UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

APR 0 8 2004

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Clean Condensate Alternative for the Pulp and Paper National Emission Standards for Hazardous Air Pollutants (40 CFR 63, subpart S)

FROM: for Stephen D. Page, Director
Office of Air Quality Planning and Standards (C404-04)

TO: Director, Office of Ecosystem Protection, Region I
Director, Division of Environmental Planning and Protection, Region II
Director, Air Protection Division, Region III
Director, Air, Pesticides, and Toxics Management Division, Region IV
Director, Air and Radiation Division, Region V
Director, Multimedia Planning and Permitting Division, Region VI
Director, Air, RCRA, and Toxics Division, Region VII
Director, Air and Radiation Program, Region VIII
Director, Air Division, Region IX
Director, Office of Air Quality, Region X

This memorandum provides additional information on the Clean Condensate Alternative (CCA) in the Pulp and Paper National Emission Standards for Hazardous Air Pollutants (NESHAP). Attached are materials responding to questions posed to EPA Region 4 by the South Carolina Department of Health and Environmental Control (DHEC). We have discussed the information in draft form with industry, State, OECA, OGC, OPEI, and EPA regional representatives.

The CCA (40 CFR 63.447) is a pollution prevention and emissions trading alternative set within this NESHAP. It provides mills an opportunity to trade the control of high volume, low concentration vents with pollution prevention projects that reduce the concentration of hazardous air pollutants (HAP) in process water before the process equipment emits the HAP. The CCA rule language provides a framework for the process, affected units, and decision criteria for the alternative. Region 4 States and EPA representatives have been discussing the details on what

can and cannot be counted under the CCA. South Carolina representatives summarized those discussions as questions for EPA response. Region 4 requested that we respond. Since this involves a national program, they asked us to develop and present the responses to all regions. Attachment 1 provides in tabular format a summary of emission reductions that can be used for the CCA. Attachment 2 provides responses to comments posed by the South Carolina DHEC. We believe the attachments are consistent with the rule language and will provide CCA control reductions that can be clearly verifiable and measured to ensure continuous compliance.

If you have any questions on the above or attachments please contact Stephen Shedd, at (919)541-5397 or shedd.steve@epa.gov.

cc: Charlie Garlow, OECA, ORE (2242A)
Rhea Hale, OPEI, OBCI (1807T)
Kent Hustvedt, OAQPS (C439-03)
Leonard Lazarus, OECA, OC (2223A)
Lee Page, EPA Region 4
Stephen Shedd, OAQPS (C439-03)
Steven Silverman, OGC (2366A)

2 Attachments

DHEC Questions on the Clean Condensate Alternative (CCA) in the Pulp and Paper Subpart S (40 CFR 63.447)

(CCA Questions from November 10, 2003 – DHEC Letter from Rhonda Thompson to Lee Page. Bullet responses by OAQPS from discussions with industry, States, OECA, and Regions)

1. Is it acceptable for facilities to use condensate collection from "unnamed" streams to show compliance with the CCA?

- HAP emission changes from condensate streams that are not "named streams" under the condensate collection requirements of §63.446(b) could be used for compliance with the CCA if they are part of the kraft CCA "affected source"(§63.447(a)(1)).

- Two examples mentioned by industry that would not be appropriate are (1) condensates from non-kraft processes, and (2) black liquor spills that are not condensates, not in the affected facility, or are not clearly outside the already required effluent guidelines best management practices.

2. What averaging time frame may be used for a compliance demonstration and to demonstrate continuing compliance? The EPA offered guidance that allowed mills a longer averaging time when mill specific conditions showed the facility would require a longer averaging time for Phase 1[1] of Subpart S. If a longer averaging period is allowed for CCA, is the mill required to submit specific data to justify a longer averaging period?

- CCA is an alternative emission standard to the kraft pulping system vent standards under §63.443 (a)(1)(ii-v) which have a short averaging period.

- Longer averaging times are acceptable, similar to guidance on condensate collection (under §63.446), if *site-specific data*[2] justify a longer averaging period and the other issues discussed in that guidance are considered (see letter: http://www.epa.gov/ttn/oarpg/t3/reports/rwgore.pdf).

