

# POLLUTED LIGNOCELLULOSE WASTE AS A RESOURCE FOR MARKETABLE PRODUCTS

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## **Abstract**

Fiberbanks and fiber-rich sediments are legacies of the previously unregulated wastewater discharge from the pulp and paper industry that have accumulated large quantities of toxic organic waste on the Baltic Sea floor and on the bottom of rivers and lakes. Several km<sup>2</sup> are covered with deposits of fibrous residues that are, typically, heavily polluted with a number of organic and inorganic substances, posing a serious threat to human and ecological health. High toxicity and the large volume of the polluted material are challenges for remediation endeavors. However, since the fibrous material is a bioresource with a high energy density, the sheer quantity of it could appeal to commercialization as feedstock for various marketable products. This study sets out to explore the potential of using this polluted material as a resource for industrial production, by reviewing and synthesizing data about modern production methods or reuse alternatives for lignocellulose material that can be adapted to a polluted feedstock. Biochemical methods such as composting, anaerobic digestion, as well as, thermochemical methods, for instance, HTC, HTL, pyrolysis, gasification etc. have been assessed. Potential end products from fiber bank material include biochar, liquid and gaseous biofuels, growth media, and fatty acids and proteins produced by white-rot fungi.

**Keywords:** Fiberbanks, Polluted Sediments, Bioeconomy, Baltic Sea, BioRem Fiber, Sediment Mining.