

State of Good Repair Audits (Phase 23) Hazardous Substance Survey

for **William Bolton Arena**
City of Toronto
Parks, Forestry & Recreation Division
at Capital Projects Section
prepared July 18, 2008

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Our File No.: 3025

1 INTRODUCTION

Kleinfeldt Consultants Limited (KCL) was retained by the City of Toronto (City) to conduct Designated Substance Survey (DSS) of the William Bolton Arena located at 40 Rossmore Road, Toronto. The purpose of the survey was to visually examine and evaluate the presence and condition of Designated Substances under the Ontario Occupational Health and Safety Act (RSO 1990). These substances include: Acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride. We have also added commentary about the presence of visible mould and polychlorinated biphenyls (PCBs).

The survey is part of the State-of-Good Repair Audits of which KCL conducted in 2008.

2 BUILDING DESCRIPTION

The building was constructed in 1972 and renovated in 1991. The building is used for public recreational use. Building area is estimated at 22,800 square feet.

Typical finishes include rubber flooring, gypsum board, concrete block and exposed concrete, steel and wood structures.

3 REGULATIONS

The Ontario Ministry of Labour has issued several regulations under the Occupational Health and Safety Act for the above named materials. This report fulfills the Owner's requirements under Section 30 of the OHSA; prior to tendering applicable project work (i.e. construction, renovation, demolition, etc.), the Owner must provide a report to the contractors tendering the work.

The disturbance of asbestos materials during project work is also discussed in Ontario Ministry of Labour Regulation, O.Reg.278/05 – Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations. The regulation stipulates removal procedures and notification requirements.

Lead based paint, defined as 0.06% or greater, is controlled by the federal Surface Coating Material Regulation SOR/2005-109.

Mercury use is controlled by O.Reg. 844, RRO 1990, Designated Substance – Mercury. Mercury disposal is controlled by O.Reg. 347, RRO 1990.

Handling and production of silica is controlled by O.Reg. 845. Designated Substance – Silica.

Waste management and transfer of PCBs are controlled by O.Reg. 362, RRO 1990 – Waste Management – PCBs.

Ozone depleting substances (OSDs) are controlled by O.Reg. 356, RRO 1990 – Ozone Depleting Substances – General.

SCOPE AND METHODOLOGY

Scope

KCL visually inspected and/or inquired with site personnel as to the possible presence of suspected designated substances. A 2004 DSS report by Construction Control Inc. was made available for review.

KCL identified and recorded all known DSS within the building structure. The report does not respond to possible contaminants in soils or otherwise concealed in vessels and storage drums.

KCL physically sampled only suspected asbestos containing materials (ACMs).

Costs of abatements, where needed, were included in the State-of-Good Repair Audit spreadsheets.

Methodology

The DSS was conducted the day of the building inspection (March 13, 2008) by Mr. John Kirkpatrick of KCL.

Asbestos sampling generally concurred with the requirements of O.Reg. 278/05. Additional sampling however may be required as identified herein. Sampling consisted of both non-friable and friable materials. Samples were taken in inconspicuous locations.

PCB identification on fluorescent ballasts was conducted in random areas and only if the fixture could be easily dismantled. Otherwise a judgment call, based on the age of the fixtures, was made on the presence of the PCB material.

All areas of the building were inspected where access was provided. Access above solid surfaced ceilings, pipe chases and trenches were not part of the scope of the work.

Laboratory Analysis

A total of two representative suspected asbestos bulk samples were submitted to EMSL Analytical Inc. for analysis of asbestos content using Analysis Method EPA 600/R-93/116.

EMSL is certified under the National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos analysis of bulk samples.

5 DSS RESULTS

Acrylonitrile

Definition: Acrylonitrile is a man-made chemical with sharp odour, colourless, volatile, and flammable, dissolves in water and evaporates quickly. Used as a chemical aid in the production of rubber and various polymers. Found in plastics, rubbers, acrylic fibers. It is primarily released into the environment during chemical production in the chemical and plastic products industries. Canada does not produce Acrylonitrile, since 1972, but does import it from the U.S. The chemical can be ingested or inhaled. It affects the nervous system primarily.

Although products within this building may contain traces of Acrylonitrile from the method of manufacturing, it is not considered a potential path for exposure.