3. Can a mill make efficiency improvements to a control device and then use the

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[1]The common term "Phase 1" refers to the first phase of the standards for kraft pulping mills (40 CFR 63.440(d)) that are required to be in compliance by April 16, 2001 or one year later if extension was granted by the permit authority. Some kraft pulping vents listed under §63.443(a)(1)(ii-v), are required to be in compliance by April 17, 2006 under §63.440(d)(1). Those later standards are commonly referred to the Phase 2 HVLC (high volume, low concentration) vent standards.

[2] ***Site-specfic data* must be used during all compliance demonstrations.** As specified in the rule (§63.7(e)) test data must be collected during representative performance (i.e., performance based on normal operating conditions).

incremental improvement for CCA Credit? For example, if a mill added aerators to a wastewater treatment pond to improve efficiency, and demonstrated through calculations that the improved efficiency of the pond decreased HAP emissions equivalent to or better than direct compliance with the HVLC portion of Subpart S, could the mill claim the reductions from the improvements to the pond for CCA credit?

- Yes, if emission changes are verifiable and clearly from additional improvements in technology (after compliance with standards required elsewhere). An example of a change that is not acceptable is the addition of a biological treatment aerator if the mill has insufficient pre-installation test data to determine emission reductions. Or, if the additional aerator is *required elsewhere* to meet the effluent guidelines or Phase 1 of the MACT standard, then reductions cannot be claimed.

- Yes, if the mill can clearly demonstrate that the improvements were not used to over control a source for the purpose of a compliance cushion for other requirements. In addition, improvements used as an operating cushion to gain flexibility in establishing the need for longer treatment standard averaging times or reduced monitoring, reporting, or recordkeeping are not acceptable.

4. Certain mills have proposed using the "Water 9" Model to estimate the 1993 "baseline" emissions from wastewater treatment systems. Some mills have upgraded their wastewater treatment plants for non-regulatory reasons. The model uses current inlet and outlet methanol concentrations to obtain the current efficiency for the pond. The mills have proposed to use past BOD data to determine emission reductions from the reconfiguration of the pond's aerators. The mid-90's reconfiguration of the pond's aerators resulted in an increased biological treatment efficiency. 40 CFR 63.447(d) appears to allow estimates of baseline emissions. However, is the Water 9 Model an acceptable method of estimating past emissions?

- No, the *Water 9*[3] model alone is not appropriate. For compliance purposes for biological treatment units, *Appendix C of Part 63 – Determination of the Fraction Biodegraded (Fbio) in a Biological Treatment Unit* contains the required (§63.457(l)(1-2)) procedures to use for determining the amount of HAP biodegraded in biological systems. Additionally, the calculation of the fraction emitted to the air is performed by filling out the Appendix C forms. You must use *site-specific data* to fill out the Appendix C forms to determine the bio-rates. Also, Appendix C provides different calculation methods for different types of biological treatment units.

- However, Water 9 is a computer model that can be used with *site-specific data* for portions of the calculations performed for 40 CFR 63, Appendix C. Additionally, Water 9 modeling can be used to calculate the emissions from wastewater transport and handling systems (ditches, lift stations, clarifiers, etc.) that are not part of the biological treatment unit procedures in Appendix C. However, *site-specific data* must be used, instead of defaults, in

[3] For information on the Water 9 model: http://www.epa.gov/ttn/chief/software/water/index.html

the Water 9 model.

- Inlet and outlet testing is not appropriate for most systems in this industry since they are not "closed" systems. Most systems used by this industry are open-top biological treatment systems that are not throughly mixed and have multiple zones of bio-activity. We developed procedure 5 (in 40 CFR 63 Appendix C, Section E. Multiple Zone Concentration Measurements) to handle these systems.

- In the earlier example of using an additional aerator (or relocating aerators), please note that you cannot simply use the same data set without the aerator, and then estimate (without further and complete testing) the change with additional aeration. Since the biological treatment unit is a system, changes to any of the operating parameters can alter the system. Thus, the mill must collect all *site-specific data* before and after the changes in any parameter. We believe that it would be extremely difficult to determine the effect of any change by using historical data or equipment changes.

