during unsafe conditions. Additionally, when the system becomes unstable or when incineration permissives are lost, safety interlocks allow for automatic venting and prevent potential explosions. Interlocks are typically set up to warn (alarm) plant operators when the "low/high" set-point is reached and vent when the "low-low/high-high" set-point is exceeded (***alarm and venting thresholds, respectively***).

The following is a list of common interlocks that result in an alarm, and if unresolved, a venting episode:

1. Steam flow from boiler or recovery furnace falls below predetermined cut-off value (e.g. 30% of Maximum Continuous Rating (MCR) for boilers and 50% for recovery furnaces). Loss of flame, if incineration device is a thermal oxidizer.

2. HVLC gas flow at the outlet of the main HVLC fan falls below acceptable threshold. In the case of LVHC gases, temperature or pressure measurements at the outlet of the steam ejector (or for steam supply into the ejector) fall outside acceptable ranges. Differential pressure alarms are also common as a way to identify plugged flame arrestors.

3. System pressure at the HVLC cooler or re-heater increases above the acceptable threshold.

4. Temperature at the exit of the LVHC or HVLC cooler exceeds acceptable thresholds. In the case of HVLC gas re-heaters, if the temperature at the re-heater exit falls below acceptable thresholds.

5. Temperature at the exit of the HVLC gas re-heater increases above the "high-high" set-point, indicating potential burn-back.

6. HVLC fan speed falls below the "low-low" set-point. When steam ejectors are used (as in the case of LVHC and SOG), when steam flow to the ejector falls below the "low-low" set-point or total system flow exceeds acceptable ranges.

7. When alarm and vent thresholds for LEL meters, when used near the incineration device, are exceeded.

8. Differential pressures across flame arrestors, mist eliminators, or condensate drains exceed acceptable thresholds.

In addition to overall transport system interlocks, portions of the system are also designed to be isolated and vented when unsafe conditions exist without having to take the entire system off-line. For instance, chip bin collection systems are typically equipped with the following dedicated interlocks that prompt localized venting:

1. Temperature at the exit of the cooler/condenser rises above the alarm threshold – this can be a surrogate for turpentine carryover.

2. Measurements from dedicated LEL meters exceed alarm thresholds.

3. Chip bin level falls below acceptable thresholds. In some cases, when the chip bin level reaches the low threshold, flash steam input into the chip bin is cut-off as a preemptive action.

As summarized in this section, the collection, transport, and treatment of NCGs in incineration devices is a complicated endeavor and involves the smooth operation of multiple systems while maintaining safety and system integrity. The primary concern is the potential for explosions. As a consequence, boiler manufacturers and insurance providers recommend the use of comprehensive control systems to ensure the safe operation of these systems. Schematics of system components are provided in Figures 1 and 2 below.

