

KNOW YOUR TIMBER'S TOXICITY

Wood Dust and Timber Toxicity

Wood dust can be defined as tiny particulates of wood produced during the processing and preparation of natural timbers, particle boards, medium density fibre boards (MDF) or laminated products such as plywoods and beams. The micro fine dust particulates released can very easily be inhaled. Woodworkers are at persistent risk of breathing in large amounts of damaging fine wood dust particulates whenever timber is being handled or machined in any workspace environment.

For example, wood dust can be a serious problem whenever an activity involves:

- Sawing, routing, woodturning, drilling, and sanding;
- Cleaning down with compressed air;
- Dry sweeping of floors, walls, ceiling fans or machinery; and
- Disturbing dust when repairing machines or during routine maintenance work.

There are health concerns associated with many timber products used in woodworking workshops. In particular, the processing of these timbers and the volumes of wood dust that can result pose the majority of health concerns. Studies show that wood dust particulates should never be considered as merely "nuisance dust". Exposure can actually be very harmful to peoples' health.

The International Agency for Research on Cancer (IARC), as part of the World Health Organisation (WHO), has found that wood dust can be directly linked to some very serious health concerns. Exposure to wood dust from some of the commercially available native and imported timber species can often have a very devastating effect on individual woodworkers' health.

The physical symptoms and the damaging health-related consequences of excessive exposure to wood dust in the workshop are many and varied:

- Allergic skin irritation, itching, dermatitis, eczema, urticarious (hives), eye irritation and inflammation;
- Dust may also irritate the upper respiratory tract and cause sinus and rhinitis, throat irritations, shortness of breath, hoarseness and coughing, asthma, pneumonia, and

even bronchitis. Chronic lung irritations may result in permanent wasting of the tissue;

- The most sinister quality of wood dusts is that some may be carcinogenic (likely to cause cancer). Tannins and lignin-related compounds occur naturally in wood and are strongly believed to be carcinogenic. They are more abundant in hardwoods and Australian native hardwoods such as the Acacia's and Eucalyptus species have high tannin contents;

In Australia all wood dust is now classified as carcinogenic (liable to cause cancer). Some timber species may also contain other biological or chemical contaminants in the wood sap, bark, leaves or roots or that have been applied, prior to commercial sale, as a fungicide or insecticide. To date, because of identified work health and safety risks, there are two (2) timber species that have been classified as totally unsuitable and should NOT be used for woodworking:

- Oleander or Rose Laurel (*Nerium oleander*)
- Western Red Cedar (*Thuja plicata*)

COMMON SPALTED WOODS are those which show decorative black lines or dark grain markings within the timber. This usually occurs in pale hardwoods such as maple, birch and beech. These markings can be regarded as a mould or fungal environment and, as such, can cause health problems such as serious lung diseases. They should be worked and sanded only when wearing a dust mask or respirator. Be careful in selecting the species used for making kitchen utensils, food storage containers, or toys an infant might chew on, as heat, moisture and time stimulate the release of the toxins found in some of these timbers.

"BAG-SEASONED" TIMBERS (i.e. unfinished turning projects stored in plastic bags) may also generate a spore environment. This may promote sensitisation and result in allergic reactions. It should also be remembered that any second hand or re-cycled wood products may have been previously coated with varnishes, lacquers, polishes, preservatives and other unknown chemicals. These may well cause serious harm to human health under some circumstances, and woodworkers should be observant and aware that these unforeseen chemical hazards may be present.

It is recommended that members wear appropriate personal protection equipment (PPE) at all times while in the workshop environment.

TIMBERS TOXICITY INDEX

Note: The following "Toxic Timbers Index" is an evaluation of the more commonly used Australian and imported timber species known to be potentially toxic (for various reasons), together with their known associated adverse health effects on humans. The information offered is based on public domain data and is believed to be reliable, and relevant in Queensland.

