High Tech Health International, Inc.
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SAUNA WOOD

"Toxicity and Negative Health Effects"

Far Infrared saunas can be constructed out of cedar, spruce, pine, fir, basswood, hemlock, teak, eucalyptus, and poplar, but not all saunas produce the same results. Many of these woods contribute to negative health effects and add to your total toxic burden. The difference between these woods is that poplar is the only wood that is non-toxic, contains zero phenols or terpene hydrocarbons, and emits no harmful odors. This makes the poplar far infrared sauna the sauna of choice for the highest quality, most effective far infrared detoxification.

Detoxify in a Non-Toxic Environment

Far Infrared Sauna Detoxification depends on the purity and quality of the therapeutic environment. It must be without off-gassing chemicals and odors. With the toxicity of today's environment, the rise of obesity and diabetes, the increase of auto-immune disease, and the unavoidable exposure to chemicals and heavy metals, no one can afford to be exposed to additional toxins and inhibit the fight to bring the body back to a state of balance and to allow the body to heal itself.

"Hypoallergenic" is Not a Regulated Term

The term "hypoallergenic" is used extremely loosely when describing wood and is misleading because saunas are not governmentally regulated products. Currently, there are no official criteria that a product has to meet before it can label itself hypoallergenic. Hypoallergenic does not have a medical definition. In fact, it was actually coined by makeup advertisers for individuals with severe allergies in 1953.[1]

The FDA states, "There are no Federal standards or definitions that govern the use of the term 'hypoallergenic.' The term means whatever a particular company wants it to mean."[2] Without a medical definition, it is easy for every company to use the word to describe their wood selection and claim how it suits their product.

Be Certain Wood is Certified by FSC, PEFC, SFI

Certifications are essential for supporting claims about wood. Look for certification by the Forest Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC), or the Sustainable Forestry Initiative (SFI). The internet is filled with sauna companies making false claims about their products. It is important to look for a third-party confirmation of the source of the wood, such as the FSC, the Forest Stewardship Council. Non-FSC wood either comes from old-growth forests (the most ecologically damaging source of wood), or from plantations using chemicals to produce wood as cheaply as possible. [3]

The interior air quality of a sauna is a direct consequence of the construction materials used; only natural, untreated materials should be used to build the highest quality non-toxic poplar infrared sauna. For an optimal sauna detox program, it is important to not contaminate the sauna with use of oils or stains to finish the sauna wood and to avoid synthetic accessories like radios, DVD players, and other plastic accessories built into the sauna. Premium grades of dry, untreated white poplar wood should be used throughout the entire sauna, even in the concealed framing!

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1 http://en.wikipedia.org/wiki/Hypoallergenic

2 http://www.fda.gov/Cosmetics/CosmeticLabelingLabelClaims/LabelClaimsandExpirationDating/ucm2005203.htm

3 Forest Products Laboratory, United States Department of Agriculture

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Poplar, the Wood of Choice

Poplar wood is the only wood that does not contain terpene hydrocarbons nor emit toxic phenols.[4] Cedar, spruce, pine, basswood, fir, teak, and hemlock wood contain and emit toxic phenols that enter the body by skin contact, exposure, and inhalation. Poplar wood is free of volatile oils that off-gas irritants that can cause irreversible skin, eye, and respiratory irritations. Poplar wood is the wood of choice for medical doctors worldwide. Health centers, cancer clinics, and the most renowned experts recommend poplar wood saunas to their patients.

Toxic Woods and Negative Health Effects

Unlike the hard wood poplar, soft woods contribute to negative health affects and increase total toxicity. Saunas made of cedar, spruce, pine, basswood, hemlock, teak, and fir contain terpene hydrocarbons that produce strong odors and emit chemicals that harm the skin, eyes, nose, and respiratory system. The United Nations-North America classified terpene hydrocarbons as hazardous with detrimental health effects of skin and eye irritation and induced coughing.[5]

These toxins enter the body by inhalation, surface exposure, or by contact with the skin and must be detoxified by the liver. No matter how much one airs out a sauna, the odors, oils, and chemicals will be present and will intensify with heat. Using a sauna not of poplar wood will prevent the best detoxification of heavy metals and chemicals while contributing to one's total toxicity.

