

In This Issue

The Louisiana Forest Products Laboratory was established in Louisiana to serve the people of this state. Our aim is to enhance the wise use of our forest resources by helping Louisiana forest products and related industries develop and maintain efficient production of value-added products, become more competitive in the marketplace, increase local employment opportunities and provide quality professionals through education.

We do this through a variety of activities such as answering inquiries and providing free information and publications when available. When information is needed that is not available, research projects are carried out to develop this information. These projects are most commonly supported by outside grants, which are provided in a number of ways. Significant work for one company is supported by that company. If a broader research project is required, the support can be shared by any number of cooperating companies. When the issue is of a national or international focus, funds are sought from state and federal sources.

This issue of the Louisiana Forest Products Laboratory Newsletter has been developed to let you know about our activities. We hope

(continued on page 2)

Developing Termite-resistant Structural Wood-based Panels From Southern Wood Species

The Formosan subterranean termites (FST) pose a growing threat to all structural wood materials in residential construction. The species is one of the most aggressive and voracious insects in the world, eating cellulose - a main component of wood material. Treatments of wood members with chemicals such as chromated copper arsenate (CCA) and borate have been effective against the termites. Structural lumber and plywood can be successfully treated after manufacturing (for example, pressure treatments with CCA). Structural composite panels such as oriented strandboard (OSB), however, cannot be pressure-treated once it is made into panel form because of its large swelling characteristics. The product is made of wood flakes glued with a thermal-setting resin. It is

widely used as sheathing, flooring and I-joint materials in construction,



Long-term structural testing of borate-modified oriented strandboard manufactured at LFPL.

replacing more traditional plywood. Thus, alternative techniques for protecting OSB against FST have to be developed.

(continued on page 5)

School Adopts New Name The School of Renewable Natural Resources

The Louisiana State University School of Forestry, Wildlife and Fisheries became the School of Renewable Natural Resources when final approval for the name change came from the Louisiana Board of Regents on January 24.

“The new name better explains the mission and scope of the school,” said LSU AgCenter Chancellor Bill Richardson. “The school has become a leader in natural resource management, and the teaching, research and outreach programs of the school are more inclusive than reflected in the old name.”

(continued on page 3)

Marketing Program Helps Louisiana Producers

The Forest Products Marketing Program conducts many research projects that have direct implications for Louisiana forest products producers. This article describes some of the recent studies and how Louisiana can benefit from them.

Pallets are the largest use of lower grade hardwood lumber in the United States. In this study, pallet manufacturers in the southern United States were surveyed to study the overall structure of the industry in this region. A number of issues were studied, including production, raw materials, marketing and training needs. Labor and resource procurement were of greatest concern for expansion. The results are valuable for Louisiana producers because they give competitive information from neighboring states.

In another study, we looked at Southern yellow pine (SYP), which has for many years provided the homebuilding industry with abundant, cost competitive products. Our objective was to ascertain homebuilders' perceptions of SYP lumber quality. SYP is still regarded positively by most homebuilders nationwide and is considered a credible resource to use in manufacturing good products. But a significant number (though not a majority) of homebuilders do perceive that SYP quality has declined over the past half-century. Some possible reasons for this perceived decline in quality are attributed to the fast grown nature of plantation wood and to possible errors in kiln drying techniques, among others. Because Louisiana has many SYP producers, this study can

(continued on page 4)

Formosan Subterranean Termite-resistant Wood-based Materials Under Investigation

The damage to homes and forests caused by Formosan Subterranean Termites (FST) and resulting treatments and repairs are estimated at \$2 billion a year nationwide, with \$350 million or more of that in New Orleans. It is the most destructive insect in Louisiana. One primary solution to termite control is to make wood inedible to termites or to stop using wood products in construction. As a result, actions are being taken to encourage the use of treated wood products for house construction in the South. A major issue, however, is the availability of treated engineered wood products such as oriented strandboard (OSB). Various treatments are becoming available, and many new treatments are under investigation to help address this issue.

A Formosan subterranean termite lab has been set up at LFPL to test wood-based materials for resistance to this pest. Materials containing various treatments with low toxicity to humans and animals, such as borate components, are being examined. Termites are collected and placed in containers with the materials under investigation. More than 55 treatments have been tested in the last year. Promising new treatment combinations are being developed. In addition, there are plans to develop a testing site off campus to help determine long-term effects on material resistance.

In addition to FST resistance, material properties such as thickness swell, leachability and strength properties such as Modulus of Elastic-

ity, Modulus of Rupture and internal bond have to be determined. Therefore, for promising new treatments, these properties are being investigated as well.