- We discussed with industry using historical BOD to determine past improvements in the system. Before promulgation of the subpart S, EPA and industry considered the use of BOD as an alternative to Appendix C testing and calculations, but it was found to be an inappropriate representation of the HAP biodegraded. Based on data presented recently, demonstrating past performance based on BOD data has still not been demonstrated and the industry does not plan to study this further. Thus, the mill must have a complete set of *site-specific data* (to fill out Appendix C tables) to determine before and after emissions. Therefore, it would be extremely difficult to determine the effect of a historical change.

- Section §63.447(d) states that you must "determine baseline HAP emissions" but it does not mention "estimates" as the question suggests. The preamble (63 FR 18509 & 18523) is consistent on the need of *site-specific test data* for determining compliance for the CCA because of the variability of process equipment and mill operations.

5. Will EPA allow the use of non-site specific emission factors (i.e., NCASI-developed) to estimate the 1993 "baseline" emissions? Is the use of mill specific emission factors acceptable in estimating the "baseline" emissions, especially for very small vents and large numbers of vents?

- No. Variability at a specific mill will strongly influence process emissions. Thus, emission data or correlations from other mills would be insufficient for demonstrating compliance at a mill (see 63 FR 18523).

- However, site-specific emissions can be used to estimate emissions from similar or multiple vents at the mill if the mill can demonstrate that the factors accurately represent emissions from the vent in question.

6. Can a mill combine control options (i.e., control of washer emissions as required by 40 CFR 63.443(a)) in addition to achieving HAP emissions reductions elsewhere from CCA?

Does Subpart S allow for a combination of the control options?

- Yes, but the mill must clearly identify each piece of equipment, how it is controlled, and monitored continuously to ensure compliance. Also, the mill must clearly identify the provisions that apply to piece of equipment.

7. On July 7, 2003, Louisiana DEQ issued a letter to a Louisiana mill which appears to contradict the letter Region 4 issued to Georgia on March 27, 2003. Specifically, the Louisiana letter states that"... the current mill configuration, collection and treatment of flash evaporator condensates in addition to turpentine decanter underflow, before routing the stripped condensates to the pulp washing systems, meets the requirements of the Clean Condensate Alternative. The Hodge Mill has concluded that the liquid methanol collection from this alternative averages 4.3 lbs/ ODTP above the regulatory minimum of 7.2 lbs/ODTP, resulting in an effective collection minimum of 11.5 lbs/ODTP..." The letter goes on to state that "...These estimates show an approximate 40% better emission performance from the CCA Alternative over typical HVLC control." This determination appears to contradict Region 4's letter to Georgia, which states, in part "... Any extra streams or additional mass of condensate used as an operating cushion, or for determining the need for flexibility provided by 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." Please address under what, if any, circumstances "overcollection" or "current mill configuration" can be used to meet the requirements of CCA.

- There are not enough specifics stated above to respond. However, the following may help answer some concerns.

- The unit measure of the CCA is "reduction of total HAP emissions" (§63.447(g)(2)), not "reduction in mass in condensates" (lbs/ton) as in §63.446.

- A mill cannot use the emission change from condensate streams that are part of a compliance cushion for demonstrating continuous compliance with separate condensate collection and treatment requirements (§63.446).

- Also, a mill cannot use emission change from condensate that are used to provide flexibility in establishing the longer condensate collection and treatment averaging times. (Note: the last two bullets are from discussions EPA had with States and industry in early 2003. That discussion concluded in a March 27, 2003 letter to Georgia from Region 4 [http://www.epa.gov/ttn/atw/pulp/letweber_r4_3_27_03.pdf])

- Therefore, mills could use the emissions changes from condensate streams that are not used (1) for Phase 1 compliance cushion; (2) to demonstrate the need for a longer averaging time; and/or (3) to comply with any other requirements, such as a State or local requirements, NPDES requirements, etc.