Harmful to the Skin, Nose, Lungs, Liver, and the Whole Body

HSE, the Health and Safety Executive, proves toxic woods can cause or aggravate allergies, asthma, cardiac problems, lung irritation, tearing, conjunctivitis, dermatitis, hepatitis, irritations, rhinitis, and sensitization. Areas affected include the skin, nose, lungs, eyes, liver, and inhalation of some woods can affect the whole body. The most common irritations are caused by direct contact with the wood, cross-contamination to other parts of the body by hand, by inhalation of the wood dust, or by lung irritations from toxic wood odors.[6]

Irritations are caused by direct contact with the wood and the wood dust. Irritations can affect the skin, eyes, nose, and lungs. Skin irritations can lead to rashes or irritant dermatitis, a condition in which the skin becomes red, itchy, or dry. Eye irritations are caused by exposure to wood odors and dust. Symptoms include soreness, watering, and conjunctivitis. Lung irritation is caused by inhalation of dust and odors; it affects the respiratory tract and causes inflammation. Symptoms of irritation can take up to 15 days to develop and persist as long as the affected area remains in contact with the wood or its dust.

Allergic effects result from *sensitization* to wood and dust and will worsen no matter how low the exposure is. Inhalation of fine dust and toxic odors can have many lasting effects on the nose, lungs, respiratory tract, and sometimes the whole body.

Dr. Mark Anderson states, "You can develop allergies following contact by touch or through the inhalation of dust. Both large and small particles can sensitize you to the allergen. The reaction can be a skin or lung reaction. Skin reactions are generally itchy rashes. Lung reactions are generally chronic coughs or wheezing. Other types of problems come from chronic exposure to dusts that are small enough to reach the small airways and alveoli. Dusts larger than 10 microns settle out in the upper airways. Between 0.1 and 10 microns reach the small airways and some of them stay. The risk isn't just cancer, but also scarring, inflammation, and other damage, that eventually causes stiffening of the lungs so that the work of breathing increases. It's not quite the same as your typical smokers' emphysema, but it's similar enough, and less responsive to treatment."[7]

[4] http://www.riparia.org/toxic_woods.htm
[5] http://cameochemicals.noaa.gov/chemical/14905
[6] http://www.hse.gov.uk/pubns/wis30.pdf
[7] Toxic, Allergenic or Carcinogenic Woods and Occupational Lung Diseases, Mark Anderson, M.D., 2000 http://www.riparia.org/toxic_woods.htm

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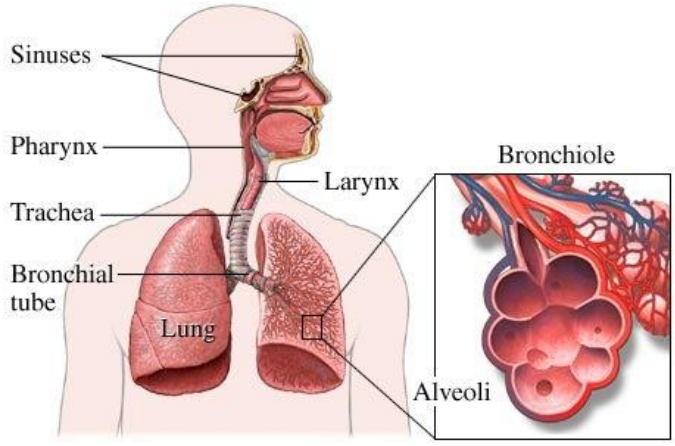

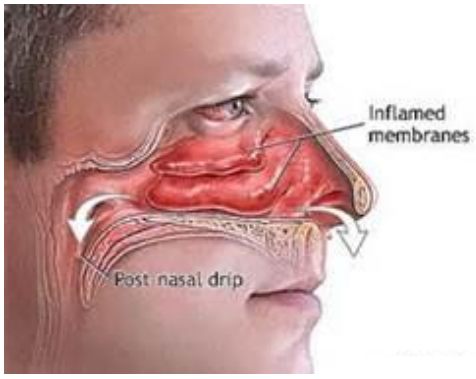

"Affected Areas from Certain Wood Exposures"

