TORONTO STAFF REPORT

June 25, 2002

To: Board of Health

From: Dr. Sheela V. Basrur, Medical Officer of Health

Subject: Chromated Copper Arsenate (CCA)-Treated Wood - Advising the Public on Reducing the Potential for Exposure to Arsenic

Purpose:

This report summarizes the health concerns surrounding Chromated Copper Arsenate (CCA)-treated wood and the potential for children's exposure to arsenic that can leach out of structures made of CCA-treated wood and outlines a public communications strategy on this matter regarding arsenic from CCA-treated wood structures directed at the public, school boards and childcare centres.

Financial Implications and Impact Statement:

The estimated one time expenditure for developing and implementing the communications strategy outlined in this report is $10,000. Funding for this initiative is available within the 2002 Toronto Public Health operating budget.

The Chief Financial Officer and Treasurer has reviewed this report and concurs with the financial impact statement.

Recommendations:

It is recommended that:

(1) the Board of Health forward this report for information to City Council through the Economic Development and Parks Committee and the Community Services Committee; and

(2) the appropriate City Officials be authorized and directed to take the necessary action to give effect thereto.

Background:

This report summarizes the issue of Chromated Copper Arsenate (CCA)-treated wood products and the potential for exposure to arsenic from structures made of CCA-treated wood. Since September 2001, Toronto Public Health has been been monitoring the ongoing joint re-evaluation by the United States Environmental Protection Agency (U.S. EPA) and Health Canada's Pest Management Regulatory Agency (PMRA) of the CCA wood preservative. In response to various inquiries since that time, Toronto Public Health has been assessing the information on preventing arsenic exposure from CCA-treated wood play structures, particularly for children. The present report provides context on the health concerns from long-term exposure to arsenic from CCA-treated wood use in the broader community, including residential uses.

At its meeting on May 23rd, 2002, City Council directed Corporate Communications in consultation with the Medical Officer of Health, "to prepare and implement a communications strategy informing the public about the health dangers of pressure-treated lumber and what they can do to mitigate any possible negative health impacts". This report addresses Toronto Public Health's work on a communications strategy and outlines the advice that will be provided to citizens of Toronto on how to minimize exposure to arsenic from CCA-treated wood structures. This report is separate from, but complementary to a June 27, 2002 report from the Commissioner of Economic Development, Culture and Tourism to the Economic Development and Parks Committee which addresses the issue of arsenic from CCA-treated wood structures specifically in park playgrounds and childcare centres.

Comments:

Chromated copper arsenate, or CCA, is a chemical wood preservative (a registered pesticide) that is used to increase the longevity of wood intended for outdoor uses. CCA treatment protects against insects (such as termites), fungi, rot and damage from sun and water. CCA contains forms of the chemicals chromium, copper, and arsenic. Among these chemicals, arsenic is characterized as being of potential concern to human health because of its high human toxicity and exposure potential. Wood treated with CCA is also known as pressure treated lumber.

The long-term health risk from exposure to arsenic from CCA–treated wood structure continues to be characterized. Regulatory authorities in Canada and the U.S. generally agree that chronic exposure to arsenic should be minimized where possible, especially for children. Toronto Public Health concurs that minimizing exposure to arsenic present in CCA-treated wood structures, particularly for children, is a prudent action that can be protective of health in the long-term.

Exposure to Arsenic from CCA-treated Wood Structures:

There have been several studies in Canada and the U.S. demonstrating that the component chemicals, particularly arsenic, can leach out of CCA-treated wood with normal wear and weathering, especially from the effects of rainfall. Arsenic can then be present on CCA-treated wood surfaces as dislodgeable residues. These dislodgeable arsenic residues may be transported to the environment, particularly to soil beneath the structures. Some studies have found levels of arsenic that approached, and in some cases surpassed, the soil arsenic guidelines set by

regulatory agencies. There are no guidelines or standards for acceptable levels of arsenic on the wood surfaces themselves.

