KEYNOTE ADDRESS

TREATED WOOD PRODUCTS - USER NEEDS AND PERCEPTIONS

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In this presentation, I will give my perception as to how evolving user needs create new opportunities and influence performance requirements for durable wood products. My central theme is that, because the individual consumer now recognizes that some aesthetically acceptable solid wood products are durable, the consumer may demand more types of durable products and is likely to ask for additional performance attributes from existing durable products. I will illustrate how some user requirements, developed for treated wood products by utilities and railroads, have moved into the consumer product sector with redefinition of evaluation criteria. User requirements or perceptions that reflect this age of information, environmental concerns, specialization, consumer protection and their impact will also be addressed.

CONSUMER AWARENESS

When a colleague and I conducted a survey of single-family houses in Mobile County, Alabama, almost 15 years ago, we learned that home owners were aware of their options for controlling termites but were not aware of their options for preventing decay. "wood rots" was a frequent home owner response to our inquiries as to why better construction techniques were not used to keep wood dry, or why pressure treated wood or even water repellent preservatives were not used to advantage.

Large user groups, such as railroads, utilities, port authorities, and highway engineers have long recognized the benefits of treated wood products. The sustained growth in volume of softwood products treated with waterborne preservatives during the last decade and their utilization within the residential market, I submit, evidences current consumer recognition that aesthetically acceptable wood need not rot. This important change in consumer awareness creates new market opportunities for durable products and brings new user demands and desires for product performance.

NEW MARKETS

Increased consumer awareness of wood durability can open additional markets for treated wood products. The wood foundation is one example. The alteration and repair market is forecast as a major opportunity for treated wood products in the United States. This market might also be an important growth area in some parts of Canada. Non residential construction may offer additional market opportunities for treated wood products.

In some areas of the United States where insect attack to wood above ground is a potential problem, the cost differential between unprotected and treated commodities favours using unprotected wood in construction. In the extreme southern part of the United States, wood components of housing are subject to attack by both drywood and subterranean termites. Protection from subterranean termites traditionally has been achieved by treating the soil under and around the foundation with an approved termiticide. Problems with drywood termites are addressed only through fumigation of existing structures. Fumigation has no residual effect, hence the home owner can experience reinfestations. Formosan termites are of more local concern in specific communities in the United States. Where they occur, they present unique challenges because they can establish colonies above ground. Will consumer demands for durable construction in these areas ever be strong enough to support the added costs of using treated wood at the time of construction?

ENVIRONMENTAL CONCERNS

The fundamental attribute of treated wood products is that they last. Depending on the specific product, this durability traditionally has been achieved using either pressure or non pressure treatments with broad spectrum pesticides. Levels of preservative application were constrained mostly by economic considerations. Now, however, environmental pressures are emphasizing precise targeting of dosage to performance requirement to avoid excess use of pesticides. Use of systems with reduced toxicity and with the narrowest practicable spectrum of activity is also a component of the environmental movement.

Perceptions of environmental safety or hazard weight heavily with most consumers. With increasingly demanding environmental requirements for wood protection systems, a greater diversification of technologies for protecting wood seems likely to evolve in an attempt to fill specific market niches. Recent use of borate treatments to protect hardwood moldings from attack by wood destroying beetles is one example of this principle. At least one port authority with the United States has restricted its acceptance of treated wood products to treatments with very specific performance properties.

Users of wood furnishings within homes in tropical areas desire that these products resist attack by indigenous insects. In the United States, some chemicals, once used to protect these products from insect attack, are no

longer accepted by environmental agencies for use within inhabited structures. For some industries that participate in this export market, regulatory development has created opportunities for new options to meet user requirements. I suspect that similar opportunities exist within the Canadian export market, as exemplified by your interests in stain control.

Interest in less toxic preservatives has rekindled a review of copper naphthenate and is prompting investigations of other alternatives.