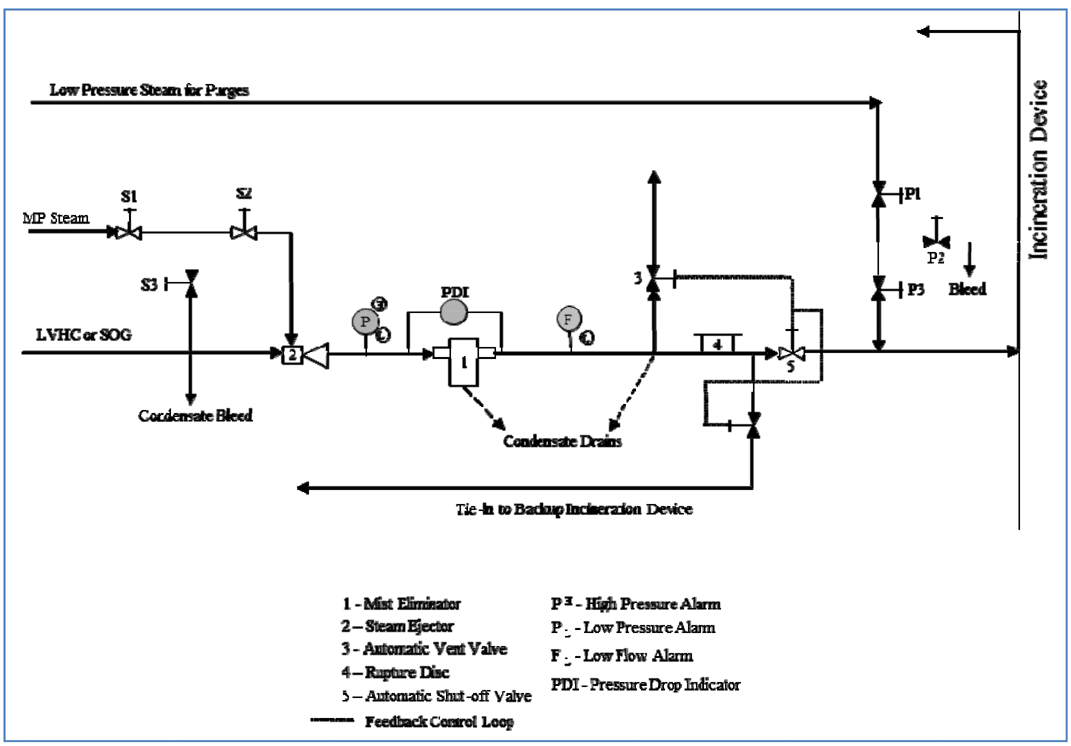

Figure 1. Schematic of typical vapor phase NCG Transport and Introduction System

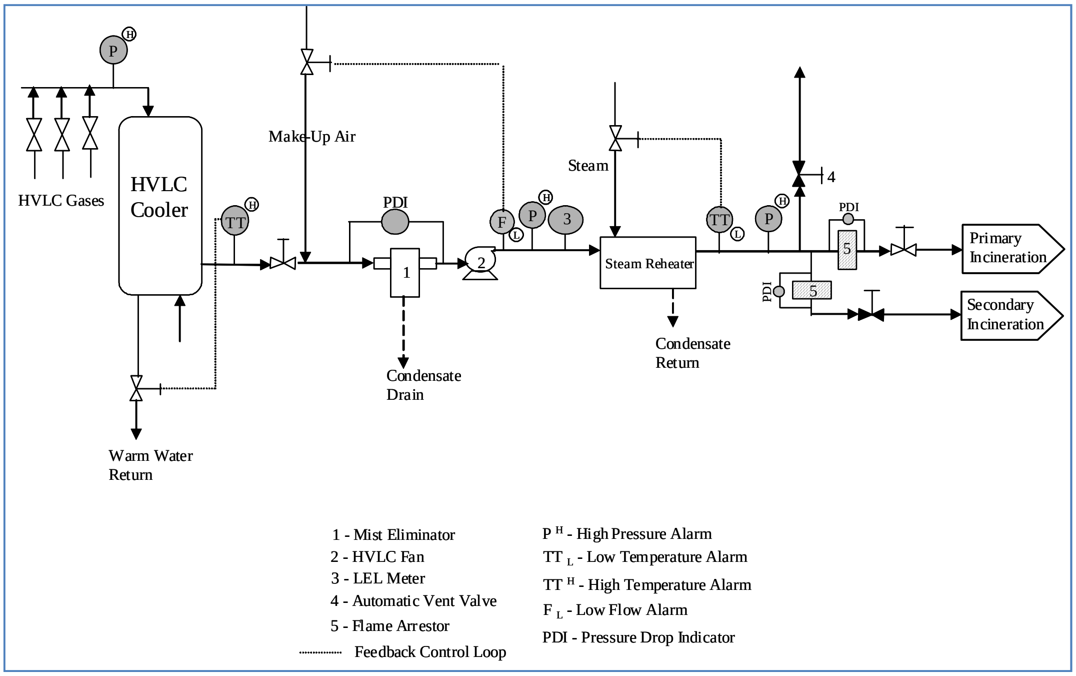

Figure 2. Schematic of typical conditioned gas HVLC transport and introduction system

6.0 SUMMARY OF INDUSTRY RESPONSES TO THE NCASI SURVEY

6.1 Background and Key Takeaways

The NCASI NCG survey was conducted in order to answer specific questions raised by the EPA, in the December 27, 2011 proposal, on intermittent NCG venting that occurs during routine or normal operations and covered under existing venting allowances. Facilities were requested to provide qualitative information, based on prevailing process knowledge and experience, on the types of events triggering these intermittent venting episodes. Additionally, facilities were also requested to identify operating conditions or threshold operating parameters used to differentiate SSM venting events from those occurring during routine operation. ***A total of 81 kraft mills responded to the survey***. This report analyzes survey responses and draws collective conclusions on the types of events triggering intermittent venting. Given the large number of survey responses and the time constraints that EPA has for reviewing these results, this report is designed to provide comprehensive summarizes of survey responses, discuss survey results in the context of the questions being posed, and draw relevant conclusions in light of survey results and the system characteristics presented above.

Intermittent venting episodes of the NCG system can be broadly categorized into the following:

a. Events occurring during equipment startup, shutdown, and malfunctions (SSM) periods, and
b. Events occurring during routine or normal operation.

Routine venting events can largely be attributed to process variability. As facilities have gained more experience in operating NCG systems, they have progressed along the learning curve and learned to manage some of this process variability. ***However, it is impossible to eliminate all sources of process variability – hence the term inherent.*** Inherent process variability inevitably results in the tripping of control system interlocks and intermittent venting episodes. The primary objective of the NCG control system and associated interlocks is to (a) prevent NCGs from approaching flammability limits, (b) minimize the potential for unsafe conditions in the transport system and at the thermal destruction device, and (c) maintain safety, system integrity, and prevent explosions. The network of alarms designed into NCG systems serves to provide operating boundaries for facilities and greatly minimizes venting episodes. These alarms facilitate the secondary, but equally important, objective of minimizing the release of TRS compounds that cause objectionable odor in the community. In spite of tight control and operation, circumstances do arise that result in the tripping of vent thresholds. Given the primary objective of promoting safety and preventing explosions, facilities have to mitigate these conditions using "fail-safe" strategies, viz., through intermittent venting.

Key takeaways from the NCASI survey are summarized below. More details and data are provided in the remainder of this report.

1. ***Intermittent venting episodes can occur during routine or normal operation.*** These events are triggered by the expected inherent process variability and by transient conditions in the collection, transport, and conditioning equipment. This results in the tripping of safety and system integrity interlocks. These venting episodes and the events that trigger them are not malfunctions of associated equipment as they continue to operate as designed and within expected ranges. These venting episodes are critical to maintaining system integrity and preventing catastrophic scenarios that could result in unsafe conditions for workers, equipment damage, and explosions.

