Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs
Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Pressure Treated Wood: Questions & Answers

The Massachusetts Department of Environmental Protection (MassDEP) has developed this web page for both residents and municipal authorities in response to several inquiries on how to manage pressure treated wood used for decking, swing sets, picnic tables, landscaping and other applications at homes and public playgrounds.

What is pressure treated wood?

Pressure treated wood is wood that has been treated with a preservative to protect it from being destroyed by insects, fungus or exposure to moisture.

What preservatives are used to pressure treat wood?

The preservatives formerly used to pressure treat wood for non-commercial applications are chromium, copper and arsenic, which are classified as pesticides. Wood treated with these pesticides is sometimes referred to as CCA treated wood, and is commonly used for decks, walkways, fences, gazebos, boat docks and playground equipment. The U.S. Environmental Protection Agency (EPA) has registered a number of alternate wood preservatives that do not contain arsenic. Wood treated with these preservatives is now available in the marketplace.

How are children exposed to arsenic from pressure treated wood?

Parents should be aware that children are exposed to arsenic through their skin contact with the wood and also from hand-to-mouth activity while playing on and after playing on pressure treated wood play sets. In addition, studies have shown that arsenic, over time, slowly leaches from pressure treated wood onto surrounding soil. As a result, children can also be directly exposed to arsenic by coming into contact with the contaminated soil. Splinters are also an exposure pathway.

When was pressure treated wood found to present health risks?

EPA began investigating the risks associated with the use of pressure treated wood in the year 2000. Arsenic has been associated with lung and skin cancer and is acutely toxic.

The draft preliminary risk assessment demonstrated an increased risk of cancer for children who regularly played on pressure treated play sets, and a greater increased risk for children who also were exposed to pressure treated decks in the home. In cold climates like Massachusetts, the mean lifetime risk of cancer to children who use play sets made of pressure treated wood ranged from 1.2 cases per 100,000 to 2.2 cases per 100,000 for children who also had a pressure treated wood deck. In warmer climates where children can be exposed for more days throughout the year the risk increased to 2.3 cancers in 100,000 for children with play

sets only, to 4.2 per 100,000 if an outdoor deck is also present. Children who contacted play sets only had half the absorbed dose of children who contacted play sets and decks. For children who contacted both play sets and decks, the total mean dose was reduced by a third when hand washing occurred after exposure. Arsenic that leached from the play sets to the soils underneath was included in the assessment of exposure.

EPA's draft preliminary childhood risk assessment takes into consideration variations in exposure due, for example, to climate, weathering of the wood play structures, whether the child also spends time on a pressure treated wood deck, and months of the year that outdoor play occurs.

Risks associated with exposure to chromium, and non-cancer risks from arsenic are incorporated in the study. EPA noted that uncertainties exist in the risk assessment, including uncertainty in the toxicity of arsenic, the level of arsenic residue on the surface of the wood, the amount of arsenic absorbed, etc.

In February 2003, the United States Consumer Product Safety Commission (CPSC) released the results of its studies examining decks and play sets made from pressure treated wood. Because arsenic is thought to be the most potent of the three substances in pressure treated wood, the CPSC risk assessment focused only on this substance. The research concluded that a young child who plays on pressure treated playground structures for an equivalent of 156 hours per year, or three times per week, over a five-year period has an increased risk of developing lung or bladder cancer in his or her lifetime.

Have the manufacturers of pressure treated wood been required to stop production of the wood?

No. Manufacturers of pressure treated wood reached a voluntary agreement with EPA to end the manufacture of pressure treated wood for most consumer applications by December 31, 2003. EPA has indicated that some stocks of wood treated with CCA before this date might still be found on shelves until mid-2004. Pressure treated wood will still be available for certain commercial applications, such as wharves and bridges, where little human contact would occur.

How do I know whether my play set or deck is made of pressure treated wood?

You can usually recognize pressure treated wood by its greenish tint, especially on the cut end, and staple-sized slits that line the wood. However, the greenish tint fades with time, and not all pressure treated wood has the slits. If you are uncertain what your structure was made of, try contacting the manufacturer or builder. If your deck or swing set is more than one or two years old, unless it was made of cedar, it was probably made with arsenic treated wood. Most play set manufacturers switched to non-arsenic preservatives by 2003.

How can I lessen the risk from exposure to arsenic from pressure treated wood?

To minimize the risk of exposure to arsenic from pressure treated wood (i.e., play sets, decks, etc.) parents should thoroughly wash a child's hands with soap and water immediately after outdoor play, especially before eating. Children should also be discouraged from eating while on pressure treated wood used at playgrounds and for decks.

Taping the hand pegs (e.g., rungs of ladders or monkey bars) of a play set with duct tape lowers the risk of splinters and contact with the wood surface. While available data are very limited, some studies suggest that applying certain penetrating sealants (e.g., oil-based semi-transparent stains) on a regular basis (one re-application per year or every other year depending upon wear and weathering) may reduce the migration of chromium, copper and arsenic from pressure treated wood.

To reduce potential contact with soil that may have elevated arsenic beneath a play set, consider covering the ground with sand, pea stone or rubber chips. The sand, pea stone or rubber chips will prevent contact with the

soil and inhibit the generation of dust or the tracking of dirt into your home. Because arsenic readily leaches through sand, rubber chips and pea stone, it is less likely to reach a level of concern at the surface of the play area. Arsenic does bind to bark mulch, making it a less desirable soil covering beneath pressure treated wood play sets.

For additional information on ways to reduce exposure, please refer to .

Will any kind of sealant work to reduce risk?

