

**Investigation of
Respiratory Hazards
Associated with Processing
/ Handling Wood Products
Derived from Trees Killed
by Pine Beetle Infestation**

**FOREST
INDUSTRY
HEALTH
RESEARCH
PROGRAM**

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FIHRP FOREST INDUSTRY HEALTH RESEARCH PROGRAM has published a report titled "Investigation of Respiratory Hazards Associated with Processing / Handling Wood Products Derived from Trees Killed by Pine Beetle Infestation". The report is available to FIHRP members on the Pulp and Paper Employee Relations Services website at www.paperforum.com or contact Mr. Scott MacLean by phone (604) 532-0642, by fax (604) 532-0639, or by e-mail at smaclean@paperforum.com. Non-members of FIHRP may be charged for the report.

The Forest Industry Health Research Program funded an investigation to determine whether pulp and paper mill workers handling or processing wood chips and other wood products derived from trees killed following attack by the mountain pine beetle are at greater risk of adverse health effects compared with mill workers handling other wood products.

As part of this project bulk composite samples of wood chips, sawdust and hog fuel were collected from two paper mills handling affected wood. These samples were analyzed for microbial species and concentrations. A literature review was also conducted to evaluate microbial species normally associated with wood chips, sawdust and hog fuel derived from trees that have and have not been killed due to pine beetle infestation. In addition, the literature review included an evaluation of the health effects associated with the specific fungal species identified in the bulk samples.

This study found that, relative to the concentrations reported in the literature, total microbial concentrations in the hog fuel, wood chip, and sawdust samples were within the expected ranges. In some samples, bacteria were more predominant than fungi. Yeasts were also identified in some samples. Evidence in the literature reviewed suggested that large quantities of yeast have been isolated from mountain pine beetles and from early stage infested pine trees. The mean total microbial concentrations for the wood chip and sawdust samples collected from the wood supply trucks at both participating mills were found to be lower than those collected from the wood chip and sawdust piles at those mills, suggesting that microbial growth continues after arrival at the mill.

The primary fungal species associated with mountain pine beetles, and early stage infestations, were not identified in any of the bulk samples analyzed. However, fungal species associated with late stage infestation were isolated from some of the bulk samples. Several fungal genera / species associated with adverse health effects in workers in the forestry industry, as well as species reported to be potentially hazardous, but not specifically linked to adverse health effects in wood workers, were found to be present in the bulk samples.

Species of fungi and bacteria found in pine beetle killed wood were very similar to those species reported to be present in unaffected wood. Most species present are most likely due to secondary microbial infestations. Exposures and associated risks to pulp and paper workers from fungal contamination in both pine beetle killed and normal trees have not been adequately assessed; however, it is unlikely that the health risk increases when working with pine beetle killed trees.