SPECIES	ORIGIN	PROBLEM	POTENCY	REPORTED ASSOCIATED HEALTH RISKS
Alder, Rose (Atherton Pencil Cedar) <i>Caldcluvia australiensis</i>	Australian native North Queensland	Dust		Sensitiser , skin irritations, dermatitis and rhinitis
Ash, Alpine (Mountain Ash) <i>Eucalyptus regnans</i>	Australian native	Dust, wood		Sensitiser , irritation to nose, throat and eyes and skin, dermatitis
Ash, Crows (Australian Teak) <i>Flindersia australis</i>	Australian native New Guinea	Dust, wood		Sensitiser , skin irritations and dermatitis
Beech, Brown (European Beech) <i>Fagus sylvatica</i>	Europe	Dust, leaves, bark		Sensitiser , nasal cancer, skin irritations and dermatitis
Beech, Myrtle <i>Nothofagus cunninghamii</i>	Australian native	Dust, leaves, bark		Sensitiser , irritation to mucous membranes, irritation to eyes and throat and difficulty breathing. Fungus found in bark
Beech, White (Beech, Grey Teak) <i>Gmelina leichhardtii</i>	Northern NSW Southern Qld.	Dust, leaves, bark		Sensitiser , nasal cancer, skin irritations and dermatitis. Greasy when woodturning
Black Bean (Morton Bay Chestnut) <i>Castanospermum australe</i>	Australian native East Coast	Dust		Sensitiser , skin irritations and dermatitis, itchiness, irritation of mucous membranes
Blackwood (Black Wattle, Mudgerabah) <i>Acacia melanoxylon</i>	Australian native Tasmania	Dust, wood, bark		Sensitiser , irritations and contact dermatitis, bronchial asthma, dust causes irritation to eyes, nose and throat (The tree's twigs and its bark are used to poison fish as a way of fishing)
Boxwood (European Boxwood) <i>Buxus sempervirens</i>	U.K. Europe, S.E. Asia, Morocco	Dust, wood		Sensitiser, irritations and dermatitis, asthma, dust causes irritation to eyes, nose and throat
Brazilwood <i>Caesalpinia echinata</i>	South America	Dust, wood		Sensitiser , headaches, nausea, painful swelling of limbs and visual disturbances

SPECIES	ORIGIN	PROBLEM	POTENCY	REPORTED ASSOCIATED HEALTH RISKS
Brigalow (Spearwood) <i>Acacia harpophylla</i>	Australian native East Coast	Dust		Sensitiser , skin irritations and dermatitis
Cedar, Mackay (Red Siris) <i>Albizia Toona</i>	Australian native Coastal Qld.	Dust		Sensitiser , skin irritations and dermatitis, nose bleed, conjunctivitis, giddiness
Cedar, Port Orford (Lawson's Cypress) <i>Chamaecyparis lawsoniana</i>	USA, Canada, plantations in New Zealand, Australia and Europe	Dust		Sensitiser , dermatitis, violent ear ache giddiness, stomach cramps, bronchitis, irritation of mucous membranes
Cedar, Red (Cedar) <i>Toona ciliata</i>	Australian native New Guinea Philippines	Dust, wood		Sensitiser , violent headache, giddiness, stomach cramps, asthma, bronchitis, dermatitis, irritation of mucous membranes
Cedar, South American <i>Cedrela spp</i>	Southern America	Dust, wood, bark, sap		Sensitiser , dermatitis, asthma, nasal cancer, irritation to nose & throat. Sap may cause blistering of skin and inflammation of eyelids
Cedar, Western Red (Canadian Red Cedar) <i>Thuja plicata</i>	North America	Dust, wood, bark, leaves		Sensitiser , skin irritations and dermatitis, asthma, effects central nervous system (rarely) nasopharyngeal cancer (nasal cancer)
Cedar, White (Chinaberry) <i>Melia azedarach</i>	India, China and Australia	Dust, wood, bark, leaves		Sensitiser , fruits and leaves are highly poisonous. Skin irritations, dermatitis headache, congestion of lungs, nausea, fainting
Camphor Laurel <i>Cinnamomum camphora</i>	China, Japan, Australia - mainly the toxic hybrids of northern NSW	Dust, wood		Sensitiser , serious skin-rash complaints and dermatitis, irritation to eyes and throat and difficulty breathing
Cashew <i>Anacardium occidentale</i>	Australian native New Guinea	Dust, wood, bark, sap		Sensitiser , sap causes blisters, wood dust cause skin irritations and dermatitis, itchiness
Coolibah <i>Eucalyptus microtheca</i>	Australian native	Dust, wood bark		Sensitiser , bark and wood dust may cause skin irritation and dermatitis
Dead Finish (Needle Wattle) <i>Acacia tetragonophylla</i>	Australian native	Dust, wood, thorns		Sensitiser , wood splinters and thorns cause skin irritations. Dust causes dermatitis
Douglas Fir (Oregon) <i>Pseudotsuga menziesii</i>	USA, Canada, plantations in New Zealand, Australia, New Guinea and Europe	Dust, leaves bark		Sensitiser , skin irritations and dermatitis, nasal cancer, irritation to eyes and throat






