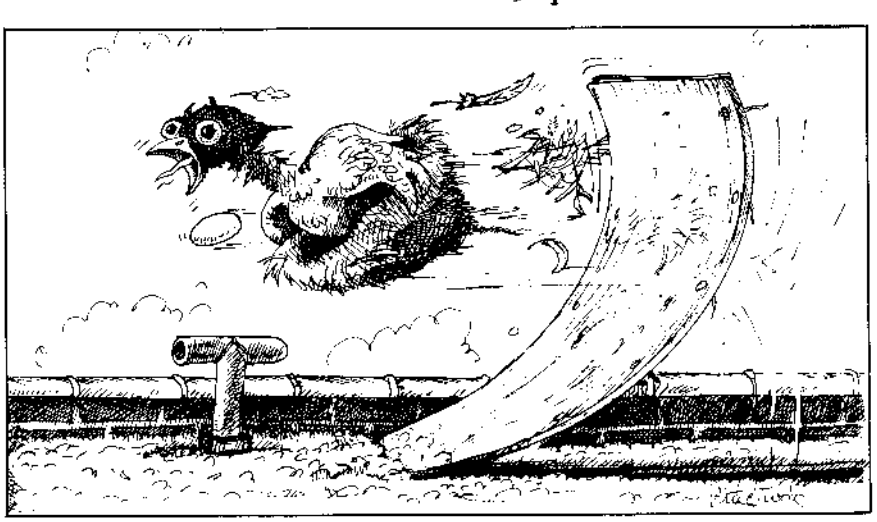
*Many contractors have reported that the fire-retardant-treated (FRT) plywood they are using is delaminating and separating on the roof. The American Plywood Association (APA) has also noted this problem and has addressed the issue in its Management Bulletin No. T-180, which is signed by Thomas A. Flint, APA's director, Technical Services Division.*

*Because of the seriousness of this matter, all contractors should be aware of the contents of APA's bulletin. To get the word out we asked for and received APA's permission to reprint the document in full. The following is the text of the bulletin.*

Over the past few months we have been made aware of an alarming number of reported field problems with FRT plywood. To our knowledge, all of the cases have involved the so-called low-hygroscopic interior fire-retardant treatments. There does not seem to be discrimination as far as any proprietary system is concerned. In short, it appears to be a general treating industry problem with potentially serious ramifications.

The problems exhibit the following common traits:

- Problems generally show up two to three years after construction.
- Panels are most often reported as charred, brittle or punky, and appear to be "decayed."
- [The plywood shows] low panel strength and/or stiffness, with some panels having failed or broken on the job under light walking traffic. Strength loss can be as much as 50 percent.



- Panel buckling is often present.

Analysis of specimens by two independent organizations revealed destruction of the middle lamella (the cement between cells), causing separation of the fibers similar to pulping. The samples were further described as having degradation similar to what one sees with acid degradation of wood.

Recent contact with the U.S. Forest Products Laboratory (FPL) has revealed some preliminary facts and evidence on the mechanism taking place. FPL staff indicated the primary fire-retardant chemicals used (mono and diammonium phosphate) are very reactive with water. Moisture from rain, condensation or humidity can cause this reaction. The resulting phosphoric acid can cause acid hydrolysis of the wood, destroying not only the middle lamella but also breaking cellulose chains, which severely degrades the wood over time.

It appears that the three primary ingredients for degradation are time, moisture and elevated temperature. All can be present in the construction environment, meaning the potential for field problems with FRT plywood can be enormous.

To further investigate environmental factors affecting performance, APA technical staff is undertaking a preliminary study on plywood samples supplied by the major suppliers of fire-retardant treatments. Data developed in the study should shed some additional light on the subject and reveal ways FRT plywood can be used with assurance of performance. However, because of the moisture/time factors, answers will not be quickly available.

You should know that APA has withdrawn from publication of FRT plywood strength reductions. Inquiries for that information are being referred to treaters and their suppliers. The source of information on structural capacity following treatment must rest with the treaters due to the proprietary treatments of the treating industry.

Further, APA promotional literature is being revised to note that the span rating and design information applies only to untreated material and is *invalid* after treatment with fire-retardant chemicals.

To aid your sales and distribution staff in assuring proper specification and use of fire-retardant treated wood, they should be advised of this APA promotional position, and that information on the structural capacity of treated panels must come from the company that provides the treating and drying service.