



Safety Tips - Toxicity of Wood (Gary Guenther)

For centuries, it's been fairly common knowledge that some woods could hinder your health. As far back as 60 A.D., the Roman historian and naturalist Pliny the Elder described a case where four soldiers actually died after drinking wine from hip flasks made of yew. Of lesser gravity was the experience of a few German sawyers in the early 1700s. It seems they developed chronic irritation of the nose and eyes, as well as headaches, from sawing bald cypress.

What are your chances of a reaction to wood? Statistics say that only 2 to 5% of all people develop an allergic sensitivity to one or more compounds found in wood. But, if you handle a lot of potentially toxic species, and work with them long enough, you increase your chances of an allergic reaction. And, with sufficient exposure, some woods bother almost everyone.

Any dust, including wood dust, mildly irritates the sensitive mucous membranes of your nose and eyes, making you sneeze and tear. The dust of some woods such as western red cedar and rosewood can be especially bothersome. However, other woods, called **irritants**, can make you even more uncomfortable, with a rash that classifies as either irritant dermatitis or allergic dermatitis. The rash usually has a uniformly red, swollen area that may erupt in blisters, and typically first shows up on the webs of skin between your fingers. **Irritant woods include black locust, cocobolo, ebony, oleander, satinwood, sequoia, and yew.**

However, for you to get an allergic-type rash, you first must be allergy-prone to one of more of the chemicals found in certain woods called **sensitizers**. And, it may take repeated contact for your body to develop a great enough allergy for it to react (the so-called "latency period of as little as five days and up to 6-8months). If you do eventually get a reaction, the rash will look like poison ivy - red with small, individual, itchy bumps. **Sensitizer woods include cypress, balsam fir, beech, birch, elm, greenheart, mahogany, maple, myrtle, redwood, sassafras, spruce, walnut, willow, western red cedar, and teak.**

In addition to the actual wood dust, **molds** frequently trigger reactions, too. One that actually grows in wood happens to be extremely potent: *Cryptostroma corticale*. This mold lives happily between the bark and sapwood of many hardwood trees, especially **favoring maple and birch**. It's responsible for the **marbleized spalting** that woodturners prize, and for **"maple bark stripper's disease," a condition with all the symptoms of a severe respiratory allergy.**

If you have an aspirin allergy, be wary of willow and birch. Both of these species possess significant concentrations of salicylic acid (the predecessor of aspirin) and very sensitive individuals might only need casual exposure, such as a whiff of sawdust, to react.

Never say "no" to a dust mask. Among woodworkers, the chances of developing nasal and sinus cancer run about 5-40 times greater than non-woodworkers. Although researchers haven't identified the exact cancer-causing compound (primarily because the disease has a latency period from 30 to 50 years), some evidence points to dust from wood with high tannin content, such as chestnut, oak, redwood, western red cedar, and hemlock.

If you are sensitive to wood dust, work in a well ventilated area (this also reduces the risk to mold), avoid unseasoned wood as much as possible, and wash or shower frequently. If you develop persistent rashes or respiratory problems, contact your physician or dermatologist.

Source: www.city-net.com/albertfp/toxic.htm

The three tables that follow contain independently compiled lists of species and symptoms. If the wood of interest to you is not in one table, it may be in another. If interested, please review all three lists. Not all problem woods are necessarily listed in any of these tables, but woods not listed have a higher probability of not being a problem.