	Skin	Nose	Lungs	Eyes	Whole Body
Cedar	++++	++++	++++	++++	++
Spruce	++		++		
Pine	+	++	+		
Basswood	+				
Hemlock	++	++	++		+
Fir	++		+	++	
Teak	+++		+++	+++	
Poplar	-	-	-	-	-

Cedar Wood, "The Most Allergenic"

All woods beside Poplar cause negative health effects, but the Center for Disease Control and Prevention identifies cedar wood as the most allergenic species of soft wood.[8] The CDC claims that exposure to wood dust and odor have long been associated with a variety of adverse health effects, including dermatitis, allergic respiratory effects, mucosal and non-allergic respiratory effects, and cancer. Cedar's volatile oil called *cedrene* permits the wood to repel insects and endure moisture; unfortunately, *cedrene* also includes unsaturated, aliphatic cyclic hydrocarbons that are local irritants.

The United States Environmental Protection Agency and the Office of Prevention, Pesticides, and Toxic Substances profile cedar as a toxic wood as well. "Cedar wood oil is a natural component of wood from the tree, Juniperus virginiana, L. It is an active ingredient in five pesticide products that are used as repellants and feeding depressants to control moths and fleas and retard the growth of mildew." Cedar also is a major component of many non-pesticidal consumer products currently marketed in the United States.[9]

The wood from western red cedar (Thuja plicata) has one of the most potent insecticidal compounds, which accounts for its popularity to repel or kill moths. These chemicals can also damage the respiratory tract, causing chronic respiratory disease, and asthma, and some studies have found an association between exposure to wood dusts and oral cancers.[10] The primary irritant in cedar is plicatic acid and western red cedar contains the highest concentrations, although eastern white cedar and Japanese cedar also contain it. Exposure to plicatic acid can cause or exacerbate asthma, rhinitis, conjunctivitis, and the damage can be progressive.

[8] http://www.cdc.gov/niosh/pel88/wooddust.html
[9] http://www.epa.gov/oppsrrd1/REDs/factsheets/3150fact.pdf
[10] Paggiaro PL, Chan-Yeung M. Pattern of specific airway response in asthma due to western red cedar (*Thuja plicata*): Relationship with length of exposure and lung function measurements. *Clin Allergy* 1987;**17**:333-9.

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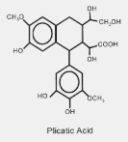
Plicatic acid has been shown to cause an array of pathological changes consistent with inflammatory and allergic reactions. Plicatic acid induces increased concentrations of eosinophils, immunoglobulin E (IgE), T-cells, histamine and leukotrienes – substances known to increase inflammation in conditions such as multiple organ failure following surgery and acute respiratory distress syndrome.[11]



Plicatic Acid

The overall increase in IgE concentrations found in humans with red cedar asthma indicates an overall sensitization of the immune system to a foreign substance. Similar increases in IgE levels also accompany allergic reactions and parasitic infections. Long-term exposure to red cedar can lead to a decrease in forced expiratory volume, a measure of lung capacity and ability to breathe freely. Plicatic acid can cause destruction and sloughing of alveolar, tracheal, and bronchial epithelial cells. [12]

The Health and Safety Executive claims cedar wood to cause negative health effects such as asthma, rhinitis, dermatitis, mucous membrane irritation, and central nervous system symptoms.[13] Furthermore, cedar wood is extremely moisture absorbent and will absorb toxin-laden sweat that will continue to out-gas when heated.

