

**REPORT
TO
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
DESIGNATED SUBSTANCES AND
HAZARDOUS MATERIALS SURVEY
ADMINISTRATION BUILDING (WW03)
WARKWORTH INSTITUTION
WARKWORTH, ONTARIO
CORRECTIONAL SERVICE OF CANADA
PWGSC PROJECT R.033225.001**

Prepared by:

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April 2011

700765-8





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29 April 2011

Public Works and Government Services Canada
Ontario Region
Environmental Services
4900 Yonge Street
Toronto, Ontario
M2N 6A6

Attention: Mr. Javier Banuelos
Environmental Officer

Re: **Designated Substances and Hazardous Materials Survey
Administration Building (WW03), Warkworth Institution
Warkworth, Ontario**

Dear Sirs:

We are pleased to submit our final report on the designated substances and hazardous materials survey conducted in the Administration Building at Warkworth Institution.

We trust that this report meets your current requirements. Please call if you have any questions or if you require further assistance.

Yours very truly,

DECOMMISSIONING CONSULTING SERVICES LIMITED

A handwritten signature in black ink, appearing to read 'Jean Daigle', written over a circular stamp or seal.

Jean Daigle
Environmental Specialist

A handwritten signature in blue ink, appearing to read 'Wayne Cormack'.

Wayne Cormack, M. Eng., CIH
Vice President

ls

EXECUTIVE SUMMARY

Decommissioning Consulting Services Limited (DCS) was retained by Public Works and Government Services Canada (PWGSC) on behalf of Correctional Service of Canada (CSC) to conduct a designated substances and hazardous materials survey (DSHMS) in the Administration Building (WW03) at Warkworth Institution, Warkworth, Ontario. DCS staff performed the DSHMS on 24 March 2011.

The subject building is a single-storey structure constructed in the mid-1960s. The objective of the project was to determine all designated substances and hazardous materials found within the areas to be affected by the renovation of the ventilation and duct work system. The HVAC upgrades project will involve filling existing underground ducts with concrete and installing new overhead ducting.

Asbestos-containing materials found to be present in the subject building included vinyl floor tiles, floor tile mastic, ceiling tiles, caulking, thermal insulation on piping, cement ducting and air duct connector sleeves on fan units. All asbestos-containing materials were noted to be in good condition except for damaged thermal insulation on piping in Room 130, fallen ceiling tiles lying on top of the suspended ceiling tile systems in Rooms 112 and 115, ceiling tiles delaminating from the gypsum board substrate in Room 115 and fallen ceiling tiles lying on top of the plaster ceiling in Room 126. An Asbestos Management Plan (AMP) should be developed and implemented to provide formalized procedures which, when adopted, will ensure compliance with applicable regulatory requirements and will also ensure that all reasonable steps are taken to minimize potential exposures to airborne asbestos fibres for staff, contractors, and others engaged in operational, maintenance, or renovation/demolition activities at the Administration Building at Warkworth Institution. The AMP should include provision for assignment of responsibilities, completion of asbestos reassessments, notifications to employees and contractors regarding the presence of asbestos-containing materials, adoption of appropriate work practices, training and record-keeping. Any work involving disturbance of asbestos-containing materials should be performed in accordance with the measures and procedures specified in Ontario Regulation 278/05 and in PWGSC Departmental Policy 057.

Results of analysis of paint samples collected by DCS indicated that lead was detected in two of three samples of paint chips analyzed and was not detected in the other sample. All paint applications were noted to be in good condition (i.e. no peeling or deterioration) except for some areas on concrete walls below the windows in Rooms 106, 108, 112 and 114. Loose and delaminating paint on concrete walls in Rooms 106, 108, 112 and 114 should be removed following procedures outlined in the Ministry of Labour Guideline - *Lead on Construction Projects*. Results of analysis of a mortar sample collected by DCS indicated that lead was not detected. Lead may also be present in the solder on the seals of bell joints of any cast iron drainpipe and in the solder on the sweated-on joints between copper pipe and fittings. If paint (or other lead-containing coatings or materials) will be disturbed, the measures and procedures outlined in the Ministry of Labour *Guideline – Lead on Construction Projects* should be followed.