Table I - Source: American Woodturner, June 1990

<u>Wood</u>	<u>Reaction</u>	<u>Site</u>	<u>Potency</u>	<u>Source</u>	<u>Incidence</u>
Bald Cypress	S	R	+	D	R
Balsam Fir	S	E,S	+	LB	C
Beech	S,C	E,S,R	++	LB,D	C
Birch	S	R	++	W,D	C
Black Locust	I,N	E,S	+++	LB	C
Blackwood	S	E,S	++	W,D	C
Boxwood	S	E,S	++	W,D	C
Cashew	S	E,S	+	W,D	R
Cocobolo	I,S	E,S,R	+++	W,D	C
Dahoma	I	E,S	++	W,D	C
Ebony	I,S	E,S	++	W,D	C
Elm	I	E,S	+	D	R
Goncalo Alves	S	E,S	++	W,D	R
Greenheart	S	E,S	+++	W,D	C
Hemlock	C	R	?	D	U
Iroko	I,S,P	E,S,R	+++	W,D	C
Mahogany	S,P	S,R	+	D	U
Mansonia	I,S	E,S	+++	W,D	C
	N		+	D	
Maple (Spalted)	S,P	R	+++	D	C
Mimosa	N		?	LB	U
Myrtle	S	R	++	LB,D	C
Oak	S	E,S	++	LB,D	R
	C		?	D	U
Obeche	I,S	E,S,R	+++	W,D	C
Oleander	DT	N,C	++++	D,W,LB	C
Olivewood	I,S	E,S,R	+++	W,D	C
Opepe	S	R	+	D	R
Padauk	S	E,S,R	+	W,D	R?? disagrees w/ other input
Pau Ferro	S	E,S	+	W,D	R
Peroba Rosa	I	R,N	++	W,D	U
Purpleheart		N	++	W,D	C
Quebracho	I	R,N	++	LB,D	C
	C		?	D	U
Redwood	S,P	E,S,R	++	D	R
	C		?	D	U
Rosewoods	I,S	E,S,R	++++	W,D	U
Satinwood	I	E,S,R	+++	W,D	C
Sassafras	S	R	+	D	C
	DT	N	+	D,W,LB	R
	C	?	D	U	
Sequoia	I	R	+	D	R
Snakewood	I	R	++	W,D	R
Spruce	S	R	+	W,D	R
Walnut, Black	S	E,S	++	W,D	C
Wenge	S	E,S,R	+	W,D	C
Willow	S	R,N	+	D,W,LB	U
West. Red Cedar	S	R	+++	D,LB	C
Teak	S,P	E,S,R	++	D	C
Yew	I	E,S	++	D	C
	DT	N,C	++++	W,D	C
Zebrawood	S	E,S	++	W,D	

KEY:
 I - irritant
 S - sensitizer
 C - nasopharyngeal cancer
 P - pneumonia
 DT - direct toxin
 N - nausea, malaise
 S - skin
 E - eyes
 R - respiratory
 C - cardiac
 D - dust
 LB - leaves,bark
 W - wood
 R - rare
 C - common
 U - uncommon

Table 2 - More common toxic woods

Source: www.hse.gov.uk/pubns/wis30.pdf

Timber name/s Use Reported adverse health effects - [# - used for plywood, \$ - softwood]

- **Abura/bahia** furniture, shop-fitting, cladding **vomiting**
- **Afrormosia** joinery, furniture, framing, veneers, cladding, boats **skin irritation, splinters go septic, nervous system effects**
- Afzelia/doussie stairs, doors, floors, cladding dermatitis, sneezing
- Agba/tola cladding, general uses skin irritation
- **Alder** construction, toys, brush handles **dermatitis, rhinitis, bronchial effects**
- Andiroba/crabwood interior joinery sneezing, eye irritation
- Ash joinery, sports goods decrease in lung function
- **Avodire** decorative veneers **dermatitis, nose bleeds**
- Ayan/movingui doors, windows, furniture dermatitis
- Basralocus/angelique marine uses, barrels general unspecific effects
- **Beech #** furniture, veneers, tool handles, musical goods **dermatitis, decrease in lung function, eye irritation (possibly from bark lichens)**
- Birch # furniture, paper and pulp, veneers, flooring **dermatitis** on sawing lumber
- **Bubinga** veneers, turnery, knife and brush handles **dermatitis, skin lesions possible**
- Cedar of lebanon \$ joinery, garden furniture, gates respiratory disorders, rhinitis
- **Cedar** (cent/s American) # cabinets, joinery, panelling, boats, cigar boxes **allergic contact dermatitis**
- **Cedar (western red)** \$ indoor and outdoor constructions, shingles, planking, boats, panelling, cladding, **asthma, rhinitis, dermatitis, mucous membrane irritation, central nervous system effects**
- Chestnut (sweet) furniture, kitchen utensils, fences, gates, veneers dermatitis (possibly from bark lichens)
- **Douglas fir #**\$ flooring, joinery, turnery, boats, vats, veneers **dermatitis, splinters go septic, rhinitis, bronchial effects**
- **Ebony** tool handles, musical and sports goods **mucous membrane irritation, dermatitis, possibly a skin sensitiser**
- Freijo/cordia interior furniture possibly a skin sensitiser
- **Gaboon/okoume #** blockboard, veneers, packing cases, cigar boxes **asthma, cough, eye irritation, dermal effects (hands, eyelids)**
- Gedu nohor/edinam furniture, boats, coffins dermatitis (rare)
- **Greenheart** marine uses, axe handles, factory flooring, sports goods **splinters go septic, cardiac and intestinal disorders, severe throat irritation**
- Guarea boats, furniture and cabinet making skin and mucous membrane irritation
- Gum (southern blue) packing cases, construction, pulp, fibre-board dermatitis
- Hemlock (western) \$ construction, joinery bronchial effects, rhinitis
- Idigbo # interior and exterior joinery, furniture possible irritant
- **Iroko** construction, bench tops, marine uses, joinery **asthma, dermatitis, nettle rash**
- **Larch** \$ construction, fencing stakes, stairs, flooring **nettle rash, dermatitis (possibly from bark lichens)**

