

About Wood

TOXIC EFFECTS OF WOODS

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I have been gathering material for an article on toxic properties of woods for some time now. The article by S. Gary Roberts on Mexico's killer tree in the December, 1989 issue of this journal gave me the incentive to finish the project.

Yes, poisonwood (*Metopium toxiferum*) does grow in South Florida. It is fairly common here, but is seldom grown beyond the shrub stage. It commands respect because it can cause a burn that is much worse than that of poison ivy. Interestingly enough, it is a commercial wood exported in moderate quantity from Central America. Why? Because the toxicity of this tree is confined to the sap of freshly cut or bruised bark. Once the wood is debarked and kiln dried, it is innocuous. I have not been able to find out how the wood cutters and handlers of the fresh wood contend with the toxicity. The wood itself, which I did try, is very pretty. It is dense, has a medium brown color, and has a nice grain. It's only drawback is its slight tendency to tear.

Trying to find material on the toxic properties of wood is not easy because there is a tendency to ignore or minimize such effects. Even highly regarded, basic books on wood technology frequently make no mention at all of the subject. It is a very human tendency on the part of persons who manufacture things out of materials, whether it is a job, career, or a hobby, to be indifferent to the dangers associated with the creation of our beautiful objects. But, beauty can have a bite!

I personally experienced a problem from this lack of information when I turned a bowl from freshly cut silk oak (*Grevilla robusta*) and woke up the next morning with a severely swollen face and arms. When I was told by my wood-cutting friend that a log of this tree would be available soon, I looked it up in my library. I found out that it was not a true oak (genus *Quercus*), but resembled oak because of its prominent rays. In Australia, its native country, it is quarter-sawn and sold as Lacewood; but, there was no

mention of toxicity. It took considerable additional library research to find out that the sap contains phenolic compounds similar to those of poison ivy.

Even though books on wood tend to ignore the subject of toxicity, it is important to be aware that toxic substances in plants are not rare. They are an important defense mechanism. Just as thorns are very effective in discouraging large animals from feeding, toxic chemicals inhibit smaller predators (insects) and help prevent fungal and bacterial attacks. It is no coincidence that the first insecticides (pyrethrin and rotenone) were plant products.

Some of these toxic protective substances are located in the bark and cambial layers of wood, where they help to protect the tree against external predators. Poisonwood is obviously in this category. A number of trees in South Florida have sap which can be mildly irritating (ie., mango and Brazilian pepper). I am sure that there are some in your part of the country, and collectors of fresh wood should be aware of this.

In other trees, toxic substances can be found in the heartwood, giving this portion of trees resistance against termites, wood-boring beetle larvae, and fungus infections. As you work with wood, you are exposed to these toxins, and they can irritate the skin as well as the mucus (moist) membranes of the nose, throat, and eyes. On rare occasions, they can induce headaches, nausea, and even heart palpitations.

Some of the substances found in wood can induce allergic reactions in the skin and respiratory tract. Allergic reactions involve a gradual development of sensitivity to the offending substance. They can be caused by molecules which are ordinarily innocuous, in contrast to toxins which are directly injurious to body tissues. Sometimes, it is difficult even for a physician to tell whether a person's symptoms are due to a toxic exposure or to an allergy. To someone who is hurting, the question is only of academic importance.

Another way in which wood can adversely affect us is to produce mechanical irritation of the skin and respiratory tract. Very small splinters and bristles can cause this kind of damage.

Which woods are the offenders? Some of the more common commercial woods (ie., stripped of their bark and dried) that are known to cause dermatitis and respiratory problems are the Rosewoods, (especially *Dalbergia nigra* and *D. latifolia*); Teakwood (*Tectona grandis*); Fir (*Pinus sylvestris*); Spruce (*Picea excelsa*); Beech (*Fagus sylvatica*); Mahogany (*Swietenia macrophylla*); Walnut (*Juglans nigra*); Oak (*Quercus robur*); and Redwood (*Sequoia sempervirens*).

Notice that this list contains woods that all of us have used. So, why have not more of us come down with symptoms? Two things can affect or determine, whether or not we develop symptoms after exposure to a plant toxin or an allergy promoting substance. They are, (1) intensity of exposure, and (2) degree of personal sensitivity. If you are very sensitive to a substance, either from a genetic predisposition or because of sensitivity development over a period of time, a strong reaction can occur very rapidly. If your sensitivity is low, you can be relatively immune; but this immunity can be lost with dramatic suddenness. Intensity of exposure is measured in terms of (a) concentration of toxin/allergen, and (b) duration of exposure. Sometimes it may take years of exposure to very low doses to develop a sensitivity. Consequently, hobbyists are less prone to develop adverse reactions from handling these mildly toxic woods than persons working with it on a full-time, long-term basis.

There are several things that you can do to minimize the potential for getting injured by beautiful woods. Of course, you are already making sure that your shop is adequately ventilated and a dust evacuation system is operating. You are also wearing a face shield and/or a dusk mask

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while working. Good hygiene helps. Wash your hands and face frequently and thoroughly, and shower at the end of the day. Do not use solvents to remove wood residues any more than necessary, because these can also irritate the skin and possibly accentuate toxic effects. The most important thing is to be aware that these toxic and allergic effects exist, and that they can sometimes creep up on you. Therefore, do not ignore early warning signs. At the first signs of skin or respiratory problems, take greater precautionary measures, and/or change the woods with which you are working.

Unfortunately, information about wood toxicity is not easy to obtain. De-

scriptions of woods and their working properties sometimes give information about unfavorable effects. There is an excellent, comprehensive, relatively recent book on the subject. It is *Woods Injurious to Human Health*, by Bjorn M. Hansen (Walter de Gruyter Company, Berlin, 1981, 189 pages). It is a revision of a 1973 book published in German. It contains a lot of information about foreign exotics as well as about our more common woods. I do not think that it is readily available in libraries; but if you have any questions about the subject or about a specific wood, it will be worth your while to try to locate a copy. ©

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