Exposure to arsenic from CCA-treated wood can occur in a number of ways. It can be via residues present on wood surfaces. Arsenic transferred to the hands from direct contact with wood surfaces can then be inadvertently ingested with hand-to-mouth transfer, a behaviour which is more typical of children than of adults. Arsenic can also be absorbed through the skin although this exposure route appears to be minimal. Ingestion (and to a lesser extent inhalation) of nearby soil that contains arsenic that has leached out of CCA-treated wood is another route of exposure. Children are more likely to ingest soil than are adults because of frequent hand-to-mouth activity. Ingestion of fruits and vegetables grown in arsenic contaminated soils represents another route of exposure.

Generally, the amounts of arsenic present from CCA-treated wood (in both soil and on wood surfaces) are small compared to the amount of arsenic originally applied to the wood and relative to toxic doses. The amounts of arsenic that could be taken into the body from incidental contact with soil or wood surfaces are typically not high enough to cause immediate, acute health effects. However, some agencies in the United States have concluded that children's long-term, frequent contact with the arsenic released from CCA-treated wood in play structures may lead to doses that could be unacceptable from a health protection standpoint (Roberts & Ochoa, 2001; Connecticut Department of Public Health, 2001). It should be noted that although a few studies have measured arsenic on hands using adult volunteers, to date, there have been no studies examining the actual exposure to arsenic in children who play on CCA-treated wood structures.

Arsenic's Known or Potential Health Effects:

At high doses arsenic is acutely toxic to humans. It is a poison that can cause death when the dose is high enough. However, as already stated, the levels of arsenic exposure that are possible from normal use of CCA-treated wood structures are too low to cause arsenic poisoning or other acute effects. The pertinent concern surrounds the potential for long-term health effects from chronic (long-term, frequent) exposure to arsenic present from CCA-treated wood structures.

Arsenic is classified as a known human carcinogen (IARC, 1987). It is linked with increased risk of skin cancer and tumors of the bladder, kidney, liver and lungs in populations around the world that have chronic exposure to higher than average levels of arsenic in drinking water (in most cases, naturally occurring). Arsenic is also toxic to the immune and nervous system and is linked to skin lesions and reproductive problems. These health effects require long-term exposure and take years to develop. These chronic health effects have been studied in populations with exposure to arsenic mainly via drinking water. It is not yet known whether the amount of arsenic leaching out of CCA-treated wood is sufficient to increase cancer risks or cause other chronic health effects.

While there have been case reports of people adversely affected by exposure to the constituent chemicals from CCA-treated wood, these typically describe instances where there has been improper handling or use of the wood. For example, when CCA-treated wood is burned it concentrates the chemicals and disperses toxic amounts into air. The ash of burned CCA-treated

wood is also highly toxic. The manufacturers provide specific recommendations for safe handling of new CCA-treated wood during construction projects. These include the use of protective apparel (gloves and mask), precautions that are to be taken for safe disposal of resulting sawdust and wood remnants and the warning that CCA-treated wood must never be burned.

Phase-out of Retail Availability of CCA-treated Wood:

On April 3, 2002 the PMRA announced that the Canadian wood treating industry had voluntarily agreed to phase out the use of the CCA preservative for treating wood for non-industrial (that is residential) uses after December 31, 2003. Retailers can continue to sell the remaining stocks of CCA-treated wood to consumers as long as these stocks were not treated with CCA after December 31, 2003. Wood preservers are transitioning to alternative chemical wood preservatives that do not contain arsenic. Health Canada supports, as a measure of prudence, discontinuation of the use of CCA in pressure treated wood for new structures that are likely to provide repeated and long term contact and exposure to the general public (personal communication, 2002). Existing structures containing CCA-treated wood are not affected by this agreement.

