



New Hampshire

Department of Education Technical Advisory

Serving New Hampshire's Education Community

Potential Danger of Fire Treated Lumber

This Technical Advisory is issued to notify schools and school districts about a potential danger if the lumber that was used in the construction of their respective schools, specifically in the roof trusses, was treated with a fire retardant chemical. Recent tests have shown that some chemicals used to make lumber fire retardant has been found to cause significant strength loss over time. Therefore, schools and school districts should take the steps necessary to identify if their school construction utilized fire retardant treated lumber.

Fire Treated Lumber

The Department of Education has recently become aware that lumber treated with fire retardant chemicals may experience a significant deterioration in strength over time. The chemical compound in question is monoammonium phosphate. It was used in the late 1980s to enhance lumber fire retardant properties. Products which utilized this chemical compound include the following:

- Osrose Flameproof LHC
- Hoover Interior Fire-X
- Hoover Protex
- Hoover Universal

It is important to note that this is not an all-inclusive list. **There might be other products that used the problematic chemical compound of monoammonium phosphate.** At this time, the Department of Education is aware of two New Hampshire schools that used the affected wood in school construction.

The fire retardant chemical causes a significant deterioration to the strength of the lumber. Specifically, the building codes in effect at the time this fire retardant chemical was used in construction, anticipated and accounted for a ten or fifteen percent strength reduction. However, testing of the affected wood shows a significantly greater strength reduction—in one instance there was a 60 percent loss of strength to the lumber.

The effects of the chemical compound and the resulting dangerous condition is most notable in the beams that support the attics of buildings. This is because the hot or moist conditions typically found in an attic apparently exacerbates the deterioration and the lumber used in attic construction are support beams, thus resulting in a troubling combination. Additionally, the breaks which occur in the affected lumber are not typical wood breaks in that they are not long and splintered. Rather, the fire retardant chemical causes the wood to become what is referred to as “brash.” When used to refer to wood, the term “brash” is synonymous in meaning with brittleness in other materials such as glass. Brashness is an abnormal condition of wood and

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Page 1 of 2



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the resulting breaks usually occur across the grain and resemble broken glass. Further complicating the situation is that the affected lumber and resulting breaks can be concealed by the attic insulation.

Therefore, school districts that have buildings which were constructed in the mid-to-late 1980's should undertake a review of the materials utilized to ensure that their buildings do not have the affected lumber. Lumber that was treated with fire retardant chemicals generally have a stamp with this information on it. Additionally, this information should be contained in the original construction documents. It is important to note, that the lumber does not necessarily have to have visual cracks to have been affected by the chemicals. Therefore, a cursory, visual inspection of the lumber **will not suffice** to ensure that the beams have not deteriorated in strength.

If a school discovers that lumber which was treated with a fire retardant chemical was used in construction in its district, it should contact a structural engineer to have it further evaluated. If any visible horizontal cracks are found or any other evidence of reduced strength, the school should immediately close off the areas below until further evaluation of the situation can be made.

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Page 2 of 2