A number of researchers are working in this area. In the LFPL, Dr. Ramsay Smith, Dr. Qinglin Wu and Dr. Todd Shupe are leading various components of this work. In addition, cooperation with Dr. Gregg Henderson in the Department of Entomology and Dr. Dennis Ring in the AgCenter Cooperative Extension Service is maintained.

As termite-resistant wood-based materials are developed, homeowners and homebuilders who incorporate them into new homes and repairs of older homes can have more confidence that their major investment will last. Through these efforts, a significant reduction in the \$500 million now spent in this state on FST damage can be realized.

For information on the FST termite testing facility, contact Ramsay Smith at wsmith@lsu.edu or (225) 578-4155. ■

In This Issue

(continued from page 1)

that providing examples of what we have been doing may prompt you to contact us for information as well. Included is a form you can mail back to us. Or, if you want, just call or contact us by e-mail. We'll respond to every inquiry we receive. If it is warranted by enough responses from a region, we will be happy to set up a regional meeting and address issues for that region.

Remember, available information is yours just for the asking. Let us know how we can help you. ■

Ramsay Smith, Program Leader

Visit our Web site at:
www.rnr.lsu.edu/lfpl

Accident Analysis Saves Lives in Logging Industry

Over the past 15 years in Louisiana, about four workers were killed each year in the timber harvesting industry. Another 250 to 550 annually suffered injuries so severe that they missed at least a week of work. Most other states have had comparable accident rates in the same industry.

LSU AgCenter researchers have been analyzing logging accidents to help industry leaders understand the accidents and improve safety programs. Most injuries in the logging industry occurred to the knees, resulting in sprains/strains. Most injuries occurred when workers were struck by trees/limbs. Cuts from chainsaws are on the decline. The

School Adopts New Name

(continued from page 1)

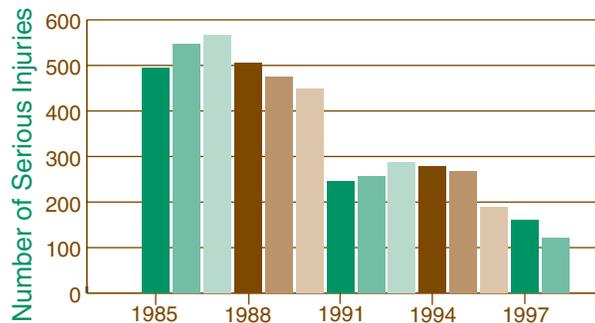
The school's director, Dr. Bob Blackmon, said, "The new name will provide the perfect umbrella for the school to grow in new directions impossible with the previous name. Currently on the drawing board are new studies in ecological restoration, human dimensions, forest products, wetland science and conservation biology. Coupled with existing programs in forest resource management, fisheries, wildlife ecology and aquaculture, we are positioning our School to address and to educate students to be able to address resource and environmental issues of the 21st century. So, the change is substantially more than a name change."

The School of Renewable Natural Resources is jointly administered by the LSU AgCenter, which oversees research and outreach activities, and the LSU A&M campus, which oversees the academic program.

"The new name is really about 21st century service to Louisiana and the country. We are building on our past and looking ahead to our future," said Director Blackmon. ■

number of injuries has declined, but injury seriousness is increasing, including an increase in the proportion of fractures. Vehicle accidents are becoming more prominent. One-quarter of the non-fatal logging injuries in Louisiana are strained knees incurred while mounting or dismounting equipment.

This project interacts with the new "Strategic Partnership" program conducted by the Occupational Safety & Health Administration (OSHA) and the Louisiana Logging Council. By having loggers submit all accident reports to this program (not just the ones required by law), the researchers have been able to cause safety programs in Louisiana to be more focused as to topic than ever before. The information developed under this project continues to be used as an introduction to the logging safety workshops conducted by the Louisiana Logging Council (259 attendees in 2001). Logging fatalities in Louisiana declined from an average of four annually to one in 2001.



This graph shows the number of serious injuries (over 7 days lost time) in Louisiana's logging industry. The numbers for the last three years can be expected to increase roughly 5% to 15% as late reports arrive. The Louisiana Forest Products Lab is also doing similar research on the primary and secondary wood products industry and finding some surprising results, such as high accident rates and unexpected types of injuries.

Informal reports were printed in three issues of the quarterly magazine, *The Louisiana Logger*, in 2001. Information from this study also is used by OSHA inspectors to help them focus their inspections on meaningful problem topics, improving the efficiency of both logging companies and OSHA inspectors.

Other publications from this study are in progress. For more information, contact Niels de Hoop at e-mail: cdehoop@lsu.edu or (225) 578-4242.