SPECIES	ORIGIN	PROBLEM	POTENCY	REPORTED ASSOCIATED HEALTH RISKS
Ebony (all dark coloured species) <i>Diospyros spp</i>	Africa, Malagasy, Ceylon S.E. Asia and Hawaii	Dust, wood		Sensitiser , skin irritations, acute dermatitis, sneezing, conjunctivitis
Elm, European <i>Ulmus spp</i>	Europe	Dust, wood		Sensitiser , skin irritations and dermatitis, nasal cancer
Gaboon (Okoumé) <i>Aucoumea klaineana</i>	Equatorial Africa	Dust		Sensitiser , itchy skin, irritation to eyes and nose
Greenheart (Bebeeru) <i>Chlorocardium rodiei</i>	South America Guiana	Dust, wood		Sensitiser , causing headache, wheezing, shortness of breath, disturbance of vision, diarrhoea
Gum, Blue (Blue Gum, Yellow Gum) <i>Eucalyptus leucoxylon</i>	Australian native South Australia	Dust		Sensitiser , skin irritations and dermatitis, itchiness, irritation of mucous membranes
Gum, Grey Box (Grey Box) <i>Eucalyptus icrocarpa</i>	Australian native	Dust		Sensitiser , skin irritations and dermatitis, nasal irritation and temporary spasmodic rhinorrhea
Gum, Spotted (Spotted Iron Gum) <i>Eucalyptus maculata</i>	Australian native South America Africa and Europe	Dust		Sensitiser , skin irritations and dermatitis, nasal irritation and temporary spasmodic rhinorrhea
Gum, Tasmanian Blue (Southern Blue Gum) <i>Eucalyptus globulus</i>	Australian native	Dust, wood		Sensitiser , skin irritations and dermatitis, itchiness, irritation of mucous membranes
Gum, Yellow (South Australia - Blue Gum) <i>Eucalyptus leucoxylon</i>	Australian native South Australia	Dust		Sensitiser , skin irritations and dermatitis, itchiness, irritation of mucous membranes
Iroko (African Teak) <i>Milaca excelsa</i>	Tropical West and East Africa	Dust, wood		A direct toxin and Sensitiser , causing dermatitis, furunculosis, oedema of eyelids, respiratory difficulties, pneumonia, alveolitis, giddiness
Ironwood, Cooktown <i>Erythrophleum chlorostachys</i>	Australian native	Dust, wood, bark, leaves		Sensitiser , nausea, headaches, asthma, skin irritations and dermatitis, foliage contains toxic levels of alkaloids
Jarra <i>Eucalyptus marginata</i>	Australian native	Dust		Sensitiser , irritation to nose, throat and eyes
Keruing <i>Dipterocarpus spp</i>	South East Asia Andaman Islands	Dust		Sensitiser , skin irritations and dermatitis

