

# MYCOREMEDIATION OF POPS- CONTAMINATED FIBERBANKS AND BIOACCUMULATION OF METALS/METALLOIDS BY WHITE ROT FUNGI

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## Abstract

Many coastal areas in Sweden are contaminated with fiber-rich sediments from pulp and paper industry. These fiber-rich sediments are referred to as “fiberbanks” and contains lignocellulosic materials, persistent organic pollutants (POPs) and toxic elements (metals/metalloids). POPs are long-lasting, highly toxic chemicals, and resistant to natural environmental degradation. In the case of exposure to people, POPs can cause serious health problems such as cancers, congenital anomalies, and immune system failure.

Bioremediation is a very effective, environmentally friendly and, cheap way of removal of contaminants, pollutants, and toxins. Due to the properties fungi possess (such as mycelia structures and secreted enzymes), using fungi for bioremediation (mycoremediation) attract attention by their ability to degrade and/or accumulate toxins. White rot (wood-decay) fungi have the ability to biodegrade POPs, uptake metals/metalloids, and use lignocellulosic material as a carbon source.

In this work, twenty species of white-rot fungi naturally growing in Sweden will be tested for their ability of biodegrade POPs, and bioaccumulation of metals/metalloids. Fiberbanks were

collected from Ortviken (Sundsvall Bay-Västernorrlands). The fungi grow on a small hagem-agar disc with fiberbanks around it. The growth rate of the fungi is recorded with a camera and the circular growth is measured. After two months of growth, POPs degradation will be analyzed by gas chromatography-mass spectrometry (GC-MS) and metal uptaking by high-resolution scanning electron microscopy (HI-SEM).

**Keywords:** Mycoremediation, POPs pollution, white rot fungi, lignocellulose, bioaccumulation