Arsenic

Definition: Arsenic is a naturally occurring element found in the earth's crust. It is a semi-metallic chemical element found in two forms: Silver-grey and yellow crystalline solids. Arsenic is found in water, soil and food products. Exposure to arsenic is by contact, ingestion and inhalation. Arsenic and its compounds are considered toxic.

There are no materials within the building that were found or known to contain arsenic.

Asbestos

Definition: Asbestos is the common name for a group of naturally occurring minerals. Asbestos fibers are resistant to heat and chemicals and is used widely for construction materials. Asbestos fibers are found in nature and so most everyone is exposed to asbestos during their lifetime. Exposure in high concentrations inhaled over a long period of time can cause serious disease (pleural plaques) and/or death. There is a latency period with the disease from 10 to 40 years. Most asbestos used in Canada and the United States is chrysotile (white). Other varieties include crocidolite (blue), amosite (brown) and fibrous varieties of anthophyllite, tremolite and actinolite. Constructors, maintenance and custodial workers and mechanics face higher risk of exposure. Asbestos is found in some sprayed or trowel led surface materials, thermal insulation and miscellaneous materials (floor and ceiling tiles, shingles, roofing felts, transite sheets and piping, gaskets, valves, fire blankets, brake linings, clutches, etc.

Suspected asbestos containing materials were sampled from, refer to Appendix A: Plaster ceiling at Men's Washroom and the gypsum texture ceiling at the Mezzanine Office.

No asbestos materials were found within sampled materials. All piping within the building is insulated with fiberglass, PVC and foam materials where inspected.

Benzene

Benzene is a colorless liquid with a sweet odour. It is highly flammable and is formed from both natural processes and human activities. Benzene is widely used in the U.S. and Canada. Benzene is used to make other chemicals to make plastics, paints, resins, nylon and synthetic fibers. Natural sources include volcanoes and forest fires, crude oil, gasoline and cigarette smoke. Primary source of exposure is through the ambient and indoor air. Benzene is considered a non-threshold toxicant. It can be found in the air, water and soil. Exposure is through inhalation or absorption through the skin.

Although products within this building may contain traces of benzene from the method of manufacturing, it is not considered a potential path for exposure. There are no direct fumes or exhaust within the building produced from gasoline use.

Coke Oven Emissions

Definition: Coke oven emissions are a complex mixture of coal and coke particles, vapours, gases and tars that include benzene, naphthylamine, cadmium, arsenic, beryllium and chromium. Coke oven emissions occur from the extraction of metals from their ores and is therefore primary exposure is in the industrial process. Chemicals recovered from coke oven emissions are used as a raw material for plastics, solvents, dyes, drugs waterproofing, paints, pipe coatings, roofing, insulation and sealants. Cancer is the major concern from the exposure to coke oven emissions.

Although products within this building may contain chemicals recovered from coke oven emissions from the method of manufacturing, it is not considered a potential path for exposure. There are no coke ovens in the building and none in the vicinity of the property.

Ethylene Oxide

Definition: Ethylene oxide is a colourless gas with a sweet odour and is extremely flammable. It is produced in large volumes and is used primarily as a chemical intermediate in the manufacture of several industrial chemicals including textiles, detergents, polyurethane foam, antifreeze, solvents, adhesives, etc. It is transported as a compressed gas in cylinders.

We found no known traces of ethylene oxide or ethylene glycol in the building.

Isocyanates

Definition: Isocyanates are a group of low molecular weight aromatic and aliphatic compounds containing the isocyanates group. They are the raw material from which all polyurethane products are made including flexible and rigid foams, fibers, and coatings such as paints, varnishes and lassoers. Exposure is typically through inhalation but can occur as a skin irritant. Exposure to isocyanates occurs through painting, foam blowing and the manufacture of products and coatings. The finished product is almost non-toxic unless it is burned or caused to generate dust.

Although products within this building may contain isocyanates from the method of manufacturing, it is not considered a potential path for exposure.

Lead

Definition: Lead is a commonly used metal in industry and manufacturing. The metal is malleable. Lead is typically ingested where it causes significant health effects: Central and peripheral nervous system, digestive system, kidneys, blood and heart, thyroid and immune system. Lead can be found in older paint and coating materials.

Lead based paint exceeding the 0.06% lead by weight concentration would occur in the older, darker coloured paints. If the paints are to be removed or disturbed or if they are present in areas where children or pregnant woman reside, it is recommended that they be covered over with non lead-based paints. During renovation or demolition activities, worker protection is required.