2. ***Intermittent venting can also be caused by Startup and Shutdown (SS) events.*** In the context of the NCG system, Startup and Shutdown (SS) conditions are distinct and therefore unlike routine operations.

- A subset of SS conditions trigger distinct interlocks and permissives within the NCG transport system or sub-systems, thus resulting in intermittent venting episodes.
- Some of the intermittent venting during SS conditions can also be traced to increased levels of process variability not expected or observed during routine operation.

3. ***A vast majority of facilities use threshold parameters to differentiate routine operating periods from startup and shutdown (SS) periods. Others have defined specific actions that are required to be carried out in order to startup or shutdown a piece of equipment or process, thus differentiating the two.***

4. ***Survey results indicate that problems related to transport system equipment (gas conditioning equipment, sensors, and fiber/liquor separation equipment) are as prevalent as malfunctions related to process equipment and thermal destruction devices.*** Given the ability to isolate sub-systems, the former are less disruptive to overall NCG system operation than the latter. Transport system equipment problems also can be triggered by inherent process variability. Adequate consideration of the triggering events is therefore justified, before these are all grouped as malfunctions as defined by the rule.

5. ***Steam stripper downtimes do not reflect "no HAP control" scenarios.*** Facilities routinely route their condensates to biological wastewater treatment systems during steam stripper downtime periods and thereby maintain high levels of treatment for methanol and major non-methanol HAPs.

6. ***A handful of states do impose limits on the duration of individual LVHC system vents. This is similar to the 40 minute limit imposed by the state of Maine.***[13] Individual LVHC system vents are limited to 30, 60, and 240 minutes in AR, OR, and AL, respectively.

Other pertinent takeaways relating to specific technical and operational aspects of NCG systems are as follows:

7. ***Intermittent venting is a consequence of "Fail-safe" systems, interlocks, and system permissives.*** These interlocks and the resulting intermittent venting are an essential "first line of defense" against system failures and potential hazardous conditions, including catastrophic explosions. Some are attributed to inherent process variability, others to SS conditions, and a third category can be the result of malfunctions.

8. ***Interlocks and permissives are essential components of any NCG system.*** These protections are designed into systems in order to prevent equipment damage, injuries,

[13] The State of Maine Department of Environmental Protection (Maine DEP), in comments filed for the RTR proposal, has opined that the EPA should maintain the venting allowances.

and potential fatalities. These are integrated into system design and considered as "prerequisites of insurability" by insurance companies. As discussed earlier, the BLRBAC recommendations and Factory Mutual Guidelines on the design and operation of NCG systems, both illustrate the importance of these permissives. Their suggested guidelines are widely followed in designing these systems and in carrying out insurance audits.

9. ***Intermittent venting episodes that occur during normal operation frequently resolve themselves or can be resolved through effective system isolation.*** NCG system interlocks are designed to effectively isolate the source and prevent momentary exceedances from propagating throughout the system and causing a broader venting episode of the entire system. The ability to isolate and vent sub-systems protects overall system integrity and minimizes potential emissions.

6.2 Detailed Discussion of Survey Responses

1. Intermittent NCG venting in Pulp and Paper mills can be caused by events that occur during routine or normal operation. These events can be traced back to inherent process variability that results in the tripping of safety and system integrity interlocks. These events are not malfunctions, as defined by the regulation, and the resulting venting episodes are an essential "first line of defense," for preventing the onset of more dangerous and potentially catastrophic conditions in the NCG system.

Facility responses to the following questions have been summarized in this section:

Q8. Rank or select the top six causes of routine venting events in the LVHC System

Q10. Rank or select the top six causes of routine venting events in the HVLC System

LVHC SYSTEMS

Four (4) most identified events that occur during routine/normal operation and trigger intermittent venting

As discussed earlier, a multitude of normal operating scenarios can cause intermittent venting of LVHC NCGs. These are all transient in nature and frequently resolve themselves or can be rectified with minimal intervention. The following four scenarios were the top triggering events, associated with LVHC systems, identified by facilities responding to the survey. (Ranked in the descending order on how frequently they were identified by facilities).

# (Area)	Conditions Occurring during Normal Operation	Facilities Identifying these Conditions [1]	1. Cause 2. Reason for venting
1 (Control device)	Primary Combustion Device Not Available (not due to malfunction)	51	– Loss of permissives – Safety-related
2 (Transport system)	Pressure / Temperature Interlocks in Gas Transport System	42	– Inherent variability – Safety-related
3 (Transport system)	Pressure / Temperature Parameters on Process Equipment Outside Normal Operating Ranges	40	– Inherent variability – Safety-related
4 (Control device)	Switching between Incineration Points	36	– Steam purge requirement – Safety-related

[1]Facilities were given the option to select ***all applicable*** reasons for venting during normal operation

Two of the four events most frequently identified by facilities in the survey relate to operating conditions in the control device (# 1 and #4). # 2 relates to process swings and the resulting tripping of system interlocks in the transport system. # 3 is predominantly driven by momentary swings in the process areas that result in pressure or temperature parameters exceeding normal operating ranges. More details on these events are provided below.