Wood Species	Irritant and/or Sensitizer	Reaction	Area(s) Affected	Potency
Cedar	Irritant and Sensitizer	Asthma, headache, bronchitis, rashes, respiratory disorders, mucosal inflammation, rhinitis, dermatitis, conjunctivitis, nervous system effects	Skin, eyes, nose, lungs, whole body	++++

Spruce, a "Sensitizer"

Spruce has been identified as a sensitizer, meaning the more one is exposed to a wood, the more sensitive one gets to exposure, and the more severe and adverse the reactions become. Nordic spruce dust has been reported to cause skin irritation and asthma-like respiratory effects.[14]

Wood Species	Irritant and / or Sensitizer	Reaction	Area(s) Affected	Potency
Spruce	Irritant and Sensitizer	Dermatitis, respiratory inflammation, decrease in lung function, asthma	Skin, lungs	++

[11] Chan-Yeung M, Chan H, Tse KS, Salari H, Lam S. Histamine and leukotrienes release in bronchoalveolar fluid during plicatic acid-induced bronchoconstriction. *J Allergy ClinImmunol* 1989;**84**:762-8.
[12] Ayars GH, Altman LC, Frazier CE, Chi EY. The toxicity of constituents of cedar and pine woods to pulmonary epithelium. *J Allergy Clin Immunol* 1989;**83**:610-8.
[13] http://www.hse.gov.uk/pubns/wis30.pdf
[14] http://www.riparia.org/toxic_woods.htm

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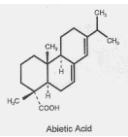
Potent Pine

The primary irritant in pine is abietic acid, sometimes called sylvic acid. Pine's raw materials and chemical properties are used in adhesives, paints, and varnishes. Abietic acid itself elicits relatively weak allergic responses; however, a number of compounds formed by air oxidation of abietic acid are potent contact allergens. [15]



Abietic Acid

The Health and Safety Executive classifies Pine wood as a sensitizer and research proves pine wood as a cause for decrease in lung function.[16]

Wood Species	Irritant and/or Sensitizer	Reaction	Area(s) Affected	Potency
Pine	Irritant and Sensitizer	Dermatitis, rhinitis, asthma	Skin, lungs, nose	++

Basswood, the Poplar Imposter

Research shows basswood causes genetic damage and skin irritation.[17] The wood is inexpensive and very soft, perhaps the softest of the wood species used to make saunas. When put under stress, it won't bend, it will break. It is non-durable and most commonly used in plywood and lumber. Companies working with basswood do so because it is cheaper and has a similar color to that of the premium non-toxic wood Poplar.

Wood Species	Irritant and/or Sensitizer	Reaction	Area(s) Affected	Potency
Basswood	Irritant	Dermatitis	Skin	+

Hemlock and its Sour Scent

The Health and Safety Executive reports Hemlock to cause negative bronchial effects and rhinitis. The softwood Hemlock out-gasses chemicals and emits phenols, which are responsible for its sour scent. Unfortunately, the scent comes from chemicals leaking into the air from the wood. These chemicals and phenols are absorbed by inhalation and by contact with the skin and cause irritations with the skin and lungs. Dust from hemlock is a sensitizer and can cause allergic reactions.[18]

Further, hemlock is notorious for ring shake, a condition that causes separation parallel to the annual rings that renders the wood worthless.

Wood Species	Irritant and/or Sensitizer	Reaction	Area(s) Affected	Potency
Hemlock	Irritant and Sensitizer	Dermatitis, asthma, decreased lung function	Skin, lungs	++

[15] Ayars GH, Altman LC, Frazier CE, Chi EY. The toxicity of constituents of cedar and pine woods to pulmonary epithelium. *J Allergy Clin Immunol* 1989;**83**:610-8.
[16] http://www.hse.gov.uk/pubns/wis30.pdf
[17] http://www.ncbi.nlm.nih.gov/pubmed/14694672
[18] http://www.hse.gov.uk/pubns/wis30.pdf

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The Progressively Foul Effects of Fir

The Health and Safety Executive associate dermatitis, rhinitis, and bronchial effects with the softwood Fir. Fir has been reported to cause skin irritation, nausea, giddiness, along with an increased likelihood of splinters getting infected.[19]
Fir is also categorized as a sensitizer that progressively affects both the skin and eyes. Symptoms are common and derive from contact with the dust.[20]

