



TECHNICAL BULLETIN

STRUCTURAL BOARD ASSOCIATION

Representing The OSB Industry

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ORIENTED STRANDBOARD (OSB) IN LANDFILLS

BACKGROUND

Oriented strandboard (OSB) is a popular structural-use wood panel. OSB is extensively used in residential and low-rise commercial construction as well as industry for packaging, pallets, displays, furniture frames, I-joint webs, and many other purposes. Similar to many construction and industrial processes, use of OSB generates some waste wood which may be recycled. However, if recycling facilities are not available, this waste wood may be placed in landfills. In order to provide information on the behaviour of OSB in landfills, the Structural Board Association commissioned studies by the Minnesota National Resource Research Institute (MNRRRI) affiliated with the University of Minnesota, and by Forintek Canada Corporation. This bulletin sets out the results of this research.

OVERVIEW

Based on present information and current manufacturing technology, landfilling of typical oriented strandboard (OSB) is a safe practice which consumers and contractors should engage in freely if no other alternatives for disposal or recycling are available. OSB is currently a non-hazardous solid waste under the federal Resource Conservation and Recovery Act (RCRA).

RESULTS OF MNRI¹ STUDY

Oriented strandboard is a composite wood product manufactured from various wood species, including aspen, southern yellow pine, and other softwood and hardwood species. The species used depends on the location of the manufacturing facility. Other additives to OSB are resin (adhesive) and wax. In general, OSB is 95% to 97% wood with 3% to 5% additives in the form of wax and resin solids.

The characteristics of a well-managed landfill will mitigate any adverse effects to health or the environment from disposal at such a facility. When a material such as OSB is landfilled, it likely ends up under dry anaerobic conditions. Under these conditions, the OSB will be entombed with minimal risk of leaching.

If the landfill is an older, poorly managed landfill, the OSB might reside in an anaerobic "wet" situation. Like other wood products, the wood component of the OSB under these conditions should hydrolyse very slowly, with the cellulose lost first. It is estimated that a 50% reduction in the cellulose content of a wood by hydrolysis would take 200 to 420 years. Burial for an estimated 150,000 years would finally reduce the wood component almost entirely to lignin.

New landfills under the federal RCRA law must be designed and managed to capture and treat any leachates which may be present. The leachates from a landfill under these regulations have to be monitored, captured, and treated.

What happens to the resin and wax during the natural decomposition of OSB can be fairly complex. The bacteria which "eat" the resin and wax (anaerobic or aerobic decomposition) will either use it for energy or may metabolize it. If it is used for energy the by-products would be carbon dioxide and water. If the bacteria metabolize the resin and wax, it could become a harmless fatty acid or a part of the bacteria. Overall, the by-products are considered harmless.

RESULTS OF FORINTEK STUDY²

A separate study assessing the environmental impact associated with the landfilling of OSB examined and analyzed leachate from single batch extractions of OSB blocks. The amount of volatile organic compounds in the leachates and particularly phenolic compounds were quantified. Results showed that no volatile organic chemicals were present in the leachates and only very small amounts of several phenolic compounds. Four of the five panel types showed less than 1.0 mg/L of phenol. This amount is low compared to the threshold limit value of 100 mg/L allowed in the province of British Columbia.

¹ This position statement has been prepared by Chris Edwardson, Program Manager for Composite Wood Products at the Natural Resources Research Institute (NRRRI) in Duluth, Minnesota.

² Forintek Canada Corporation study on Panel Products Stewardship by Dr. Alpha Barry, Research Scientist, Composite Wood Products.