CWPA NEWSLETTER

Canadian Wood Preservation Association

16933, 115th Street, #15, Edmonton AB, T5X 6E3

WEBSITE: www.cwpa.ca E-mail: info@cwpa.ca **ISSUE 1, 2007**

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THE PRESIDENT'S PEN

In returning to an earlier title for this column, I am conscious our readership is very lucky a pen was not involved, since my writing is atrocious and has not improved with reduced usage. I blame my spidery scrawl on being taught to write in italics (*seriously*) at an early age. Fortunately, I progressed from a pen through typewriter plus carbon papers, and electric typewriter plus photocopier to a word processing program on a mainframe terminal and finally a networked PC. Each of the above steps was about 10 years apart, probably because I am not an early-adopter of new technologies. I will not be text messaging this article to you from a hand-held device the day after you receive the rest of the newsletter. I relate this chronicle as an example of the pace of evolution in user-friendly technologies for written communication through the baby boom years. (I emphasize user-friendly technologies because punch cards and Gestetners don't count.) While innovation is continuous, what we see in practice is periods of rapid change with intervening periods of relative stability. During the periods of rapid change, multiple new technologies are introduced. These are then whittled down by the marketplace to a limited number of cost-effective, broadly acceptable technologies.

In the field of wood preservation we are now in a period of rapid change. The last time innovation was at this pitch was the 1930s out of which we got pentachlorophenol, ACC, CCA and ACA. Right now, there are a large number of new wood treatments being developed by existing market leaders, start-up companies and individuals. These treatments are being promoted to lumber companies, treaters, retailers, wholesalers and end users; some are even being made known to the regulators. All of these groups have limited information on which to judge the merits of these new technologies.

Fortunately for our members the CWPA is here to "facilitate the exchange of knowledge on enhancing the performance of wood against biological, physical and thermal deterioration". From its inception, the CWPA has had a broad remit and for many years our mandate has been described as follows: "The scope covers deterioration processes, control products and methods, codes, standards, performance, test methods, environmental, regulatory, and life cycle considerations. This includes prevention of sapstain, mould, decay, insect damage, marine borers, fire, wear, and weathering by proper design, chemical, biological or other means. It also includes production, handling, storage, use, recycling, disposal and environmental impact of treated or coated wood." Other organizations in this field are expanding their mandate and even changing their name to use the word "protection" instead of "preservation" to emphasis this expansion. I see no need for the CWPA to change its name. We just need to keep doing what we do best: hold an annual meeting that ensures our members are kept abreast of the latest developments in the field. Elsewhere in this Newsletter you will find details on our 2007 annual meeting that, I am confident, will meet the expectations raised by the above high-sounding words taken from our web site.

Paul Morris

28th Annual CWPA Convention
Quebec City, October 16th-17th, 2007

The Canadian Wood Preservation Association is pleased to invite you to participate in the 28th Annual Meeting held in Quebec City, Québec, on October 16th to17th

The keynote address deals with ''Possibilities and pitfalls in the future of wood preservation''. The major theme for day one of the conference will relate to the ''New Preservatives and Approaches to Protecting Wood''. A special session on Association – Issues, What we do for you, will be held on day two of the conference.

There will be several papers given by research students from Canadian Universities on leading edge aspects of wood preservation such as ''Migration and impacts of preservatives in soil' or ''Preservation of Canadian Species', and from Forintek Canada, the Canadian Research Institute like ''Chemical stain on hardwoods'' or the ''Potential of biological treatments to increase durability of composites''.

The conference will be held consecutively with meetings of ''Wood Preservation Canada'' and the ''Canadian Standards Association A336 Technical Committee on Wood Preservation''. All three meetings will be held at the, attractively located, Loews Le Concorde Hotel, 1225 cours du Général-De Montcalm, Quebec City, Québec, Tel. No: 1-800-463-5256 direct Room Rates: C$182 single/double, Cut-off for reservations: September 14th, 2007. The Hotel Loews Le Concorde is 20 minutes from the Jean Lesage International Airport, is located in the heart of the city on the ''Champs Élysées'' of Québec, and is in walking distance from the Plains of Abraham, the Old City, and many museums and monuments.

For more information please visit our home page at www.cwpa.ca

Raymond Hotte

CWPA Compendium

The Canadian Wood Preservation Association compendium reproduces more than 300 papers presented at CWPA conventions and published in the CWPA Proceedings since the inaugural meeting in 1980 (25 years) in convenient CD ROM format.
The compendium program is searchable by author, keyword, year, venue and it is a "smart" search, meaning it distinguishes between "and" or "or" options for the search.