Advising the Public on Reducing Exposure to Arsenic from CCA-treated Wood:

Toronto Public Health has concluded that the arsenic levels measured in soil, ground cover and on wood surfaces of CCA-treated wood structures do not pose an “immediate” health risk to people using these structures or the facilities that contain them. However, Toronto Public Health has recommended that it is prudent to minimize the public’s exposure to arsenic where possible.

CCA-treated wood has been widely available and affordable. Many people have used it in construction projects at their homes. It will still be available to the consumer for some months or years to come. Attention is on the CCA-treated wood used in structures where children are likely to routinely come into direct contact with the wood surfaces or underlying soil or ground cover, such as in the case of decks, play structures, and picnic tables.

Toronto Public Health has been responding to public inquiries and is preparing, as a component of a larger communications strategy, fact sheets providing simple tips for reducing exposure to arsenic that leaches from CCA-treated wood structures . These fact sheets will provide information geared to the public and to appropriate institutions and agencies to help them avoid exposure to arsenic from CCA-treated wood.

Consistent with a prudent avoidance approach, Toronto Public Health recommends that people consider avoiding the purchase of CCA treated wood (while the wood continues to be available) for constructing new structures if they are intended for use by children. Regulatory authorities have not recommended that existing structures be removed or replaced. However, available research suggests that regular application of a sealant (every 1 to 2 years), particularly a penetrating, oil-based stain, significantly reduces the rate of arsenic leaching (U.S. Federal Insecticide Fungicide & Rodenticide Act Scientific Advisory Panel, 2001; Health Canada personal communication, 2002). Parents should also ensure that children wash their hands (or

have them cleaned thoroughly with a wet wipe) after playing on unsealed CCA-treated wood structures. Hand washing precautions should be used if unsure about whether the structure has been sealed. Whenever possible, parents should ensure that their children do not eat soil. It is further recommended that children and pets be kept away from the areas underneath raised decks or play structures made of CCA-treated wood. People who grow vegetables, should avoid using CCA-treated wood around their vegetable gardens or should install a plastic liner to keep the leached arsenic away from any edible plants.

People who choose to use CCA-treated wood, should follow appropriate safety and handling instructions recommended by Health Canada. Children should not be exposed to the sawdust and wood pieces from construction projects. CCA-treated wood should never be burned, since burning releases toxic concentrations of chemicals into the air and in the remaining ash.

Toronto Public Health staff are currently developing a distribution plan for the communications strategy that will involve such partners as Parks and Recreation, Children's Services, as well as health and environmental groups. Toronto Public Health is also communicating with authorities at the City's school boards (Toronto District School Board, Toronto Catholic District School Board, Conseil Scolaire de District Catholiques and Conseil Scolaire de District du Centre-Sud-Ouest) and also with private schools and licensed child care centres to provide them with this information.

Conclusions:

Arsenic is a known human carcinogen with potentially serious health effects arising from acute and/or chronic exposures. CCA-treated wood has been found to pose an arsenic exposure hazard. However, the amounts of arsenic present from CCA-treated wood structures are generally small compared to the amount of arsenic originally applied to the wood and relative to toxic doses. The arsenic levels expected from incidental contact with CCA-treated wood structures are typically not high enough to cause immediate, acute health effects. It is possible that the levels of arsenic leaching from CCA treated wood may cause long-term health effects.

The PMRA and U.S. EPA support minimizing the public's exposure to arsenic. Toronto Public Health concurs that minimizing exposure to arsenic present in CCA-treated wood structures, particularly for children, is a prudent action that can be protective of long-term health. Toronto Public Health is developing fact sheets with simple tips for reducing exposure to arsenic from CCA-treated wood structures that will be disseminated to the public and to other institutions including school boards and licensed child care centres.

Toronto Public Health will continue to monitor the results of ongoing research and the joint PMRA/U.S. EPA re-evaluation of the heavy-duty wood preservatives (especially the risk assessment of children's exposure to CCA chemicals in wooden play structures) as well as decisions made by the European Commission.

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