Based on the age of this building, it is expected that lead-based paint be found below newer latex painted finishes. Lead may be present in the soldered joints of copper piping found within this building.

Mercury

Definition: Mercury is found naturally in the environment in several forms. It is a shiny, silver white liquid metal. Exposure, by ingesting, inhaling or touching, mercury will affect the nervous system. Manufactured materials include batteries, electric lamps (fluorescent and high intensity discharge), industrial and medical equipment such as thermometers, barometers, electrical switches, gauges and for pigments in paints.

Mercury is likely present in the high intensity discharge (HID) and fluorescent lamps used at the interior and exterior of the building. This in itself does not pose a problem. Disposal is to be in accordance to O.Reg. 844 and 347. We observed no mercury-based thermostats throughout the building.

Silica

Definition: Crystalline silica or silica dioxide is a basic component of sand, quartz and granite rock. It is also found in sandstone, granite, flint, slate, etc. Materials include brick, concrete, mortar, slate, rock and stone, sand, topsoil and asphalt. Silica causes disease when workers breathe in tiny silica particles that are released from rocks and ores. Scar tissues can occur in the lungs that make it difficult to breathe called silicosis. All workers involved in rock drilling, masonry, jack hammering, excavation and tunneling are at potential risk.

Although products within this building contain silica from the method of manufacturing, it is not considered a potential path for exposure. During renovation or demolition, methods of protection are required to control the exposure to the generated dust.

Vinyl Chloride

Definition: Vinyl chloride is a colourless, flammable gas. Vinyl chloride monomer is the parent compound of polyvinyl chloride (PVC). Products include all types of plastic containers, wrapping film, electric insulation, etc. It is used extensively in the U.S. and Canada. The main source of environmental releases is in the form of emissions and wastewater resulting from the production of PVC plastics. Exposure causes nerve damage and immune reactions.

Although products within this building contain vinyl chloride from the method of manufacturing, it is not considered a potential path for exposure.

Other Issues

PCB's

Based on the random visual ballast examination of the ballasts and the age of the fixtures, PCB containing ballasts are not considered to be present; T8 fluorescent fixtures are installed. As a precaution, any light fixtures and ballasts being decommissioned should be checked against the Environment Canada PCB identification document. If present, they are to be managed in accordance to O.Reg. 362.

Visible Mould

The accessible areas of the building were free from visible mould.

Ozone Depleting Substances (ODS)

Ozone Depleting Substances (ODS's) may be present in the refrigeration and HVAC equipment within the building. At the time of the site visit, no visually damaged or leaking refrigeration or HVAC equipment was observed or reported on by site personnel. All ODS materials are to be disposed of in accordance with O.Reg. 356.

R22 refrigerant was noted to be utilized in the rooftop units and arena dehumidifiers.

6 SUMMARY and RECOMMENDATIONS

Based on our findings, we find that the building has only minimal known hazardous substances as summarized below.

Prior to renovations or demolitions, it would be prudent to provide further sampling of building materials as an additional means of assurance against possible contamination and exposure.

Lead

Maintain painted finishes in good condition. Provide water testing to determine presence of lead from copper solder.

Mercury

Maintain HID and fluorescent fixtures and dispose of as per Ontario Regulations 844 and 347. Based on limited quantities, costs are not carried in this review.

Silica

Silica is found in all masonry and concrete components. Costs for abatement are covered under standard demolition work which is not anticipated for this project.

7 DISCLAIMER

This report has been prepared for the sole benefit of The City of Toronto (The City). KCL understands that this report may be provided to and relied upon by City staff and retained contractors and as background information on the location and condition of designated substances within the building. Any other person or entity without the express written consent of KCL may not rely upon the report. Any use that a party makes of this report, or any reliance on decisions made based on it, is the responsibility of such parties. KCL accepts no responsibility for damages, if any, suffered by any party as a result of decisions made or actions based on this report.

The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with generally accepted engineering and scientific practices current at the time the work was performed. KCL makes no other representation whatsoever, including those concerning the legal significance of its findings, or as to the other legal matters addressed incidentally in this report, including but not limited to the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation. These interpretations may change over time, thus The City should review such issues with appropriate legal counsel.

