Date: February 16, 2005 – Susan Jenkins
File to: Norbord Georgia, Inc. – Title V Permit File

RECORD OF TELEPHONE CONVERSATION

Party Spoke To: Scott Standefer
Representing: PPC Industries
Location: Texas
Phone Number: 903-758-3395
Type: Incoming X Outgoing Returned

Summary of Call: Topic of discussion = Biofiltration for Wood Products Industry
We discussed the use of biofiltration to control organic emissions from OSB dryers and presses using Southern Yellow Pine. www.ppcbio.com

Discussion...
A biofiltration system follows the RTO concept of pretreatment of the exhaust stream and then cleaning the air stream. A biofiltration system is typically composed of a bioscrubber followed by a biofilter. There are three design hurdles with several regulatory hurdles that must be overcome for the use of biofiltration to be economically feasible.

The first design hurdle is temperature. A biofiltration system works "well" with an exhaust stream that is 55 deg F to 105 deg F. If the exhaust stream is greater than 105 deg F, the result is a reduction in the appetite for the designed bacteria culture. As the temperature kills the designed bacteria culture and a new bacteria culture is formed. As the temperature of the stream increases the removal efficiency of the biofilter decreases. **An OSB board press** typically operates at 400-500 deg F with an exit temperature of 120 deg F. The wet bulb temperature of the stream is 80 deg F which is within the design temperature range. The press exit stream is contacted with water (100% relative humidity) (i.e., bioscrubber). **An OSB flake dryer** typically operates at 800 deg F with an exit temperature of 275 deg F. The wet bulb temperature of such a stream is around 165 deg F – still too hot after exiting a bioscrubber. The exit stream may be

further cooled but this action will produce a condensate. Simple organic compounds such as methanol, formaldehyde, and phenol are water soluble. Complex organic compounds such as alpha and beta pinenes are not water soluble.

The second design hurdle is particulate matter. PM can plug a biofilter. It is not uncommon for a biofiltration system to be preceded by some sort of pre-filter such as compost, rocks, bark, a cyclone or a baghouse. **An OSB flake dryer** produces too much particulate matter to make cleaning the particulate stream prior to the biofiltration system economic. **An OSB press** has a "low" particulate matter hurdle to overcome. A bioscrubber should work well at cleaning the stream of particulate matter.

The third design hurdle is the chemical constituents that need to be removed plus their required removal efficiency. The third design hurdle can be viewed as technical feasibility vs. economic viability. If the regulatory agency only requires removal of simple organic compounds (such as methanol, formaldehyde, phenol), the biofilter can be designed with a very short residence time because the designed bacteria culture can easily decompose the organic compounds. If the regulatory agency requires removal of complex organic compounds (such as alpha and beta pinenes), the biofilter needs to be designed with a very long residence time (i.e., 50 seconds) because the designed bacteria culture cannot easily decompose the organic compounds. Longer residence time interferes with the production rate.

The regulatory hurdle to overcome is whether the project is allowed any wastewater stream as the use of a biofiltration system produces a wastewater stream.

Typically, for the production of OSB from Southern Yellow Pine, the removal efficiency guaranteed for a biofiltration system is 50% (designed for 95%).