SPECIES	ORIGIN	PROBLEM	POTENCY	REPORTED ASSOCIATED HEALTH RISKS
Kwila (Merbau, Vesi) <i>Intsia bijuga</i>	Australia, New Guinea Pacific Islands South East Asia	Dust		Sensitiser, skin irritations and dermatitis, rhinitis
Lignum Vitae <i>Guaicum</i>	West Indies, central and northern South America	Dust, bark, sap		Sensitiser , skin irritations and dermatitis
Mahogany, African <i>Khaya ivorensis</i>	West Africa	Dust		Sensitiser , irritation to the mucous membranes, skin irritations, dermatitis, nasal cancer
Mahogany, American <i>Swietenia macrophylla</i>	Central America, northern South America, Mexico and Fiji	Dust		Sensitiser , skin irritations, giddiness, vomiting, furunculosis
Mahogany, Miva (Red Bean) <i>Dysoxylum muelleri</i>	Australian native	Dust		Sensitiser , exceedingly irritating causing eczema, congestion of lungs, eye infections, irritation of mucous membranes, headache, nose bleed, loss of appetite. Effects increase with more seasoned wood
Maple, Queensland (Maple) <i>Flindersia brayleyana</i>	North Queensland rainforests	Dust		Sensitiser , skin irritations to back of hands and between fingers, eczema and acute exfoliative dermatitis
Messmate (Messmate Stringybark) <i>Eucalyptus obliqua</i>	Australian native plantation in Africa, Europe and South America	Dust		Sensitiser , skin irritations and dermatitis, asthma, sneezing
Meranti (Red, White & Yellow) <i>All Shorea spp</i>	South East Asia	Dust		Sensitiser , dermatitis, irritation to nose, throat and eyes
Merbau (Kwila, Vesi) <i>Intsia bijuga</i>	Australia, New Guinea, Pacific Islands and South East Asia	Dust		Sensitiser , skin irritations and dermatitis, rhinitis
Milky Mangrove <i>Excoecaria agalloche</i>	Australian native South East Asia and Pacific	Dust, wood bark, sap		Sensitiser , sap is poisonous and may cause severe irritation to eyes, even temporary blindness, headache, burning of throat, and rapid blistering of skin
Mulga <i>Acacia aneura</i>	Australian native	Dust, leaves wood, bark		Sensitiser , wood contains a virulent poisonous principle, used for spear heads by aboriginals. Dust may cause irritation to mucous membranes, headache, vomiting

SPECIES	ORIGIN	PROBLEM	POTENCY	REPORTED ASSOCIATED HEALTH RISKS
Myrtle, Beech <i>Nothofagus cunninghamii</i>	Australian native Victoria and Tasmania	Dust, leaves, bark		Sensitiser , irritation to mucous membranes, irritation to eyes and throat and difficulty breathing. Fungus found in bark
<i>Myrtle, Oregon</i> (Bay Laurel) <i>Umbellularia californica</i>	Oregon, California USA	Dust, wood		Sensitiser , nausea, headaches, asthma, skin irritations and dermatitis
Needlewood <i>Schima wallichii</i>	India, Oceania, S.E. Asia	Dust, bark		Sensitiser , dust and bark can cause severe skin irritations
Oak, European (most European species) <i>Quercus spp</i>	Europe, Japan and China	Dust, leaves wood, bark		Sensitiser , nasal cancer, dermatitis, sneezing, irritation to eyes and throat and difficulty breathing
Oak, Beef (Desert Beefwood) <i>Grevillea striata</i>	Australian native WA., NT., Qld., NSW	Dust, wood		Sensitiser , irritation to mucous membranes, skin irritation and dermatitis, asthma, dust causes irritation to eyes, nose and throat
Oak, Northern Silky (Bull Oak, Qld Oak) <i>Cardwellia sublimis</i>	North Qld, Townsville	Dust, wood		Sensitiser , green timber may cause dermatitis
Oak, Red Silky (Red Beef Oak, Queensland Waratah) <i>Stenocarpus salignus</i>	Australian native Tropical NSW, Qld	Dust		Sensitiser , irritation to mucous membranes, skin irritation and dermatitis
Oak, Silky (Southern Silky Oak, Silver Oak) <i>Grevillea robusta</i>	Australian native New Caledonia	Dust, wood, bark, sap		Sensitiser , sap may cause blistering of skin, inflammation of eyelids. Wood contains an allergen which may cause dermatitis. Flowers and fruit contain toxic hydrogen cyanide
Obeche <i>Triplochiton scleroxylon</i>	West Africa	Dust, wood		Sensitiser , asthma, sneezing, congestion of the lungs
Oleander (Rose Laurel) <i>Nerium oleander</i>	Southern Europe, Asia, China, Northern Africa, Mediterranean, Australia	Dust, leaves wood, bark latex gum		A direct toxin and Sensitiser , latex is poisonous if turned green. Smoke toxic if burned. Causes vomiting, diarrhoea, dizziness, breathing difficulties, skin irritations and dermatitis
Oregon (Douglas Fir) <i>Pseudotsuga menziesii</i>	USA, Canada, New Zealand, Australia and Europe	Dust, leaves bark		Sensitiser , skin irritations and dermatitis, nasal cancer, irritation to eyes and throat
Padauk (Sandalwood, Coralwood) <i>Pterocarpus soyauxii</i>	Central West Africa	Dust, wood		Sensitiser , nausea, headaches, asthma, skin irritations and dermatitis