Mercury should be assumed to be present as a gas in fluorescent light tubes observed throughout the facility. If the light fixtures are removed, the fluorescent light tubes should be collected and properly recycled for mercury. One mercury thermostat was observed. Mercury may also be present in silent light switches. If fluorescent light tubes are removed, they should be removed intact from the fixtures to prevent potential breakage and worker exposure to mercury and they should be recycled for mercury. If any mercury-containing equipment (e.g. thermostat, silent electrical switches) is removed, the mercury should be handled and disposed as mercury waste.

Building materials observed which should be considered to contain silica include concrete, concrete block, mortar, cementitious ceramic tile bases, ceramic tile grout, drywall, drywall joint compound, plaster, acoustic ceiling tiles, cement ducting and cementitious thermal insulation on pipe fittings. Any work involving disturbance of silica-containing materials should be performed following procedures outlined in the Ministry of Labour *Guideline – Silica on Construction Projects*.

None of the other designated substances (vinyl chloride, acrylonitrile, benzene, arsenic, ethylene oxide and coke oven emissions) were observed in the subject building.

Light ballasts, such as those associated with the type of fluorescent lights (T12s) observed throughout the facility, may contain PCBs. In order to verify if a light ballast contains PCBs or not, in the event that it is to be removed, the date code stamped on the bottom (or back) of the ballast should be checked on each ballast removed by an electrician at the time of dismantling of the lights for comparison with information published by the manufacturers and by the federal government regarding which ballasts contain PCB fluids.

Ozone-depleting substances (ODS) may be present in refrigerants in a wall-mounted air-conditioning unit and in several small refrigerator units. ODS are present in refrigerants in four roof-mounted air-conditioning units. If any ODS-containing equipment is to be removed then the contractor responsibilities under the Federal Halocarbon Regulation (FHR) 2003 must be adhered to.

Suspect mould was observed on the surface of the canvas covering on the thermal insulation on ducting. The suspect mould-impacted insulation should be removed following CCA Level II procedures.

One smoke detector may contain radioactive material. Standard smoke detectors do not require a licence and can be disposed of in a MOE certified landfill.

Man-made mineral fibres are present in the form of glass fibre thermal insulation on piping systems and ducts observed throughout the facility. Procedures for removal of insulation containing MMMFs are outlined in the Construction Safety Association of Ontario (CSAO) guidelines.

No urea formaldehyde foam insulation (UFFI) or fuel, oil, waste oil, or chemicals were observed during the course of the investigation.

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1.0 INTRODUCTION

Decommissioning Consulting Services Limited (DCS) was retained by Public Works and Government Services Canada (PWGSC) on behalf of Correctional Service of Canada (CSC) to conduct a designated substances and hazardous materials survey (DSHMS) in the Administration Building (WW03) of the Warkworth Institution in Warkworth, Ontario. A site location plan is provided as Figure 1.

The subject building is a single-storey structure constructed in the mid-1960s. A ventilation upgrade project is planned for the Administration Building which will involve filling existing underground ducts with concrete and installing new overhead ducting.

The objective of the survey, as stated in the Terms of Reference, was to conduct a designated substances and hazardous materials survey to determine all of the designated substances and hazardous materials found within the areas to be affected by the renovation of the ventilation and duct work system in the Administration Building. The survey was to include a detailed "room by room" designated substances assessment including recommendations for the management of these materials which may require special attention in order to be in compliance with requirements under the Occupational Health and Safety Act, and applicable specific regulations, as well as Canada Labour Code Part II.

1.1 SCOPE OF WORK

The scope of work for the designated substances and hazardous materials survey (DSHMS), as outlined in the Terms of Reference issued by PWGSC dated February 2011, and the proposal prepared by DCS dated 8 March 2011, included:

- review of available information provided by PWGSC;
- inspection of readily-accessible areas in the subject building for the presence of designated substances and hazardous materials used in building construction materials and components, fixtures and equipment;
- obtaining representative bulk samples of materials suspected of containing asbestos and paint chip and mortar samples;

- laboratory analyses of bulk samples for asbestos and analyses of paint chip and mortar samples for lead; and
- preparation of a report outlining the findings of the investigation, including preparation of a floor plan showing locations of identified designated substances and hazardous materials, and providing recommendations that address compliance requirements and estimated costs for the removal and disposal of designated substances and hazardous materials.