- **Limba** # frames, drawer sides, coffins, veneers, furniture **splinters go septic, nettle rash, nose and gum bleeding, decrease in lung function**
- **Mahogany** furniture, cabinet work, boats **dermatitis, respiratory disorders, mucous membrane irritation**
- **Makore** # planks, floors, panelling, doors, furniture, boats **dermatitis, mucous membrane and respiratory tract irritation, central nervous system and blood effects**
- **Mansonia** cabinet making, turnery, sports goods **splinters go septic, skin sensitisation, irritation, respiratory disorders, nose bleeds, headache, cardiac disorders**
- Maple flooring, furniture, sports goods decrease in lung function
- Meranti/lauan (various) # boats, flooring, furniture, joinery skin irritation
- **Oak** (various) furniture, joinery, flooring, panelling, barrels **asthma, sneezing, eye irritation**
- **Obeche** # model-making, musical goods, picture frames **skin and respiratory tract irritation, nettle rash, dermatitis and rashes (handling articles), feverish, sneezing, wheezing**
- **Opepe** construction, marine uses, flooring **dermatitis, mucous membrane irritation, central nervous system effects e.g., giddiness, visual effects; nose bleeds and blood spitting**
- **Padauk** turnery, carving, boats, flooring species-dependant: **itching, eye irritation, vomiting, swelling (e.g., eyelids)**
- **Peroba** construction, joinery, turnery **skin and mucous membrane irritation; systemic effects e.g., headache, nausea, stomach cramp, weakness, blisters**
- Pine (many species) # construction, stairs, doors, furniture, pallets skin irritation (may cause photosensitisation); decrease in lung function
- **Poplar** # shelves, toys, matches, pallets, wood wool **sneezing, eye irritation, may cause blisters**
- Ramin furniture, mouldings, toys, joinery dermatitis (possibly from bark)
- **Rosewood (many species)** furniture, cabinets, musical goods, jewellery **dermatitis, respiratory disorders. Effects may arise from handling wood**
- Sapele # furniture, mouldings, flooring, veneers skin irritation
- **Spruce** (several species) # construction, telegraph poles, packings, pallets **respiratory disorders, possible photosensitisation**
- **Teak** marine fittings, joinery, scrubbing towers **dermatitis (potent, even after seasoning) nettle rash, respiratory disorders**
- Utile furniture, cabinet making, veneers, mouldings skin irritation
- Walnut (not African) furniture, fancy goods, gun-stocks, veneers **sneezing, rhinitis, dermatitis from nut shells and roots**
- **Wenge** panelling, furniture, kitchens, veneers **splinters go septic; dermatitis, central nervous system effects e.g., giddiness, drowsiness, visual disturbance, abdominal cramps**
- Whitewood (American)# construction, flooring, joinery dermatitis
- **Yew** \$ carving, turnery, cabinet making, sports goods **dermatitis, systemic effects e.g., headache, blood pressure drop, cardiac effects**

Table III - Potentially Toxic Woods

Source: [Musical Instrument Makers Forum](#)

The following information is reprinted with permission from data provided by Roy Banner, a wood turner from Torrance, California who almost lost his life in 1989 to anaphylactic shock after turning pieces of exotic wood. You can bet Roy wears his RACAL respirator every time he turns on his lathe now! Roy has assembled this data over the years from various sources and when an entry appears in *italics*, this indicates that the information has come from only one source and has not been verified elsewhere.

“Potency” is listed as ‘small’, ‘great’, or ‘extreme’. This is the potential of the wood or sawdust doing harm and would vary with the individual, i.e., those who are allergy prone might think twice about working with wood classed as extremely potent.