 # 1 – Primary combustion device not available (not due to malfunctions) – The combustion device becomes temporarily unavailable due to the momentary loss of NCG burning permissives. This condition is not caused by malfunctions of associated equipment and affects only the ability of the control device to burn NCGs. Examples include the following:

– Transient changes in process steam/energy demands in the mill (inherent variability in upstream processes or swings in production rates) cause variations in steam header pressure. This could lead to changes in fuel feed rates and/or fuel mixes and trip NCG burning permissives.
– A reduction in steam demand could result in steaming rates being reduced below a certain threshold, thus preventing the burning of NCGs in the boiler or recovery furnace.

When steaming rates in a boiler or a recovery furnace fall below a certain threshold percentage of the maximum continuous rating (MCR), it triggers a "boiler permissive" that prevents NCGs from being burned in the boiler. NCG burning is not recommended at low MCR as the resulting lower combustion temperatures increases the potential for incomplete combustion of NCGs, which is an unsafe operating condition. In the case of a thermal oxidizer, a temporary flameout could result in loss of the "burner permissive" and result in NCG venting until the flame is relit and the unit is stabilized. These temporary losses of permissives are not malfunctions of the associated equipment but primarily driven by inherent process swings and variations. These are typically resolved when the associated parameters stabilize and the NCG burning permissive is restored.

When the primary combustion device becomes temporarily unavailable, LVHC gases are typically routed to the secondary combustion device. In the case of LVHC systems, this transfer can occur without intermittent venting if and only if all transfer piping conveying the gases to the secondary combustion device is maintained in “ready” mode. This condition is satisfied by maintaining a continuous steam purge through all transfer piping, thus allowing for ventless transfer of gases. Switching between incineration points was another routine/normal operating condition identified in the survey (#4 below).

 # 2 – Pressure / Temperature Interlocks in Gas Transport System – These interlocks can be tripped due to exceedances of either the flow rate OR temperature set-points in the transport system. Pressure variations can frequently be caused by inherent swings in production rates or, as in the case of batch digester mills, pulping blow sequences. Pressure interlocks can also trip due to flow balancing issues within the various branches of the NCG system. Temperature interlocks in the transport system are instituted as a way to prevent excess carryover of hot gases, foam, and liquor. They are also used to detect flame blow-backs through NCG piping, inadequate cooling of NCGs, etc. For instance, NCG temperatures could temporarily exceed alarm limits when condensers/coolers are over-extended, either due to variability in cooling water temperatures or due to excess NCG flows. As facilities have gained operating experience with NCG systems, they have increasingly reduced manageable process variability. However, inherent process variability still results in the tripping of these essential safety interlocks.

#3 - Pressure / Temperature Parameters on Process Equipment outside Normal Operating Ranges – This is another category of events that occur during normal operation and can trigger intermittent venting. Unlike # 2 above, interlocks at or near process equipment are designed to effectively isolate any variability that occurs within process vessels from propagating into the transport system. Isolating the process vessel during temporary periods of process upsets allows the facility to isolate the problem and continue operating the NCG system. The ability to prevent the propagation of isolated process variability into the transport system, through the use of a local interlock (a) effectively isolates the source of the variability, (b) averts the onset of a more dangerous and potentially catastrophic condition in the NCG system, and (c) minimizes potential venting as other components of the system continue to operate normally.

#4 – Switching between incineration points – This was the identified as the fourth most prevalent reason for intermittent venting during routine operation. The driver for this venting episode is primarily safety and system integrity. As discussed in Section 5.1, flammability considerations prevent the use of air as the motive force while transporting LVHC gases.[14] Consequently, LVHC gases are transported to the combustion device using steam as the motive force. LVHC systems are designed and operated to prevent any ingression of air because of the potential for these gases to move into the flammability range (between the LEL and UEL). The sequence of events that lead to intermittent venting due to switching between incineration points is given below:

- Facilities operating LVHC systems have a backup combustion device that is "ready" to receive LVHC gases.
- Given the need to prevent air ingression, transfers of LVHC gases from primary to secondary incineration devices are preceded by steam purges to remove entrained air from transfer piping. This steam purge requirement is frequently a permissive built into the control logic.
- As a consequence, any unplanned switching of LVHC gases between incineration devices results in a momentary venting episode while the steam purge requirement is being satisfied.

The only alternative to this momentary venting episode would be to maintain a constant steam purge throughout all transfer piping between the "divert point" and the secondary incineration device, thus continuously maintaining the permissive. This alternative is infeasible and economically impractical in many cases due to the distance between the primary and secondary control device and the significant energy penalty associated with maintaining the constant steam purge.

These four identified scenarios occur during routine operations and can trigger intermittent venting episodes. These conditions are not caused by malfunctions of any associated equipment and are primarily the result of inherent process variability. The associated venting episodes are designed into the control system to maintain safety and system integrity.

[14] The concentrations of organic compounds in LVHC (concentrated NCG) systems are typically above the UEL thresholds. The ingression of air could potentially dilute these gases to within flammability ranges (between the LEL and UEL), while providing oxygen to support combustion. This potential explosive scenario is avoided by minimizing air entry into HVLC systems. More details on the characteristics of NCGs and transport systems are provided in NCASI Special Report 03-03 (NCASI 2003).