Mr. Jean Daigle and Ms. Ada Nguyen of DCS visited the subject site on 24 March 2011 to complete the Designated Substances and Hazardous Materials Survey.

1.2 METHODOLOGY

1.2.1 Asbestos

Bulk samples of material obtained by DCS during the course of our survey were forwarded to EMSL Canada, Inc., a commercial laboratory in Mississauga, Ontario, for asbestos analyses. EMSL holds a current Certificate of Accreditation for Bulk Asbestos Fibre Analysis under the Voluntary Accreditation Program (NVLAP). Analysis of bulk samples was performed following EPA method 600/R-93/116 in conformity with the requirements specified in O. Reg. 278/05. Determination of the locations of asbestos-containing material was made based on the results of bulk sample analysis and on visual observations and physical characteristics of the applications at each inspection location.

Bulk sampling was performed in accordance with the requirements of O. Reg. 278/05 as follows:

- the minimum number of bulk samples to be collected from an area of homogeneous material is set out in Table 1 of the regulation (Table 1 is reproduced below).
- if analysis establishes that a bulk material sample contains 0.5 per cent or more asbestos by dry weight:
 - (a) it is not necessary to analyze other bulk material samples taken from the same area of homogeneous material; and

- (b) the entire area of homogeneous material from which the bulk materials sample was taken is deemed to be asbestos-containing material.

TABLE 1
BULK MATERIAL SAMPLES
(FROM O.REG. 278/05)

ITEM	TYPE OF MATERIAL	SIZE OF AREA OF HOMOGENEOUS MATERIAL	MINIMUM NUMBER OF BULK MATERIAL SAMPLES TO BE COLLECTED
1.	Surfacing material, including without limitation material that is applied to surfaces by spraying, by trowelling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 square metres	3
		90 or more square metres, but less than 450 square metres	5
		450 or more square metres	7
2.	Thermal insulation, except as described in Item 3	Any size	3
3.	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
4.	Other material	Any size	3

In practice, application of the Table 1 requirements means that the specified minimum number of negative (i.e., less than 0.5% asbestos) bulk sample analysis results will be required in order to classify a material as non-asbestos. Area of homogeneous material means an area in a building constructed at the same time. Homogeneous material is defined as material that is uniform in colour and texture.

1.2.2 Lead

Samples of select paint applications and mortar collected during the course of the site inspections were forwarded to the Maxxam Analytical Inc. laboratory in Mississauga, Ontario for analysis of lead content.

1.2.3 Mercury

The presence of equipment which may contain mercury, such as thermometers, gauges, etc. observed during the course of our site inspections was recorded.

1.2.4 Silica

The presence of silica-containing materials observed during the course of our site inspections was documented. Silica is known to be a constituent of brick, concrete, cement, etc. Sampling and laboratory analysis are not required to make this determination.

1.2.5 PCBs

Fluorescent light ballasts were inspected during the course of our survey to determine whether they were the T12 type and may therefore contain PCBs. Transformers were also inspected to determine whether they were air-cooled or oil-cooled.

1.2.6 Ozone-Depleting Substances

Information on air-conditioning equipment, cooling equipment (refrigerators, etc.), etc. was recorded during the site inspections by DCS staff.

1.2.7 UFFI

Investigations for the potential presence of UFFI entailed inspection of exterior and interior walls for openings (i.e., “nozzle holes”) made for installation of insulation and limited visual observations of the wall cavity and insulating materials at select, representative locations.

1.2.8 Man-Made Mineral Fibre

MMMF-containing materials were identified during the site inspections based on visual inspection observations.

1.2.9 Mould

The presence of “suspect” mould observed during the course of our site inspections was documented. “Suspect” mould is typically a coloured, textured substance or discolouration or staining on a building material surface which, based on our experience, may be mould growth. The adjective “suspect” is used where the presence of mould has not been confirmed by laboratory analysis.

2.0 REGULATIONS AND GUIDELINE REQUIREMENTS

Requirements related to disclosing the presence of hazardous substances (including designated substances) in federal government buildings are specified in Part II of the *Canada Labour Code*, sections 124(1)y and 125(1)Z.14, which state that employers shall:

- “ensure that the activities of every person granted access to the work place do not endanger the health and safety of employees [Section y)]; and,
- take all reasonable care to ensure that all of the persons granted access to the workplace, other than the employer’s employees, are informed of every known or foreseeable health or safety hazard to which they are likely to be exposed in the workplace. [Section Z.14]”

A decision of the Ontario Superior Court of Justice confirms that when construction or redevelopment work is undertaken by a company whose primary activity is construction or redevelopment work at the site of a federally-regulated employer, the provincial health and safety laws will apply⁽¹⁾. The Ontario Occupational Health and Safety Act and regulations made thereunder would therefore apply to any construction work undertaken at the subject site.