SPECIES	ORIGIN	PROBLEM	POTENCY	REPORTED ASSOCIATED HEALTH RISKS
Pine, N.Z. White (Kahikatea, kahika) <i>Dacrycarpus dacrydioides</i>	New Zealand	Dust, wood		Sensitiser , dermatitis, irritation to nose and throat
Pine, Northern Cypress (Blue Pine) <i>Callitris intratropica</i>	Australian native	Dust, wood		Sensitiser , skin irritations and dermatitis, swelling of eyelids, asthma, irritation of nose and throat, nasal cancer, furunculosis
Pine, White Baltic (Norway spruce) <i>Picea abies</i>	Europe	Dust		Sensitiser , asthma, Irritation to nose and throat Pine
White Cypress (Cypress Pine) <i>Callitris glauca</i>	Australian native	Dust, wood		Sensitiser , skin irritations and dermatitis, swelling of eyelids, asthma, irritation of nose and throat, nasal cancer, furunculosis
Purpleheart <i>Peltogyne spp</i>	Central & South America	Dust		Sensitiser , nausea, headaches
Poplar <i>Populus spp</i>	North America, Europe, East Asia	Dust, wood		Sensitiser , asthma, dermatitis, bronchitis
Rengas <i>Gluta spp</i>	South East Asia, New Guinea	Dust, leaves bark, wood, sap		Sensitiser , bark, sap and wood dust irritating to skin, causing dermatitis, blistering and chronic skin ulcers
Rimu (New Zealand Red Pine) <i>Dacrydium cupressinum</i>	New Zealand	Dust		Sensitiser , irritation to nose, eyes
Rose Butternut (Nth. Qld. Bollygum) <i>Blepharocarya depauperata</i>	Australian native North Queensland	Dust		Sensitiser , skin irritations and dermatitis, conjunctivitis
Rosewood, Indian (Black Rosewood, Blackwood) <i>Dalbergia latifolia</i>	South East Asia, India and New Guinea	Dust, wood		Sensitiser , causing skin irritations and dermatitis, asthma, irritation to eyes and throat and difficulty breathing
Rosewood, New Guinea (Malay Padauk) <i>Pterocarpus indicus</i>	New Guinea, North Australia and S.E. Asia	Dust, wood		Sensitiser , nausea, headaches, asthma, skin irritations and dermatitis
Rosewood, Thailand <i>Dalbergia cochinchinensis</i>	Cambodia, Laos, Thailand	Dust, wood		Sensitiser , skin irritations and dermatitis, conjunctivitis. Contains methoxydalbergione