Other prevalent events that trigger intermittent venting in LVHC Systems during routine operations

#	Conditions Occurring during Normal Operation	Facilities identifying these conditions	1. Cause 2. Reason for venting
5	Flow balancing issues or tripping of flow interlocks	27	– Inherent variability – Safety
6	Steam Interlocks in Gas Transport System	22	– Inherent variability – Safety
7	Back-up combustion device not available	20	– Loss of permissives – Safety

The LVHC system is an interconnected network of transport piping that collects NCGs from various sub-systems and transports these gases to the combustion device. Some of these systems tend to cycle (e.g., flows from the digester and turpentine recovery system) while others are continuous (e.g., non-condensible gases from the evaporator system). Given these varying characteristics in flows, LVHC systems are designed with flow interlocks that monitor and protect the system from excess flows, gas blow back into the process when sub-systems under lower pressure operate with reduced flows, etc.

Steam interlocks are tripped in LVHC systems when variations in process steam demands result in momentary swings in steam flows to ejectors. In the absence of the motive force, LVHC gases are forced to vent, thus preventing accumulation inside the transport system and the potential for other dangerous consequences.

There are instances when, immediately following an LVHC gas diversion, the secondary combustion device also becomes unavailable due to the momentary loss of permissives. Once again, this control device unavailability is not due to a malfunction of associated equipment but merely a safety mechanism designed to prevent the burning of flammable NCGs in an unsafe combustion environment. These instances also result in venting episodes.

HVLC SYSTEMS

The following four conditions have been identified as the top events associated with HVLC systems by the 48 facilities responding to the survey that had HVLC systems.

#	Conditions Occurring during Normal Operation	Facilities identifying this condition	1. Cause 2. Reason for venting
1	Primary Combustion Device Not Available (not due to malfunction)	27	– Loss of permissives – Safety
2	Pressure / Temperature Interlocks in Gas Transport System	18	– Inherent variability – Safety
3	Pressure / Temperature Parameters on Process Equipment Outside Normal Operating Ranges	14	– Inherent variability – Safety
4	Flow interlocks in transport system (overall system flow, make-up air flow, etc.)	14	– Inherent variability – Safety

Once again, as discussed under the section on LVHC venting episodes, the leading event that occurs during normal operation and triggers venting of HVLC systems was the unavailability of the combustion device due to the momentary loss of permissives. This observation is expected given that the loss of the primary control device was also the #1 driver for venting episodes in LVHC systems. The #2 and #3 most frequent events are similar to those discussed earlier under LVHC systems, except that it pertains to the HVLC systems in this case. The #4 condition identified in the survey (flow interlocks) stems from inherent fluctuations in HVLC gas flows from the various components of the system like weak liquor storage tanks, brown stock washer area storage tanks, brown stock washers (BSWs), etc.

KEY TAKEAWAYS ON INTERMITTENT VENTING EVENTS DURING NORMAL OPERATION

The following aspects are worth reiterating about the operating conditions, interlocks, and the venting episodes described above:

- The ***inherent process variability*** that triggers these events cannot be reasonably prevented through corrective actions and is an unavoidable part of normal, continuous operations.
- The conditions triggering these venting events are normal and expected fluctuations in operations rather than equipment failures or operator errors, and therefore would not be considered malfunctions of equipment, processes, or control devices.
- These venting episodes are designed to promote safety and system integrity while averting the potential for accumulation of NCG gases within transport systems and control devices.
- Although facilities continue to make strides in reducing manageable process variability, there is inherent variability in many of the relevant processes and waste streams that cannot feasibly be eliminated.
- These venting events are necessary both for technological and operational reasons.

– Lastly, the elimination of venting allowances for normal operating periods would jeopardize system integrity, compromise safety considerations, and ultimately render safe and continued operation infeasible.

2. Startup and shutdown (SS) conditions are distinctly different from normal operation. A subset of SS conditions trigger distinct interlocks and permissives within the NCG transport system or sub-systems, thus resulting in intermittent venting episodes. Some of the intermittent venting during SS conditions can be traced to unusual levels of process variability not observed during normal operation.

The NCASI survey has identified several unique conditions, occurring during startup and shutdown periods, that result in the temporary loss of permissives or can trip control interlocks. These conditions are ***unlike those observed during normal operation and are typically not encountered when the mill is operating in stable production mode.*** The ~ 80 facilities responding to the survey have identified the following SS conditions that lead to venting episodes of NCG systems:

#	Venting Episodes Related to Startup / Shutdown Conditions	Facilities Identifying this Condition	1. Cause 2. Reason for Venting
1	Isolated venting of process equipment before reaching steady state	45	– SS Condition – Isolate system and prevent propagation into other areas
2	Inability to resolve interlocks due to process variability during startup and shutdown	41	– SS Condition and higher process variability – Safety
3	Intermittent venting of isolated sections of the transport system due to flow balancing issues (higher than usual variability in flows from sub-systems)	35	– SS Condition and higher flow variability – Safety
4	Purge requirement of concentrated NCG line before pulp mill start-up (to prevent air from entering LVHC system)	25	– SS Condition – Safety
5	Transient venting of LVHC and HVLC sources due to slow "warm up" of boiler (low process steam requirements)	24	– SS Condition resulting in loss of permissives – Safety

1 above occurs near process equipment and stems from unusual variability in flows from process equipment during SS conditions. #2 may be temperature, pressure, and flow interlocks in the transport system that cannot be resolved due to unusual variability that exists during SS conditions. Issues due to flow balancing were also identified as being prevalent

during normal operation. While # 3 above may have the same end-result (the venting episode), the trigger is once again unusual process variability, germane to SS conditions. #4 is again a distinct SS condition that is encountered during a cold startup (when the purge requirement has to be satisfied).