- **Afromosia**: irritant/eye & skin, respiratory/**great**/dust/rare
- Alder: irritant/eye & skin, respiratory
- **Angelico**: irritant/eye & skin, respiratory/**great**/dust
- Arborvitae: irritant/respiratory
- Ash: irritant/respiratory
- Baldcypress: sensitizer/respiratory/small/dust/rare
- Balsam fir: sensitizer/eye & skin/small/dust/rare
- **Beech**: sensitizer/respiratory/**great**/dust/rare
- **Birch**: sensitizer/respiratory, nausea/**great**/dust, wood/rare
- **Black locust**: irritant/nausea/**great**/rare
- **Blackwood**: sensitizer/eye & skin/**great**/dust, wood/**common**
- Boxwood: sensitizer/respiratory/small/dust, wood/rare
- **Cashew**: sensitizer/eye & skin/**great**/dust, wood/*rare*
- **Chechem**: irritant/respiratory, eye & skin/**great**/dust, wood/**unknown**
- **Cocobolo**: irritant/respiratory, eye & skin/**great**/dust, wood/**common**
- **Dahoma**: sensitizer/respiratory/**great**/dust/**common**
- **Ebony**: irritant, sensitizer/respiratory, eye & skin/**great**/dust, wood/**common**
- Elm: sensitizer/eye & skin/small/dust/rare
- Fir: irritant/eye & skin/small/rare
- Goncolo alves: sensitizer/eye & skin/*small*/dust, wood/rare
- **Greenheart**: sensitizer/respiratory, eye & skin/**extreme**/dust, wood/**common**
- **Guarea**: sensitizer/eye & skin/**extreme**/dust/rare
- **Hemlock**: *nasal cancer*/**great**/dust/rare
- Ipe: irritant/respiratory, eye & skin
- **Iroko**: irritant/respiratory, eye & skin/**extreme**/dust, wood/**common**
- Katon: irritant/respiratory
- Kingwood: irritant/eye & skin
- Mahogany, American: sensitizer/respiratory, eye & skin/small/dust/rare
- **Mahogany, African**: sensitizer/respiratory/**great**/dust/rare
- Makore: irritant/respiratory, eye & skin
- **Mansonia**: irritant/respiratory, eye & skin/**extreme**/dust, wood/**common**
- Manzinilla: irritant/respiratory/dust/rare
- **Maple**: sensitizer/respiratory/**great**/dust, wood/rare

- **Mimosa**: irritant/nasal/extreme/dust, wood/common
- **Myrtle**: sensitizer/respiratory/**great**/dust, wood/**common**
- **Oak, red**: nasal/**great**/dust/rare
- **Obeche**: sensitizer/respiratory, eye & skin/**great**/dust/**common**
- **Olivewood**: sensitizer/respiratory, eye & skin/**great**/dust, wood/**common**
- Opepe: sensitizer/respiratory/small/dust/rare
- Orangewood: respiratory/*rare*
- **Padauk**: irritant/respiratory, eye & skin, nausea/extreme/dust, wood/common
- Pau ferro: sensitizer/eye & skin/small/dust, wood/rare
- **Peroba rose**: sensitizer/respiratory/**great**/dust, wood/**common**
- Peroba white: sensitizer/respiratory, eye & skin
- Purpleheart: sensitizer/eye & skin, nausea/small/dust, wood/rare
- **Quebracho**: nasal cancer/**great**/dust/rare
- Ramin: irritant/respiratory, eye & skin/small/dust/rare
- Redwood: sensitizer/respiratory, nasal cancer/small/dust/*rare*
- **Rosewood(s)**: irritant, sensitizer/respiratory, eye & skin/extreme/dust, wood/common
- **Satinwood**: irritant/respiratory, eye & skin/extreme/dust, wood/common
- Sassafras: sensitizer/respiratory, nausea, nasal cancer/small/dust, wood/rare
- Sequoia: irritant/respiratory, nasal cancer/small/dust, wood/rare
- **Snakewood**: irritant/respiratory/**great**/dust, wood/rare
- Spruce: sensitizer/respiratory/small/dust, wood/rare
- Stavewood: irritant/respiratory
- Sucupira: irritant/respiratory
- **Teak**: sensitizer/eye & skin/extreme/dust/common
- **Walnut, black**: sensitizer/eye & skin/**great**/leaves & bark/**unknown**
- **Wenge**: sensitizer/respiratory, eye & skin/**great**/dust/**common**
- **Willow**: sensitizer/nasal cancer/**great**/dust/**unknown**
- **W. red cedar**: sensitizer/respiratory, nasal cancer/**great**/dust/**common**
- **Yew, Europe**: irritant/eye & skin/**great**/dust/**common**
- **Zebrawood**: sensitizer/eye & skin/**great**/dust/rare