Wood Species	Irritant and/or Sensitizer	Reaction	Area(s) Affected	Potency
Fir	Irritant and Sensitizer	Dermatitis, rhinitis, asthma, decrease in lung capacity, headache, conjunctivitis	Skin, eyes, lungs, whole body	++

Teak, the Expensive Toxin

Teak is a highly toxic wood. The Health and Safety Executive classified teak as a strong sensitizer that affects the entire body.[21] Once exposed to Teak wood, an individual will experience strong allergic reactions that will continue to worsen with exposure. Affected areas include the eyes, skin, and respiratory system.[22] Teak is often used for the construction of outdoor furniture because of its high quantity of terpene hydrocarbons and in effect, its ability to repel insects and mold.

Wood Species	Irritant and/or Sensitizer	Reaction	Area(s) Affected	Potency
Teak	Irritant and Sensitizer	Dermatitis, rash, nausea, asthma, conjunctivitis	**Teak**	+++

High Tech Health Offers a Premium Poplar Solution

Poplar wood is the only choice for people serious about detoxification. High Tech Health uses 100% solid white poplar wood, even for the hidden inside framing wood, something no other manufacturer does because it is very expensive. We have more experience working with the very sickest people than any other company by far, and all of our experience supports the superiority of poplar.
High Tech Health's poplar wood is not only the finest and most beautiful furniture-grade poplar wood available, but it is also Forest Stewardship Council, Programme for the Endorsement of Forest Certification (PEFC), and Sustainable Forestry Initiative (SFI) certified. These certifications mean that our wood is guaranteed to be from a sustainable forest. The Forest Stewardship Council (FSC) sets standards for managing a sustainable forest and ensures that the forest is not destroyed for its wood, that there is minimal impact on the plant and animal life in that forest, and that the forest was legal for logging in the first place. Certification requires forest management systems that promote environmentally friendly non-chemical methods of pest management avoiding the use of chemical pesticides. Certification companies certify forests to the FSC's standards, as well as the entire chain of custody of the wood (all of the intermediary companies that handle the wood or products made from wood) so that you can be certain that the wood in a product did originate in an FSC-certified forest. Greenpeace, National Wildlife Federation, the Nature Conservancy, Sierra Club, and World Wildlife Fund all support and encourage FSC certification. Certification ensures that the forest is not destroyed for its wood, and according to Greenpeace, "Forest destruction produces about one fifth of global greenhouse gas emissions – more than all the cars, planes, and trains in the world." High Tech health International's FSC ID Code is FSC-US-0170.

If you are serious about detoxification and are determined to restore your body back to a state of balance, High Tech Health's poplar Thermal Life Far Infrared sauna is the sauna for you.

[19] http://www.hse.gov.uk/pubns/wis30.pdf
[20] http://www.riparia.org/toxic_woods.htm
[21] http://www.hse.gov.uk/pubns/wis30.pdf
[22] http://www.riparia.org/toxic_woods.htm

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Wood Species	Irritant and/or Sensitizer	Reaction	Area(s) Affected	Potency
Cedar	Irritant and Sensitizer	Asthma, headache, bronchitis, rashes, respiratory disorders, mucosal inflammation, rhinitis, dermatitis, conjunctivitis, nervous system effects	Skin, eyes, nose, lungs, whole body	++++
Spruce	Irritant and Sensitizer	Dermatitis, respiratory inflammation, decrease in lung function, asthma	Skin, lungs	++
Pine	Irritant	Dermatitis, rhinitis, asthma	Skin, lungs, nose	++
Basswood	Irritant	Dermatitis	Skin	+
Hemlock	Irritant and Sensitizer	Dermatitis, asthma, decreased lung function	Skin, lungs	++
Fir	Irritant and Sensitizer	Dermatitis, rhinitis, asthma, decrease in lung capacity, headache, conjunctivitis	Skin, eyes, lungs, whole body	++
Teak	Irritant and Sensitizer	Dermatitis, rash, nausea, asthma, conjunctivitis	Skin, lungs, eyes, whole body	+++
Poplar	Neither	None	None	-

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