In addition to the five SS scenarios identified above, 20+ facilities identified additional distinct conditions, from startup and shutdown periods, that cause intermittent venting of LVHC, HVLC, and SOG systems:

1. Transient venting due to combustion device instability on startup
2. SOG venting during steam stripper startup due to high pressure conditions which are the result of temperature fluctuations in the steam stripper reflux condenser
3. Tramp air purge from evaporators until vacuum is achieved
4. Venting due to high moisture caused by reduced flows and low system temperatures
5. Venting of HVLC sources due to "warm up" of thermal oxidizer
6. Evacuating air from storage vessels to prevent air ingression into LVHC system
7. Evaporator liquor carryover causing foaming and flame arrestor plugging
8. False instrumentation indications (causing safety vents to open) during switching between primary and back-up mill power supplies
9. Boilers not achieving the temperature needed to satisfy NCG burning permissives
10. Evaporator hotwell venting before vacuum is established
11. Transient venting from blow heat accumulator due to air ingression during a cold start-up. Steam purge used for keeping the accumulator “hot” is sometimes unsuccessful.

The above SS conditions and the associated increased levels of variability result in the tripping of interlocks and venting in LVHC, HVLC, and SOG systems. In addition to SS conditions in the steam stripper itself (# 2 above), any variability in steaming rates, steam availability, and condensate collection during SS conditions can also cause increased levels of operational variability in the steam stripper and lead to intermittent venting of SOGs. Again, the primary reason for venting is safety and system integrity.

KEY TAKEAWAYS ON INTERMITTENT VENTING EVENTS DURING STARTUP AND SHUTDOWN

Survey responses have identified several distinct SS conditions that trigger intermittent venting events. ***While the venting episode itself may be no different from a venting episode that occurs during routine or normal operation, the triggering conditions are unique SS conditions. Some of these events are caused by process variability, which in many cases exceeds the variability observed during normal operation.***

In the preamble to the RTR rule proposal, EPA has stated there was no information in the record indicating that operations (and attendant emissions) during startup and shutdown conditions would differ from those during normal operation. However, the information obtained from this survey clearly indicates that SS conditions are not similar to normal operations, as it pertains to NCG and SOG control systems. Therefore, further consideration of startup and shutdown conditions is necessary.

3. Facilities are able to distinguish between routine operating periods and startup/shutdown (SS) periods. Survey results indicate that majority of facilities use threshold parameters to differentiate normal operating periods from startup and shutdown (SS) periods. Others have defined specific actions that are required to be carried out in order to startup or shutdown a piece of equipment or process.

EPA had requested specific information on how facilities differentiate venting episodes that occur during normal operation from those that occur during SS periods. This question was posed in the survey and the responses are discussed in detail below. Facilities have defined multiple threshold parameters to differentiate SS events from normal operation. More information on the threshold parameters used for LVHC systems, HVLC systems, and combustion devices are provided below.[15]

LVHC Systems

The following four parameters were most frequently identified by facilities as “threshold parameters” for differentiating normal operation from SS periods in LVHC systems.

#	Parameter	Facilities Identifying this Parameter
1	Steam flow to digesters	42
2	Flow and Temperature of weak black liquor feed to evaporators	34
3	Steam flow to evaporators	42
4	Total LVHC system Pressure or Flow	23

In addition to the threshold parameters identified above, 40+ facilities have identified additional operating parameters that are used to differentiate normal operating conditions from SS conditions. These include:

[15] It should be noted that, as with NCG systems during normal operations, mills have continued to improve their practices over the past dozen years to minimize venting during SS events. As the understanding of these practices has evolved, along with guidance from EPA and the states, in some cases the criteria mills have used for characterizing a condition as related to SS, normal operations, or malfunctions have evolved as well. The following attempts to provide a snapshot of current practices. In some cases, the criteria for distinguishing SS, M, and normal operations may be spelled out in state regulations or as guidance in Title V permits and related documents, but often the criteria are less rigid or explicitly specified as that.

– Flow of strong black liquor product from evaporators - foul condensate conductivity < 800 µmhos/cm AND combined condensate conductivity < 1,000 µmhos/cm
– Blow valve and relief valve opening
– Chip feed to digester (feeder rpm threshold)
– Digester steaming and blow heat system online. SS condition continues for at least 2 digester blows to blow heat accumulator system
– Steam flow plus pressure threshold at evaporator set (LVHC for evaporators
– Control device (boiler) operating and meeting permissives
– Flow of weak black liquor from digesters
– Chip feed to steaming vessel
– Product liquor flow valve open and water valve to evaporators closed
– Vacuum threshold in evaporator set
– Steam flow to liquor concentrators
– Final effect evaporator and surface condenser condensate conductivity

Stripper Off-Gas (SOG) Systems

The following four parameters were most frequently identified by facilities as "threshold parameters" for differentiating normal operating periods from SS periods associated with steam strippers.