The Ontario *Occupational Health and Safety Act* requires that a list of all “designated substances” at a project site be provided to all bidders at the tendering stage and that the “Constructor” for a project shall ensure that each prospective contractor and subcontractor for the project has received a copy of the list before entering into a contract. Eleven substances are classified as “designated substances” in Ontario: asbestos, lead, silica, mercury, arsenic, benzene, acrylonitrile, ethylene oxide, isocyanates, vinyl chloride, and coke oven emissions. The Terms of Reference provided by PWGSC also requires that the polychlorinated biphenyls (PCBs), ozone-depleting substances (ODS), mould, urea formaldehyde foam insulation (UFFI), stored chemicals and radioactive materials be included in the scope of the survey.

Legal requirements which apply to health and safety on construction projects are set out in the *Ontario Occupational Health and Safety Act* and regulations made under the Act. The *Occupational Health and Safety Act* specifies, in general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include taking

(1) Gowlings OHS Law Report – December 2007.

all reasonable precautions to protect the health and safety of workers and acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any hazardous materials. The *Regulation for Construction Projects*, O.Reg. 213/91 (amended to O. Reg. 85/04), applies to all construction projects, and requires the use of appropriate personal protection equipment, training in the use of protective equipment and the provision of adequate washing facilities.

Other regulatory requirements (and guidelines) which apply to control of exposure to designated substances and hazardous materials are referenced in the sections below along with general information on material use and health effects.

2.1 ASBESTOS

Asbestos has been widely used in buildings, both in friable applications (materials which can be crumbled, pulverized or powdered by hand pressure, when dry) such as pipe and tank insulation, sprayed-on fireproofing and acoustic texture material and in non-friable manufactured products such as floor tile, gaskets, cement board and so on. The use of asbestos in friable applications was curtailed around the mid-1970s and, as such, most buildings constructed prior to about 1975 contain some form of friable construction material with an asbestos content. The use of asbestos in certain non-friable materials continued beyond the mid-1970s.

Control of exposure to asbestos is currently governed in Ontario by O.Reg. 278/05 – *Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations*, made under the Occupational Health and Safety Act. O.Reg. 278/05 prescribes the obligations for on-going asbestos management in buildings, and the procedures to be followed in undertaking asbestos removal work. Public Works and Government Services Canada (PWGSC) Departmental Policy 057 – Asbestos Management provides additional requirements for asbestos management in federal buildings. This document states:

- *“Public Works and Government Services Canada shall comply with all federal, provincial, territorial and municipal regulations, statutes and requirements with regard to asbestos containing materials (ACM) in government owned or leased buildings and facilities.”*

Disposal of asbestos waste (friable and non-friable materials) is also governed by O.Reg. 347, the general waste management regulation, which requires that the waste material be placed in

appropriately-labelled, impermeable, sealed containers (typically polyethylene bags), transported by a driver trained in the management of asbestos waste in an properly-equipped vehicle, and disposed at a landfilling site authorized to receive asbestos waste.

O. Reg. 278/05 prescribes certain requirements for asbestos management in buildings. These requirements are generally consistent with the requirements of PWGSC Departmental Policy DP 057 – Asbestos Management, which applies to asbestos management in federal buildings.

For on-going asbestos management in buildings, building owners are required to:

- prepare (and keep on the premises) a record (i.e., asbestos survey report) of the locations of all friable and non-friable asbestos-containing materials in a building;
- inspect asbestos-containing materials at reasonable intervals to determine their condition and update the asbestos survey record at least once in each 12-month period, and whenever asbestos-containing material is removed or discovered;
- give any person who is an occupier⁽²⁾ of the building written notice of any information in the asbestos survey record that relates to the area occupied by the person;
- give contractors written notice of the information in the asbestos survey record if the work to be carried out by contractor may involve asbestos-containing material or may be carried out in close proximity to and may disturb asbestos-containing material;
- advise staff of the information in the asbestos survey record, if work is to be performed in a facility that contains asbestos-containing material;
- provide training for staff based on the responsibilities and duties to be undertaken in relation to asbestos management;

⁽²⁾ An “occupier” is defined as
(a) a person who is in physical possession of premises, or
(b) a person who has responsibility for and control over the condition of premises or the activities carried on there, or control over persons allowed to enter the premises.