Please send information on:

Please send me an LFPL publications list

Please contact me

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____ E-mail _____

Complete and mail to: Dr. Ramsay Smith, Louisiana Forest Products Laboratory, Renewable Natural Resources Building, Louisiana State University, Baton Rouge, LA 70803-6202.

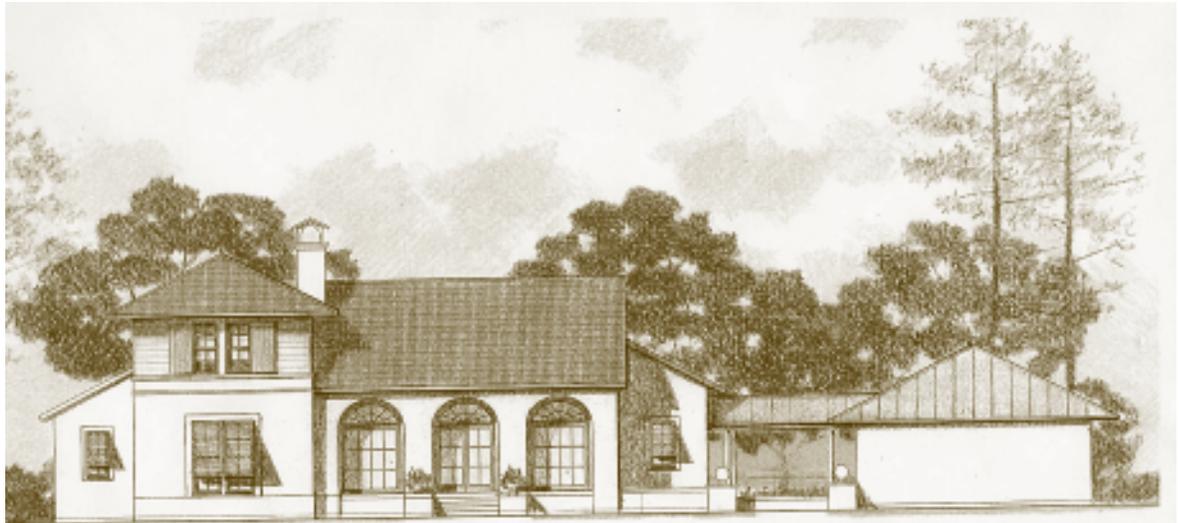
Louisiana House: *Shaping the Future for Louisiana Living*

The LFPL is working with the LSU AgCenter's team of specialists and scientists to help develop **Louisiana House - Home and Landscape Resource Center** (LaHouse).

LaHouse is a public-private partnership initiative to build an evolving showcase house and landscape on the LSU campus that will be

operated as a dynamic educational resource center - - with onsite tours, virtual tours, educational publications, distance education seminars and classes. Its purpose is to stimulate consumer demand for and enhance industry capability to produce *sustainable* housing.

The house and 7-acre site will showcase a range of ways to integrate and balance the project criteria: resource-efficient, durable, healthy, practical and convenient. It will combine economic and quality of life benefits with the principles of envi-



The architectural rendering of LaHouse - Louisiana House - Home and Landscape Resource Center.

ronmental stewardship, while addressing Louisiana's unique challenges of hurricanes, floods, Formosan subterranean termites, decay and mold, unstable fuel supplies, a warm, humid climate, non-point source water pollution, threatened drinking water supplies, indoor air hazards, waste disposal and the aging population.

The house will exhibit several building systems and varied products. Although its primary purposes are education and technology transfer, LaHouse also will offer applied research opportunities in a range of disciplines. Additional LSU units

involved include the departments of Renewable Natural Resources, Civil Engineering, Bio and Ag Engineering, Horticulture, School of Architecture, the Interior Design Program and Vocational Education.

To learn more about LaHouse, its vision and how you can become a part of it, visit the Web site www.LouisianaHouse.org. For additional information, contact Dr. Claudette Reichel, Division of Family & Consumer Sciences at creichel@agctr.lsu.edu or (225) 578-6701, or Dr. Ramsay Smith, LFPL, wsmith@lsu.edu or (225) 578-4155. ■

Marketing Program

(continued from page 2)

help them to better understand how builders feel about their products.