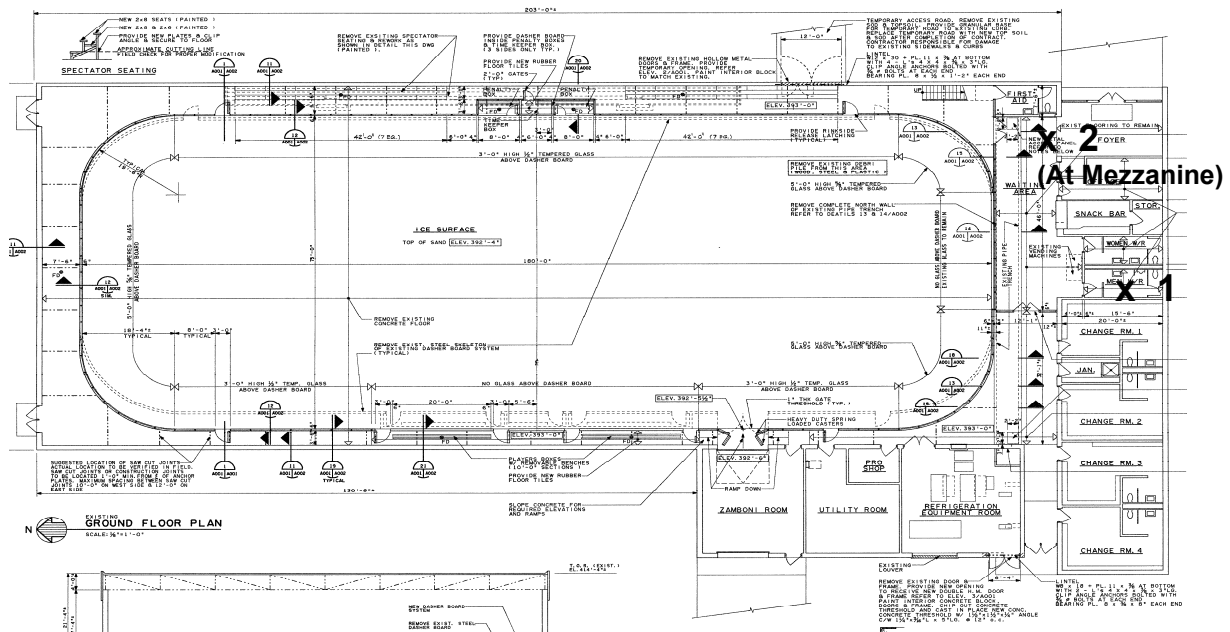
The designated substance locations and conclusions provided are based on information obtained from visual inspection and limited sampling carried out, at the specific test locations, and information obtained from building maintenance personnel. The results can only be extrapolated to an undefined area around the test locations. It is possible that additional, concealed designated substances may become evident during demolition and/or renovation activities.

The conclusions presented represent the best judgment of the assessor based on the nondestructive sampling carried out. Due to the nature of the material investigated and the limited data available, the assessor cannot warrant against undiscovered designated substances.

This report was prepared by Mr. John Kirkpatrick and reviewed by Mr. Stephen Blaney.

APPENDIX A

BILL BOLTON ARENA – SAMPLE LOCATION




EMSL Analytical, Inc.

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 Attn: **Adrian Cwietkow**
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 Fax: (905) 542-2729 Phone: (905) 542-1600
 Project: **Job/Project Name: City of Toronto, Job/Project No: 3025**

 Customer ID: KLEI80
 Customer PO:
 Received: 04/21/08 8:45 AM
 EMSL Order: 060806862

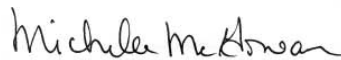
 EMSL Proj:
 Analysis Date: 4/28/2008
 Report Date: 5/2/2008

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Location	Appearance	<u>Non-Asbestos</u>		<u>Asbestos</u>
			% Fibrous	% Non-Fibrous	% Type
206.1 060806862-0304	Plaster ceiling @ men's w/c	White Non-Fibrous Homogeneous		50% Ca Carbonate 50% Non-fibrous (other)	None Detected
206.2 060806862-0305	GWB ceiling @ mezzanine (newer stipple)	Gray Non-Fibrous Homogeneous		20% Mica 80% Non-fibrous (other)	None Detected

Analyst(s)

Jonathan Teda (2)



 Michelle McGowan, Laboratory Manager
 or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. The limit of detection as stated in the method is 1%. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

AIHA IHLAP 102344, NVLAP Lab Code 101048-10, CA ELAP 2339, CT PH-0249, NY ELAP 11469, MA AA000200, LELAP 04144

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