8. Can a facility perform a new initial performance test (IPT) for Phase 1 to gain CCA credits from streams they are already collecting to meet Phase 1?

- Yes, the mill can and must (after notification and agreement from permit agency) perform a full test for the compliance demonstration on any provision of the rule. Additionally, all concessions negotiated and achieved in the original compliance demonstration need to be discussed and re-analyzed.

- As noted earlier: Mills cannot use the condensate streams that are part of a compliance cushion or used for flexibility in demonstrating continuous compliance with separate condensate collection and treatment requirements (§63.447(d)(1)(i)).

- Mills must clearly identify and demonstrate what condensate streams are used for which provision of the rule and how they will be monitored for demonstrating continuous compliance. See question 12 for further discussion.

9. Can fresh water be used if the facility-wide water balance does not change? A particular mill is proposing to remove at least one existing washer and construct a new (hooded) washer. The facility intends to use the fresh water that normally would have been used with the existing washer in the causticizing area. Is this considered dilution? Is this an acceptable approach?

- Yes, emission changes from using fresh or cleaner water can be counted under the CCA (but the analysis must account for emission increases caused elsewhere from water switch). If additional fresh water is used, it must be demonstrated to be environmentally neutral or beneficial.

10. Does CCA allow for the 4% exceedence exemption specified in 40 CFR 63.443(e)(2) for control devices used to comply with 40 CFR 63.443(c) or (d).

- No. This is a separate standard and we provided no exceedence provisions, so compliance with the CCA must be demonstrated on a continuous basis.

- However, if a mill that is currently using a steam stripper to comply with Phase 1 condensate treatment standards (§63.466(e)(3-5)) and wants to use the same steam stripper for CCA and receive the 10% exceedence provisions of §63.466(g), additional reduction under the CCA would have to occur. The mill would have to fully demonstrate to the satisfaction of the permit authority at the time the CCA demonstration, that the mill is continuously reducing additional HAP emissions under the CCA that is at least equivalent to the CCA emission reductions that could be lost under the steam strippers 10% exceedence period.

11. Can BOD be used as a surrogate for methanol as approved for Subpart S, Phase 1?

- No. BOD has not been determined to be surrogate for methanol for demonstrating initial compliance with any of the standards under 40 CFR 63, subpart S. However,

soluble BOD5, along with four other parameters, can be used as an option for monitoring open biological treatment systems, once compliance has been demonstrated for HAP.

12. An extra concern was raised when discussing and answering the above questions. Can mills use portions of one condensate stream or the effluent from a common collection tank to meet two different standards? We asked industry if all the mills using a common condensate collection tank are using a continuous flow and concentration monitor to demonstrate compliance with condensate collection? If not, how would they determine continuous compliance? Industry replied that two commonly used approaches are: (1) some mills continuously monitor the individual flowrates and collect daily composite samples to determine the average methanol concentration, and (2) some others continuously monitor the flowrates and use this with "methanol concentration factors," developed during the initial performance test and other tests, to demonstrate compliance. In the 2nd case, mills periodically verify/re-calculate these concentration factors.

- Our goal is an approach that provides a real, clear, and verifiable continuous compliance demonstration for the two separate emission standards (§63.446 *Standards for Kraft Pulping Process Condensates* and §63.447 *Clean Condensate Alternative*). To clearly show compliance for each standard, condensate streams and the collection systems should be segregated. Given some mills do not provide separate systems (and collection tanks) and propose to use portions of one condensate stream to meet different standards, we believe these mills should provide a higher level of monitoring to demonstrate combined continuous compliance. Additionally, if the mill does not continuously comply with the combined flow and concentration, then they are not complying with either standard.

