

# **PRODUCTION OF A BIO-BASED GREENHOUSE MEDIUM FROM CO-COMPOSTING OF TIMTEK PROCESS WATER AND WOOD WASTE**

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## **Abstract**

The Timtek process involves crushing of small diameter trees to form mats which are coated with adhesive then pressed into boards. The crushing process yields effluent water that has a high biological oxygen demand (BOD), chemical oxygen demand (COD), and total suspended solids (TSS). This water must be remediated before it can be discharged into public water systems. A six month study was conducted to evaluate the effectiveness of co-composting of the process water with wood waste and chicken manure as a method of remediation. Wood waste from the pilot facility in Shuqualak, MS was ground into sawdust. This sawdust was composted using four treatments with deionized water or process water to adjust moisture content. Two treatments were amended with manure to provide a nitrogen source; two received only deionized water or process water. The compost end-products for all treatments were then evaluated for relative toxicity, weight loss, maturity and suitability as a container substrate in a greenhouse experiment using pansies. Additional testing was conducted to determine the toxicity of compost leachate and to evaluate the effects on germination rates of sensitive plant species. Co-composting successfully reduced the bulk and toxicity for all treatments. Treatments containing manure and process water showed over 90% emergence rate of radish seeds by day 90. The manure amendments were also comparable to the commercial greenhouse substrate in aiding plant biomass production. The end result of the experiment was the production of a bio-based value added medium that was non-toxic and suitable for soil amendment/potting mix.