In selecting a coating, consumers should be aware that, in some cases, "film-forming" or non-penetrating stains (latex semitransparent, latex opaque, and oil-based opaque stains) on outdoor surfaces such as decks and fences are not recommended, as subsequent peeling and flaking may ultimately have an impact on durability as well as exposure to the preservatives in the wood.

Should I remove my backyard play set or deck?

This is your decision. EPA's long term goal is to eliminate residential use of pressure treated wood. However, EPA does not believe there is an immediate need to remove or replace pressure treated structures, including decks and playground equipment, nor do they recommend surrounding soils be removed or replaced without testing.

If I decide to remove my backyard play set or deck, how should I dispose of it?

Never burn or grind pressure treated wood. Do not recycle it for other residential uses. It is acceptable to dispose of small amounts of pressure treated wood with your municipal solid waste. For larger quantities, you may want to rent a roll-off container or haul the load to an approved solid waste handling facility for proper disposal.

Should I test the soil under my play set or deck?

Again, this is your decision. Soil testing can be done to determine whether arsenic has leached from your play set into the surrounding soil. Arsenic is naturally-occurring in Massachusetts' soils, so finding it beneath your play set does not necessarily indicate that it is coming from the wood. In order to determine whether arsenic levels are above what would be found in unaffected or "clean" soil, test results from samples taken beneath the play set need to be compared to those from outside the area.

An alternative to soil testing is to cover the soil that may have elevated arsenic to reduce potential contact. Sand, pea stone or rubber chips will prevent contact with the soil and inhibit the generation of dust or the tracking of dirt into your home.

If you decide to test your soil, consider consulting an environmental professional or another person qualified to plan the sampling and interpret the results.

If I test the soil, does MassDEP have arsenic soil standards?

MassDEP does have an arsenic soil standard in the Massachusetts Contingency Plan (M.G.L. Chapter 21E), a document that explains how hazardous waste sites should be cleaned up in Massachusetts. The soil standard applies to locations where a "release" of arsenic to the environment has occurred. This standard does not apply to arsenic that has leached into soil from pressure treated wood, however. The MCP specifically exempts residues from properly applied pesticides from the definition of "release." Arsenic in pressure treated wood is a pesticide applied as a wood preservative.

While the MCP soil standard is not a cleanup requirement for arsenic from pressure treated wood, it can be used for simple comparison purposes as a level that represents "No Significant Risk" to human health.

If I want to remove the soil, what do I do with it?

There are regulations that govern what can be done with soil that contains elevated levels of metals, such as arsenic, or other chemical constituents. These regulations also specify rules for documenting the relocation of soil and where it can be disposed. If you want to remove soil from beneath your play set, you will need to have it tested if before taking it off your property. The concentrations of arsenic in the soil will determine what options there are for reusing it at another location. Depending on the arsenic levels, the soil may be acceptable for reuse at a landfill, as cover material. You should consult an environmental professional if you are considering removing contaminated soil from your property.

What should owners of public playgrounds do to protect children who use them?

Owners of existing public playgrounds made from pressure treated wood should maintain and operate the structures in a manner to minimize CCA from leaching from the structure. Apply a coating product to pressure-treated wood on a regular basis. According to the EPA, studies suggest that applying certain penetrating coatings (e.g., oil-based, semi-transparent stains) on a regular basis (e.g., once per year or every other year depending upon wear and weathering) may reduce the migration of wood preservative chemicals from pressure treated wood. Ground cover surrounding the playgrounds should be maintained in a manner to minimize exposure to potential CCA contamination. Suitable ground cover such as sand, pea gravel and rubber chips lessens the risk of exposure to arsenic. If owners of public playgrounds wish to replace pressure treated wood structures, disposal of the pressure treated wood should be at an approved solid waste handling facility.

Will raised garden beds made from pressure treated wood contaminate my garden?

Plants can take up arsenic from the soil, so it may not be a good idea to use pressure treated wood in gardens. Use arsenic-free alternatives. If you cannot replace raised garden beds with arsenic-free alternatives, peeling root crops or scrubbing with a brush and water helps remove arsenic-contaminated soil that sticks to the vegetables. As an added precaution, line the inside surface of the pressure treated frame with plastic.

Should I take any other precautions when I work with pressure treated wood?

When working with pressure treated wood, consumers should follow the same precautions that workers should take: wear gloves when handling wood, wear goggles and a dust-mask when sawing and sanding, always wash your hands before eating, and never burn pressure treated wood.

What should I use in place of pressure treated wood?

Non-arsenic containing hardwoods such as cedar and redwood, wood composites and non-wood alternatives such as metals and plastics, are excellent substitutes for pressure treated wood. The EPA has registered a number of alternate wood preservatives that do not contain arsenic. Wood treated with these preservatives is available in the marketplace. Prior to purchasing treated wood, you may wish to seek additional information on the type of preservatives used from the manufacturer.

Sources

- Dang, W., et al. 2003. A Probabilistic Risk Assessment for Children Who Contact Pressure Treated Playsets and Decks. U.S. Environmental Protection Agency (Draft Preliminary Report). Nov. 10.
- EPA 2001. Preliminary Evaluation of the Non-dietary Hazard and Exposure to Children from Contact with Chrominated Copper Arsenate Treated Wood Playground Structures and Contaminated Soil. SAP Report No. 2001-12.
- EPA 2001. Sampling for Residues of Arsenic, Chromium, and Copper in substrates (Soils/Buffering Materials) Beneath/Adjacent to Chromated Copper Arsenate (Pressure)-Treated Playground Equipment. U.S EPA Office of Pesticide Programs, Antimicrobials Division, Washington, DC.