- To provide this higher level of monitoring, we believe mills using one collection tank (or header piping system) should initially measure both outlet flow and methanol concentration on a daily basis. This approach matches up with the direct measurement of the X day rolling averages that many mills are using under §63.446 *Standards for Kraft Pulping Process Condensates*. Mill operators must also routinely monitor inlet flows into the tank to demonstrate the inlet condensates contain enough mass (§63.446(c)(2-3) and §63.447) and are from applicable condensate streams (§63.446(b) and §63.447(a)(1)) for each standard. However, we agree that the monitoring frequency of sampling (flow or concentration), after an appropriate period, can be reduced – – provided the mill can clearly demonstrate to the permit agency that the low variability in mass collected in the condensate streams justifies the decrease in inlet or outlet sampling. Additionally, the permit authority can increase the monitoring frequency at anytime if compliance is unclear or diminishes.

- We do not believe continuously monitoring of the flow rates and using "methanol concentration factors" can clearly verify continuous compliance for both standards. EPA and some permit authorities have cautioned that the "factor" approach is not

considered continuous compliance since using a "factor" assumes the concentrations have not changed. Some permit authorities have allowed this approach for compliance with §63.446 *Standards for Kraft Pulping Process Condensates*, when given an appropriate amount of *site-specific data* over all the normal process operating scenarios that clearly show the mass of streams does not vary, the mass collected is easily meeting the standard, and the process is appropriately continuously monitored to demonstrate similar conditions to test conditions. However, we believe that using the direct method of monitoring, measuring both flow and methanol concentration discussed in the above bulleted paragraph, is more appropriate, especially when combining the compliance demonstration for two standards.

Table 1. Calculation Component Summary for the Clean Condensate Alternative (CCA) --- EPA/OAQPS, March 24, 2004

98% of affected Vent HAP Emissions	≤	Baseline (Before) HAP Emissions from CCA Affected Sources	-	HAP Emissions after CCA Technology Is Applied from CCA Affected Sources
• *Knotter & Screens system* • *Pulp washing system* • *Decker system* • *Oxygen delignification system*		• Emissions from the *CCA affected source*: Pulping, Bleaching, Causticizing, & Papermaking (not including additives) systems • Emissions for the Kraft source category • Verifiable HAP emissions from condensates from *CCA affected sources* emitted from wastewater transfer and treatment systems • Emissions from process or air pollution control equipment installed and operating on 12/17/1993 • Emissions after compliance with changes *required elsewhere*: 1) Phase 1 process condensate collection and treatment (§63.446) reductions, 2) Effluent limitation guidelines and standards, 3) Other applicable local, State, & Fed. requirements		Approach • Emission change (increases and decreases) must be clearly verified, measured, and continuously monitored to ensure compliance. • Site-specific test data must be used for determining baseline and emission reductions from the CCA. Emission estimates or engineering assessments can only be used to develop a CCA strategy, but not for CCA compliance demonstrations. • Cannot use emission changes that were part of a compliance or operating cushion used to demonstrate compliance or to provide longer averaging times or less monitoring or record-keeping with standards *required elsewhere*. Condensate streams: • Emission changes resulting from the reduction of additional *CCA affected source* condensate streams (not *required elsewhere).* These may or may not be *named condensate streams* listed under 63.446(b). • Emission changes from a complete or a portion of a *named condensate stream* collected and treated under 63.446 (Standards for kraft pulping process condensates) but later fully demonstrated to not be needed for compliance with those standards. • Emission changes from using fresh or cleaner water can be counted (but the analysis must account for emission increases caused elsewhere from water switch). If additional fresh water is used, it must be demonstrated to be environmentally neutral or beneficial. • Cannot use emission changes from collecting or treating only a portion of a *named condensate stream*, if using the all "named stream" collection requirement of 63.446(c)(1). Technology: • Emission changes from enclosing or covering affected sources can be counted if the analysis also includes any increased emissions in the downstream *HVLC system* process equipment. • Emission changes from technology improvements where the HAP reductions are clearly demonstrated and the improvements are not *required elsewhere*. Example of a change that could not be counted is an adding an aerator to a biological system where insufficient pre-installation test data is available to determine emission reduction have occurred and/of if the aerator is *required elsewhere*. Example of improvement that could be counted is adding a tray to a steam stripper where before and after test data demonstrates the reduction is achieved. • Improvements in combustion of vent emissions beyond 98%, 20 ppmv, etc. cannot be counted. • Credits cannot be from shutdown of process units.