For your copy of the CWPA compendium, mail your request and $250.00 payable by cheque, VISA or Mastercard to CWPA, 16933, 115th Street, #15, Edmonton AB, T5X 6E3 or FAX it to CWPA at (780) 642-2326

Pour nos amis francophones

L'ACBT offrira un service de traduction pendant la 28ème réunion annuelle de Québec.

Coming events

103rd AWPA Annual Meeting
(06 - 08 May 2007, St. Louis, Missouri, USA)
International Research Group on Wood Protection, 38 Annual Conference
(20 - 24 May 2007, Jackson Lake, WY, USA)
FPS 61th International Convention
(June 10 - 13, Knoxville TE, USA)
Biodeterioration of Wood and Wood Products - BWWP 2007
(26 - 29 August 2007, Riga, Latvia)
NWPC Bi-Annual Meeting
(14 - 16 August 2007, Stavanger, Norway)
11th International Conference on Durability of Building Materials and Components - "Globality" and "Locality" in Durability
(11 - 14 May 2008, Istanbul, Turkey

Looking Back ~ Carbolineum

Protecting wood against mould and decay has been a concern in Canada that dates back to the early days of Confederation. In the Canadian Archives, there are several documents that indicate that the use of wood preservatives was an important subject that was even discussed at the parliamentary level. For example, in 1892, it was decided that a list of the names of all the buyers of pitch, tar, creosote oil, sulphate of ammonia, as well as the timber creosoters operating in Canada would be compiled. This list was then posted in the 1893 Central Registry System.

During the 1880s, the transporting of cattle in wood-frame railcars was a booming business. Though the Canadian economy greatly benefited from this activity, the potential for spreading disease was a very serious concern that needed to be addressed. Subsequently, it was decided that all railcars that transported livestock or manure would have to be disinfected after each use. The challenge this presented was to determine a safe and cost effective means of achieving this safety requirement.

One option that was deemed acceptable was the application of a relatively new form of wood preservative called *Carbolineum.* This coal-tar distillate, which was first commercialized by Avenarius in 1875, referred to chlorinated anthracene oils. The benefit of Carbolineum was that it could easily be applied at atmospheric temperature using a brush. It could also be used to treat wood in open dip tanks.

By the turn of the century, there were several companies in Canada that advertised the sale of Carbolineum treated wood. A few noteworthy examples were: the Dominion Paving and Contracting Company of Toronto, Domionion Carbolineum Works of Vancouver and Gold Teredo Proof Pile Company, also of Vancouver. Those early pioneer companies represent the birth of Canada's wood treating industry.

In the early 1900s, the appearance of thermal and pressure treating plants in Canada resulted in Carbolineum being phased out. Still, it holds its place in wood preservation history as an effective means of protecting wood.

Leon A. Joseph

SOP-TRD Final Audits complete

The SOP-TRD Implementation Program for wood preservation plants, which was to bring treating plants into compliance with the Technical Recommendations Document (TRD), published by Environment Canada in 2004, has been completed with the performance of audits at 53 Canadian plants. The program commenced in 2000 with mini audits (assessments) of all plants. Thereafter plants established improvement programs to be carried out over a five-year period. The industry entered this program voluntarily in order to reduce inherent risks to the environment and workers.

The final audits were conducted during 2005 and 2006. During that period, 61 plants were operating with 68 individual preservative facilities comprising 127 treatment vessels. For various reasons the number of plants audited were only 53, utilizing a total of 111 treatment vessels.

The audits found that the overall industry compliance was 87% as compared to 65% in 2000. The main shortcomings were excessive levels of residual free preservative inside plants and site, workplace and worker monitoring issues. Shortcomings were mostly due to incorrect interpretation of the requirements and a lack of available information, such as for monitoring. Plants were given 60 days after the audits to remedy the shortcomings. As of March 2007, it is estimated that 70% of all plants have reached a conformance of 99% or more and another 15% have achieved a compliance rating of between 95% and 99%

For the industry the implementation program constituted a major effort and expenditure. It was noted by the auditors that not only the physical aspects of the plants had vastly improved, i.e. better plant designs and equipment but also the levels of awareness of risks and their prevention and the general knowledge had been raised significantly

Although the official SOP-TRD program is complete now, the industry improvement and surveillance program continues with the Industry Certification Program, which is administrated by Wood Preservation Canada and monitored by Environment Canada. For this purpose the Canadian Wood Preservation Certification Authority (CWPCA) has been created, which established the program rules and hired an auditing company that has since trained internal plant auditors and will carry out the actual surveillance of the industry.