In a related study, the treated wood industry was researched because public concerns about the safety of treated wood are increasing as a result of increasing negative publicity in the media. Public concern can also be attributed to livability issues with respect to two stages of the treated wood life cycle – installation and disposal. This research was conducted to ascertain consumer attitudes and

preferences for building materials, with particular emphasis on treated wood products. The results indicate that homeowners have a generally positive opinion of the safety and performance of treated wood. Most respondents indicated a positive overall perception of treated wood in that they are willing to use it in or at their homes. The major reasons of those unwilling to use treated wood are linked to livability and health concerns. Respondents indicated that individual wood products companies

are the least trusted to provide consumers with treated wood safety and handling information and environmental organizations are the most trusted. Of course, this information is important for both current treated wood manufacturers and companies that may think about going into this business. For full reports or articles on this and other marketing/business development research, contact Dr. Rich Vlosky at e-mail: vlosky@lsu.edu or phone: (225) 578-4527 or fax: (225) 578-4251. ■

Developing Termite-resistant Structural Wood-based Panels

(continued from page 1)

A research project, sponsored by the National Science Foundation's PATH (Partnership for Advanced Technology in Housing) Initiative and industry, is being conducted to incorporate powder borate into OSB furnish during the blending process and to study long-term durability properties of the finished products. The purpose of the project is to investigate the effects of wood species, borate type and content on the panel's stiffness and strength, swelling, water leaching, and long-term structural and biological performance. The information is highly desired for developing durable structural panels for residential construction.

Green lumber boards from eight southern species were used to manufacture wood flakes. Experimental panels were produced using a mixture of dry wood flakes, liquid phenol formaldehyde resin, wax and powder borate (zinc and calcium borate). Samples were taken from each panel to test chemical content, the panel's static bending stiffness and strength, internal bond strength, thickness swelling, water leaching properties, long-term creep and termite resistance.

The project provides comparative properties between zinc and calcium borate modified OSB and thus identifies alternative treating methods for structural OSB (calcium borate). The results of this study indicate that termite-resistant structural OSB from southern species could be successfully developed with a right combination of wood species, borate type and content, and other processing variables. For information on this project, contact Dr. Qinglin Wu at wuqing@lsu.edu or (225) 578-8369.

Can Decommissioned CCA-Treated Wood Be Used for Structural Flakeboard?

Wood products that are used under conditions that expose them to attack by decay fungi and insects must be impregnated with a wood preservative. The preservative most commonly used in North America is chromated copper arsenate (CCA). Inevitably, the treated products will become unserviceable either because of mechanical damage or failure, biological deterioration or obsolescence. At such time, the treated wood may be salvaged, abandoned in place or removed from active service for disposal.

Popular waste disposal options, such as combustion and land-filling, are becoming more limited because of environmental regulations. Land-filling of treated wood is not a financially profitable method to dispose of out-of-service treated wood. It is important that a recycling process that is



Recycling of decommissioned preservative-treated wood is one research program area of the LFPL. Here, decommissioned CCA-treated highway guard rails are being loaded to begin further research.

technically feasible, environmentally friendly and economically sound be developed for treated wood. Currently, about 0.5 million cubic meters of CCA-treated wood are disposed of annually in the United States. An estimated 8 million cubic meters of CCA-treated wood will be removed from service in the United States in 2010 and 18 million cubic meters in 2020. Nearly 5 million metric tons of preservative-treated wood are disposed of annually into landfills. As a result, companies and municipalities face a dilemma concerning the disposal of out-of-service treated wood that still contains residual preservative.

A cooperative project was initiated with Arnold Forest Products Co., a wood treating facility in Shreveport, to study the technical feasibility of recycling decommissioned CCA-treated highway guard rails into structural flakeboard. Panels were made with various ratios of recycled CCA-treated southern pine flakes and virgin, untreated southern pine flakes. In general, the mechanical and physical properties of structural flakeboard from recycled CCA-treated wood decreased as the amount of treated material in the furnish increased. However, an addition of 50 percent of treated material did not substantially reduce most panel properties.

The production of structural flakeboard is one of the critical steps in a proposed closed loop system for recycling treated wood. The other major components are composite poles and liquefaction. The liquefaction process is an experimental technique that involves converting wood fiber to a liquid, isolating and removing the preservative from the liquid, and conversion into industrial chemicals such as plastics and novalec resins. Arnold Forest Products Co. is furthering the research to address the liquefaction process of our closed-loop recycling system.

For more information, contact Dr. Todd Shupe at e-mail: tshupe@lsu.edu or (225) 578-6432. ■

Calendar of Events and Workshops

March 12-14

Basics of Hardwood Lumber Drying Workshop. Held in Lomax Hall, Louisiana Tech University, Ruston. For information, contact Todd Shupe at tshupe@agctr.lsu.edu or (225) 578-6432.

April 9

Wood Products Industry Business Issues - Gaining the Competitive Advantage Workshop. Held at Camp Grant Walker, Pollock. For information, contact Todd Shupe.

 Louisiana
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Rich Vlosky - Forest Products Marketing
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The LSU AgCenter provides equal opportunities in programs and employment.

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