SPECIES	ORIGIN	PROBLEM	POTENCY	REPORTED ASSOCIATED HEALTH RISKS
Sapale (Sapelli, Aboudikro) <i>Entandrophragma cylindricum</i>	West Africa	Dust, wood		Sensitiser , skin irritation, sneezing
Satinwood (East Indian Satinwood) <i>Chloroxylon swietenia</i>	India, Pakistan, Ceylon	Dust, wood		Sensitiser , dermatitis, headache, swelling of scrotum, irritation of mucous membranes, irritation to eyes and throat and difficulty breathing
Satinwood (Thorny Yellowwood) <i>Zanthoxylum brachyacanthum</i>	Australian native	Dust, wood bark, thorns		Sensitiser , lesions made by thorns & splinters take a long time to heal. Dust causes dermatitis, cramp, eye and throat irritation, disturbance of vision
Spruce (European Spruce) <i>Picea abies or Picea excelsa</i>	North Scandinavia, Russia, Europe and Japan	Dust, wood		Sensitiser , asthma, Irritation to nose and throat
Sumac (Staghorn Sumac & others) <i>Rhus typhina & Rhus Vernix spp</i>	Asia, South America, Europe	Dust, wood, bark		Sensitiser , bark causes blisters, dust may cause skin irritations and dermatitis
Teak, Asian (Indian Teak) <i>Tectona grandis</i>	South East Asia, plantations in most tropical regions	Dust, wood		Sensitiser , skin irritations and dermatitis, conjunctivitis, over sensitivity to light, swelling of hands, forearms and scrotum, irritation to throat & nose, pneumonia, alveolitis, nausea
Teak, Australian (Crows Ash) <i>Flindersia australia</i>	Australian native New Guinea	Dust, wood		Sensitiser , skin irritations and dermatitis
Teak, Iroko (African Teak) <i>Milaca excelsa</i>	Tropical West & East Africa	Dust, wood		A direct toxin and Sensitiser , causing dermatitis, furunculosis, oedema of eyelids, respiratory difficulties, pneumonia, alveolitis, giddiness
Turpentine <i>Syncarpia glomulifera</i>	Australian native Hawaii	Dust, wood, bark		Sensitiser , skin irritations and dermatitis, mild swelling. Identified by WorkSafe Australia and NOHSC as concerning because of direct skin absorption of chemical irritants
Walnut, African <i>Lovoa trichilioides</i>	West Africa, Angola	Dust, wood		Sensitiser , skin irritations and dermatitis, itchiness, irritation of mucous membranes
Walnut, Australian (Poison Walnut) <i>Cryptocarya pleurosperma</i>	Australian native	Dust, wood, bark, sap		Sensitiser , bark and sap very irritating to skin. Dust may cause breathing problems, vomiting, giddiness, dermatitis

SPECIES	ORIGIN	PROBLEM	POTENCY	REPORTED ASSOCIATED HEALTH RISKS
Walnut, European (English Walnut) <i>Juglans regia</i>	England, Europe and Asia Minor	Dust, wood		Sensitiser , skin irritations and dermatitis, nasal cancer
Wenge <i>Millettia laurentii</i>	Equatorial Africa	Dust, wood		Sensitiser , dust causes dermatitis similar to the effects of poison ivy and is an irritant to the eyes, respiratory problems, giddiness, drowsiness, and abdominal cramps. Splinters are septic, similar to those of greenheart
Western Red Cedar (Canadian Red Cedar) <i>Thuja plicata</i>	North America	Dust, wood, bark, leaves		Sensitiser , skin irritations and dermatitis, asthma, effects central nervous system (rarely) nasopharyngeal cancer (nasal cancer)
White Handlewood (Prickly Fig) <i>Streblus brunonianus</i>	Australian native	Dust, wood bark, sap		Sensitiser , sap very irritant to eye, dust causes dermatitis, abdominal pains, nausea
Yew <i>Taxus baccata</i>	UK, Europe, N.W. Africa and Asia Minor	Dust, wood bark, leaves, fruits		A direct toxin and Sensitiser , skin and eye irritations, dermatitis, headache, congestion of lungs, nausea, fainting, irritation of alimentary tract.