G.E. Brudermann

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In Vitro Gastrointestinal Bioavailability of Arsenic in Soils Collected near CCA-Treated Utility Poles

Because of the potentially high arsenic concentrations found in soils immediately adjacent to -chromated copper arsenate (CCA)-treated wood structures and utility poles, CCA contaminated soil ingestion may be a significant exposure route to arsenic for children. Therefore, a strong need exists to provide accurate data on oral relative bioavailability (RBA) of arsenic (in vivo or in vitro) in field-collected CCA contaminated soils. The objectives of this study were (1) to assess arsenic bioaccessibility in contaminated soils collected near in-service CCA-treated utility poles, (2) to determine the influence of soil properties and arsenic fractionation on arsenic bioaccessibility, and (3) to estimate an average daily arsenic intake from incidental soil ingestion.

Arsenic bioaccessibility (in vitro gastrointestinal (IVG) method) was determined on surface soil samples collected immediately adjacent to 12 CCA-treated utility poles after 18 months of service. Bioaccessible arsenic was also determined in 3 certified reference materials. Total arsenic concentrations in soils (<300 µm) varied from 37 ± 2 to 251 ± 12 mg/kg, irrespective of soil organic matter content with the major soil-bound arsenic species being As-(V). Arsenic bioaccessibility ranged between 25 ± 3 and 66 ± 2% (mean value 41 ± 15%). The mean value was in agreement with the in vivo arsenic RBA reported by Casteel et al. (2003) in soil near CCA-treated utility poles. Bioaccessible arsenic was positively correlated with total organic carbon content (r2)0.36, $p < 0.05$) and with water soluble arsenic (r2) 0.51, $p < 0.01$), and was negatively correlated with clay content (r2) 0.43, $p < 0.05$). Using conservative exposure parameters, the mean daily arsenic intake from incidental ingestion of contaminated soil near CCA-treated utility poles was 0.18 ± 0.1 µg As kg-1 d-1. This arsenic intake appeared negligible compared to the daily intake of inorganic arsenic from water and food ingestion for children.

Based on the bioaccessibility of arsenic in field-collected soils, one can calculate approximately the mean daily arsenic intake from incidental ingestion of CCA contaminated
soil. The calculations suggest that a child exposed to soil near CCA-C/PA-treated utility poles could ingest 0.05-0.32 µg As kg-1 d-1 (mean value of 0.18 ± 0.1 µg As kg-1 d-1), considering a soil ingestion rate of 100 mg/d, an exposure frequency of 0.5, and a body weight of 17.8 kg. The EPCs used for exposure assessment calculations were the arsenic concentrations in soils (<2 mm) sampled immediately adjacent to the poles (mean value of 148 ± 38 mg/kg) even though those EPCs are valid only at a radial distance of 0-0.05m from the poles.

It should be emphasized that arsenic concentrations noticeably decrease beyond 0.1 m from the poles. Therefore, it is unlikely that a child playing near a CCA-treated utility pole will be exposed only to the soil impacted by arsenic. Nevertheless, using conservative exposure parameters, the maximum potential arsenic intake originates from exposure to CCA-impacted organic soils (mean daily intake of 0.27 µg As kg-1 d-1) and to sandy soils (mean daily intake of 0.22 µg As kg-1 d-1) because of the higher As bioaccessibility in these soil types. The mean daily arsenic intake from exposure to soils immediately adjacent to CCA-treated poles represents 60% of the non carcinogenic oral minimal risk level (MRL) for chronic intake of arsenic (0.3 µg kg-1 d-1).

Moreover, the mean daily arsenic intake from ingestion of soils immediately adjacent to CCA-treated poles is negligible compared to the daily total arsenic intake from water and food ingestion for children (0.20-6.5 µg As kg-1 d-1). According to the study of Yost et al., the mean childhood (1-6 years of age) intake estimate of inorganic arsenic from food is 0.18 µg As kg-1 d-1, with a range of 0.09-0.35 µg kg-1 d-1 for the 10^{th} and 95th percentiles, respectively. Furthermore, assuming a 1 L/d consumption of water and considering an average arsenic level in drinking water of 5 µg/L (half of EPA's new drinking water standard), the mean daily inorganic arsenic intake from food and water would be 0.46 µg As kg-1 d-1. Therefore, for children, the mean daily arsenic intake from ingestion of soil immediately adjacent to CCA-treated poles represents less than 40% of the mean daily intake of inorganic arsenic from ingestion of water and food.

Geraldj Zagury

The original paper has been published by Priscilla Pouschat and Geraldj Zagury in Vol.40, No. 13, 2006 Environmental Science and Technology for the original reference.