One concern about CCA treated wood that has not been fully resolved, is the question of potential exposure hazard that might occur with CCA treated wood prior to chemical fixation. We are currently researching methodologies for field monitoring the state of CCA fixation in wood. Procedures developed in the laboratory are currently being field tested by cooperators in one of the AWPA technical subcommittees. An explanation of the fundamental chemical principles of fixation awaits definition. This poses a significant challenge to the research community. Precise understanding of this phenomenon could pave the way for development of a new generation of preservatives.

Another concern, for which answers are known, is a potential for improper handling and disposal of treated wood materials. In the United States, producers have alerted retailers to these procedures; but the communication link between the retailer and user, such as contractor or home owner, is weak. The importance of this linkage and a positive means to address this through promulgation of "safety tips" were recently presented before the AWPA by representatives of SAWP and AWPI. A broad base of consumer understanding of proper handling and disposal procedures will better serve both producer and user. Knowledgeable consumers will better serve both producer and user. Knowledgeable consumers will be less prone to commit errors and a common understanding of proper procedures will buffer the marketplace against impact of inadvertent mistakes. The automobile industry could be offered as a corollary example where safe driving practices benefit the consumer and industrial efforts to improve product safety and minimize the impacts of individual accidents.

CONSUMER USE REQUIREMENTS

Users also require some degree of product reliability, products with physical and mechanical properties appropriate for the intended end use, acceptable appearance and, for some products, resistance to fire.

Reliability begins with an accurate understanding of the intended purposes for different types of treated wood. User-friendly labeling which advises the user whether treated products should be used out of contact or in contact with the ground is one means of communication that contributes to proper use of treated wood products. Expansion of this practice to include an alert against using lightly treated materials, such as landscape timbers, for permanent loadbearing construction in soil contact would further minimize misapplication of treated wood products.

More attention is being given to finite description of anticipated performance potentials of durable wood products treated at specified retentions. As a consequence, the natural durability of some products, such as western red cedar shakes, is being supplemented with chemical treatment to achieve higher levels of durability.

Early attempts to describe service lives of treated products focused on railroad ties. Utilities have for some time accounted for costs of poles on a basis of an average life of poles in line. Now, however, more consumer-oriented commodities, such as dimension lumber and posts, are being retailed, in some instances with warranties for minimum lifespan of each piece! This anticipation of specific service life is now entering the standards-setting process as a criterion in setting minimum retention levels for new preservatives.

For the user, this trend will ultimately result in greater product reliability. For the producer, it demands accurate assessment of performance potentials of treated wood products and good quality control. For the proponent of a new protective system, this development poses added challenge. Not only is a new system evaluated with reference to an accepted industrial standard, it is also evaluated for its intrinsic potential performance in different environments. For the researcher, this trend requires increased emphasis upon construction and design of laboratory and field evaluations which will provide not only accelerated, relative comparisons within the test, but also estimates of variability and lifetime distribution parameters for specific products. The facility for accelerated biodeterioration, being discussed in this meeting, is in step with this trend.

A major research program is underway in the United States to identify the relative contribution of various components in petroleum solvents to durability of products treated with oilborne preservatives. This research should lead to development of an ideal carrier with respect to efficacy.

A correlation between preservative penetration and protection is well recognized. The practical need for more than a shallow layer of preservative treatment over refractory heartwoods is quickly seen in marine construction and over a much longer period of time in above ground construction. The full potentials of a complement of indepth penetration for preservatives and supporting supplemental protection of heartwood via fumigation or biotechnology warrants definition. Great strides in incising technology have been made in Canada. The wood products sector will benefit from these advancements.

Physical and mechanical properties of the treated wood product must be adequate for intended use. For example, the climbability of poles treated with different preservative systems is being researched by attempting to alter surface hardness of treated wood or to alter designs of climbing tools. In several laboratories, effort has been directed to define the upper temperatures acceptable for kiln drying CCA-treated wood products after treatment.

Fire performance of roofing materials is receiving increased attention, particularly for construction located in areas defined as the "urban-wildland interface".

In conclusion, the experience of individual consumers with wood products treated with waterborne preservatives has fostered a public perception that wood products from many species can be rendered durable through appropriate processing. I submit that durability will now have to be factored into the development of many new composite and solid wood products.