#	Parameter	Facilities Identifying this Parameter
1	Condensate flow to steam stripper	35
2	Steam flow to steam stripper	27
3	SOG flow and/or other SOG parameters	13
4	Other (please specify)	14

In addition to the threshold parameters identified above, 14 facilities have identified additional operating parameters that are used to differentiate normal operation from SS conditions. These include:

– Having both condensate flow and steam to stripper begins the Startup period. Having sufficient SOG flow to continuously meet permissives for at least 30 min ends the startup period
– Control device (boiler) operating and meeting permissives
– Condensate stripper feed temperature
– Evaporator foul condensate flow
– Steam-to-condensate ratio

HVLC Systems

The following three parameters were most frequently identified by facilities as "threshold parameters" for differentiating normal operating periods from SS periods in HVLC systems.

#	Parameter	Facilities Identifying this Parameter
1	Stock flow to Brownstock washers (BSW)	30
2	Total HVLC gas flow from BSWs	15
3	Total system flow	14

In addition to the threshold parameters identified above, 15 facilities have identified additional operating parameters that are used to differentiate normal operation from SS conditions. These include:

- Steam flow to digesters
- Control device (recovery boiler) operating and meeting permissives
- Flow of weak black liquor from digesters
- Chip feed to steaming vessel
- Stock flow or pump amperage indicating oxygen delignification system operational
- Power to HVLC fan on
- Stock flow to knotter system
- Steam to the chip bin (chip bin goes to LVHC system in continuous digester)
- Meeting boiler permissives

Combustion Devices

The following three parameters were most frequently identified by facilities as "threshold parameters" for differentiating normal operating periods from SS periods in combustion devices.

#	Parameter	Facilities Identifying this Parameter
1	Primary and/or auxiliary fuel feed rate	35
2	Steam generation rate	26
3	Combustion air feed rate	11

In addition to the threshold parameters identified above, ~30 facilities have identified additional operating parameters that are used to differentiate normal operation from SS conditions. These include:

- Flame detection
- Combustion temperature and presence of gases (SS irrelevant if gases are diverted to alternative device or NCG sources are down)
- Mud flow to pre-coat filter or vacuum in pre-coat filter
- ID fan damper position
- Recovery furnace temperature
- Oxygen content in flue gas
- For a cold startup, lime kiln operating at a stable rate not less than 300 gpm of lime mud, incineration interlocks are met, and the manual switch is in the "Accept" mode – lime mud flow threshold dependent on number of sources collected
- For power boilers - a minimum steaming rate of 120000 lb/hr. Steam pressure > 1200 psig
- Steam flow to ejectors and permissives satisfied to burn NCG gases
- Combustion temperature
- NCG flow to thermal oxidizer
- Continuous parameter monitoring systems fully operational prior to introduction of pollutants to combustion device
- Flame safety system operational and all permissives met
- Minimum flame temperature
- Thermal oxidizer temperature
- Scrubber pH and flow rate, and
- Meeting boiler permissives

Twelve of the 81 facilities reported using a pre-defined set of specific actions to differentiate between SS conditions and normal operation. These specific actions needed to be carried out successfully in order for a startup or shutdown of a piece of equipment or process to be completed. The completion of this set of actions was subsequently used as a benchmark to differentiate the SS condition from normal operating conditions.

KEY TAKEAWAYS ON DIFFERENTIATING STARTUP AND SHUTDOWN EVENTS FROM NORMAL OPERATIONS

The majority of the facilities use threshold parameters to differentiate normal operating periods from SS periods. There is considerable variation from mill to mill, based on individual mill configuration and operating practices. Survey responses provide a better understanding of the types of threshold parameters used by facilities to differentiate between these two periods.

4. Malfunctions can also result in intermittent venting episodes. Survey responses suggest that venting episodes related to malfunctions fall into four categories, viz.; (a) those related to process equipment, (b) those related to the thermal destruction device, (c) those related to equipment in the transport system including sensors, gas conditioning equipment, and fiber/liquor separation equipment, and (d) those driven by uncontrollable events. Survey responses indicate that events in all four categories were equally prevalent.

The industry survey has provided information on the above four categories of events. More details on the number of facilities responding about malfunctions are provided below:

Category	Source and Type of Malfunction	Response
Process	Malfunctioning process equipment (control valves, blow heat accumulator circulation pumps, liquor heaters, etc.)	60
Transport Equipment	Malfunctioning collection and transport system equipment (pumps, fans, steam ejectors, flame arrestors, etc.)	62
Transport Equipment	Malfunctioning foam breakers that cannot be repaired "on-the fly" (causing excessive foam carryover)	14
Transport Equipment	Malfunctioning sensors (Pressure relief valves, temperature / flow / pH / pressure sensors, etc.) - System cannot be operated without fixing these devices	64
Control Device	Incineration device(s) unavailable due to burner plugging, flame-outs, tube leaks, or other major issues	60
Control Device	Malfunctioning control device equipment (condensate collection pumps, scrubber ID fans, ESP plates, etc.)	53
Uncontrollable Events	Loss of power, loss of instrument air, loss of water supply, etc.	66

Facilities have identified additional examples that include:

Category	Source or Type of Malfunction
Process	Bark screw malfunction (malfunctioning controller)
Process	Seal pot water flow interruptions
Process	Unusual pressure surge due to a process malfunction causing rupture disc to fail, P/V relief to lift, or loop seals to blow out.
Process	Foaming, level control issues in stripper caused by black liquor carryover or other contamination in the condensate feed
Process	Air entrainment in blow heat system during system cool-down during lower throughput periods, over-pressurization, blown loop seals and/or P/V relief valves
Transport Equipment	Fan, ducting, demister, flame arrestor, dampers, or any other associated in-line equipment plugged or plugging
Transport Equipment	Malfunction of process control systems/distributed control systems (bad I/O card, power surge, etc.)
Transport Equipment	HVLC fan malfunction (broken shaft, motor failure, belt failure, etc.)
Uncontrollable events	Natural gas supply interruption due to internal or external line failure (required for thermal oxidizer and lime kiln)

