

Proposed Options on Hydrogen Sulfide and Activated Sludge Treatment Issues

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Background Facts

Based on the Weyerhaeuser submittal of emissions and modeling to the N.C. Division of Air Quality, the Plymouth Pulp Mill is currently operating exceeding the current H₂S Acceptable Ambient Level (AAL) guideline. For instance, its modeled maximum property line concentration is 15,000 ug/m³ compared to the current AAL of 2,100 ug/m³. No other facilities have submitted models, but there is reason to believe that:

1. All NC mills (except Blue Ridge) would likewise model above the current H₂S AAL.
2. To have their wastewater treatment systems comply with any of the three proposed AALs, all NC mills (except Blue Ridge) would be forced to convert from aerated stabilization basin to activated sludge treatment, and then add covers, ducting, and an incinerator.

Data in the literature indicates that the wastewater treatment at pulp/paper mills release an equivalent amount of methyl mercaptan relative to H₂S. Assuming this similarity and given the current methyl mercaptan AAL of 50 ug/m³, it is likely that the wastewater treatment operations also produce conditions above the current methyl mercaptan AAL. This means that DAQ believes that modeling would estimate a level near 15,000 ug/m³ relative to the methyl mercaptan AAL of 50 ug/m³.

In addition, there are indications that a trend is developing. Wastewater discharge limits for biochemical oxygen demand, total suspended solids, nitrates, and phosphates are getting stricter for the paper industry as well other industries. Because of its superior performance, several paper mills with aerated basins releasing wastewater into sensitive waterways with stringent permit limits already have or are switching over to activated sludge. This is true at least in certain areas in Florida, Michigan, Minnesota, Washington, Wisconsin, Canada, as well as for Blue Ridge Paper on the Pigeon River here in NC.

The technology on the extent and control of H₂S emissions from wastewater treatment is not fully developed. This means that there is not enough known and understood about these issues for the paper industry to make a huge commitment in significantly reducing H₂S emissions from wastewater treatment. Until more information is available, DAQ recommends that the paper industry wastewater treatment operations be handled with an exemption.

Proposed Options

Below are three proposed options for consideration.

1. Revise the AAL and exempt wastewater treatment systems at paper mills until February 1, 2007, in which case a demonstration of economic hardship may not be necessary.
2. Revise the AAL, but do not exempt wastewater treatment systems at paper mills, in which case a demonstration of economic hardship would be necessary from each facility.
3. Do nothing: do not revise the AAL, and do not exempt wastewater treatment systems at paper mills, in which case a demonstration of economic hardship would be necessary from each facility.

Further Investigation

In any of the three proposed options, further investigation on the extent and control of all toxic and hazardous air pollutants from wastewater treatment systems at paper mills appears necessary. DAQ recommends for consideration that the paper industry perform such a study and prepare a written report(s). In addition to the air quality benefits, industry would evaluate any improvements/ benefits in the quality of wastewater discharge to see if there were any synergy in improving air and water quality with a given technology(s). Industry would report its interim findings and recommendations by February 1, 2005, and its final findings and recommendations to DAQ and the Air Quality Committee no later than February 1, 2007.