A closer examination of the most frequently identified malfunction triggers of venting events would suggest that it is inappropriate to combine these four categories of events into a single bucket. The following characteristics are worth additional consideration:

- Malfunctions of isolated equipment and sensors in the transport system are expected to be less disruptive to overall NCG system operation than are malfunctions of process equipment and control devices. Sub-systems can be effectively isolated while the rest of the system remains in operation.
- A subset of transport system equipment problems are momentary and could stem from inherent process variability (plugging of condensate drains, foam carryover, malfunctioning steam ejectors etc.). These may recur and hence are not reasonably preventable through maintenance or corrective actions.
- Malfunctions of process equipment or combustion devices, on the other hand, are of a different level of significance than the ones described above.

A closer examination of these different categories of malfunctions is therefore justified, specifically from the stand-points of (a) what triggers them, (b) whether they are infrequent and reasonably preventable and (c) whether they can be classified as malfunctions, as defined by the rule, with the option to avail of affirmative defense. A broad-based classification of malfunctions, as it pertains to the NCG collection and transport system, has the potential to significantly increase the regulatory burden for facilities.

5. Steam stripper downtimes do not reflect “no HAP control” scenarios. Facilities routinely route their condensates to biological wastewater treatment systems during steam stripper downtime periods. Biological treatment systems have been demonstrated to achieve high levels of treatment for methanol and major non-methanol HAPs. They are currently being employed by facilities to demonstrate compliance with condensate treatment requirements.

The following information applies to the 33 facilities that reported employing steam strippers for demonstrating compliance with condensate treatment requirements:

- All 33 (100%) of the facilities continue to collect condensates in the condensate tank during temporary outages. Temporary outages or downtimes may be the result of momentary unavailability of the combustion devices (due to momentary loss of permissives etc.), or temporary operational issues with steam availability, etc.
- The following practices apply to longer downtimes of the steam stripper
    - 20 out of the 33 facilities route condensates through the primary clarifier to biological treatment systems
    - 6 facilities bypass the primary clarifier and directly route condensates to the biological wastewater treatment system
    - Remainder of the facilities reported utilizing different condensate reuse, recycling, or re-routing practices.
    - 3 of the facilities that also operate HVLC systems reported routing their condensates back to liquor storage tanks (the tanks are air-swept and collected as part of the HVLC system).

Survey responses indicate that the vast majority of facilities continue to achieve HAP treatment during steam stripper outages/downtimes. Downtime periods in the steam stripper do not mean that the facility is achieving zero HAP control from condensate treatment. Facilities routing condensates to biological treatment systems are expected to achieve greater than 80% methanol removal.

6. Compilation of applicable state-specific recording, reporting, and other requirements pertaining to NCG venting events

In discussions leading up to the distribution of the NCASI survey, OAQPS requested specific information on restrictions, if any, imposed by States on the duration of single NCG venting episodes. This request was in response to comments filed by The State of Maine Department of Environmental Protection (Maine DEP) on the proposed elimination of the venting allowances. In its comments, Maine DEP urged EPA to maintain the 1% and 4% venting allowances. The agency indicated that the state TRS rule (06-096 CMR Ch. 124) limits any single LVHC system vent to 40 minutes. Maine DEP also indicated that the 40 minute individual vent limit imposed as part of the TRS rule, in conjunction with venting allowances, was effective in minimizing the total duration of venting.

The agency also acknowledges the fact that intermittent NCG venting episodes are inevitable given the complexity of the system and the need to deliver flammable NCG gases safely to combustion devices. A compilation of alternate rule or other applicable State requirements pertaining to the recording, reporting, and classifying of NCG venting episodes, as reported by facilities responding to this survey, is provided below.

State	Alternate State rule OR operating permit threshold for recording vents (MINUTES)		Threshold above which a SINGLE VENTING EVENT is further investigated and recorded as a MALFUNCTION (MINUTES)		State/Operating permit that limits individual venting events from exceeding a specific threshold (MINUTES)	
	LVHC/SOG	**HVLC**	**LVHC/SOG**	**HVLC**	**LVHC/SOG**	**HVLC**
AL			60	60	240	240
GA	5	5	30	30		
MS			240			
AR	1		30		30	
SC			60	60		
TN			15			
NC			240	240		
VA			60	60		
WI			120	480		
ME	1	1	15	240	40	
OR			60		60	
WA	1				600 [1]	

[1] 600 minutes of total LVHC venting allowed per month

As indicated in the Table, a handful of states impose limits on the duration of individual LVHC system vents. Arkansas, Oregon, and Alabama impose limits of 30, 60, and 240 minutes for any individual vent from the LVHC system. The state of Washington imposes a cumulative monthly limit of 600 minutes for vents from the LVHC system.

In addition to limiting the duration of individual vents, several states also impose duration limits above which any single venting event needs to be further investigated to identify the root cause and prevent recurrence. This duration limit varied from State to State and ranged from 15 minutes to 240 minutes.