- clean up any fallen asbestos-containing fireproofing or acoustical or thermal insulation (if the material is being disturbed so that exposure to the material is likely to occur);
- repair, seal, remove or permanently enclose asbestos-containing fireproofing as thermal insulation if it is readily apparent that material will continue to fall because of deterioration; and,
- perform work operations which involve disturbance (i.e., cleanup, removal, repair, etc.) of asbestos-containing materials in accordance with the measures and procedures (Type 1, 2 and 3 operations) specified in O. Reg. 278/05 and PWGSC DP 057 – Asbestos Management.

O.Reg. 278/05 defines asbestos-containing material and classifies asbestos work operations into three types (Type 1, 2 and 3), as shown in Table C-1 in Appendix C, and specifies procedures to be followed in conducting asbestos abatement work.

2.2 LEAD

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints.

The *Surface Coating Materials Regulations* made under the *Hazardous Products Act* (SOR/2005-109) sets a maximum concentration of total lead of 90 mg/kg (0.009 percent or 90 parts per million) for surface coating materials, including paints as a result of amendments to the regulation, effective 21 October 2010. This criterion level applies to the advertising, sale and importation of new surface coating materials. Any paint containing lead at a level above 90 mg/kg when a dried sample of it is tested is therefore considered to be “lead-based paint”.

The Ministry of Labour *Guideline, Lead on Construction Projects*, dated September 2004, provides guidance in the measures and procedures that should be followed when handling lead-containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of lead, as shown in

Appendix C, Table C-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

2.3 MERCURY

Mercury has been used in electrical equipment such as alkaline batteries, fluorescent light bulbs (lamps), high intensity discharge (HID) lights (mercury vapour, high pressure sodium and metal halide), “silent switches” and in instruments such as thermometers, manometers and barometers, pressure gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (four foot) fluorescent lamps contain between 7 and 40 mg of mercury each. Mercury compounds have also been used by many manufacturers historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, however, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The *Surface Coating Materials Regulations* made under the *Hazardous Products Act* sets a maximum total mercury concentration of 10 mg/kg (0.001 percent) for surface coating materials (including paint). This criterion level applies to the importation and sale of new surface coating materials.

Mercury-containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word “TOP” stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

No special requirements exist in Ontario for disposal of small quantities (i.e., less than 30) of waste light tubes. Larger quantities of waste light tubes (more than 30) generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of Ont. Reg. 347 - *Waste Management, General*.

Waste mercury in amounts less than 5 kg (per month) are exempt from the generator registration requirements prescribed by O.Reg. 347 – *Waste Management – General*. Waste mercury from

mercury switches or gauges should, however, be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-containing equipment (e.g., switches, gauges, controls, etc.) should be carried out in a manner which prevents spillage and exposure to workers.

2.4 SILICA

Silica exists in several forms of which crystalline silica is of most concern with respect to potential worker exposures. Quartz is the most abundant type of crystalline silica. Some commonly used construction materials containing silica include brick, refractory brick, concrete, concrete block, cement, mortar, rock and stone, sand, fill dirt, topsoil and asphalt containing rock or stone.

The Ministry of Labour Guideline, *Silica on Construction Projects*, dated September 2004, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of respirable crystalline silica in the form of cristobalite, tridymite, quartz and tripoli as shown in Appendix C, Table C-3.

2.5 VINYL CHLORIDE

Vinyl chloride vapours may be released from polyvinyl chloride (PVC) products in the event of heating or as a result of decomposition during fire. PVC is used in numerous materials that may be found in building construction, including, for example, piping, conduits, siding, window and door frames, plastics, garden hoses, flooring and wire and cable protection.

2.6 ACRYLONITRILE

Acrylonitrile is used to produce nitrile-butadiene rubber, acrylonitrile-butadiene-styrene (ABS) polymers and styrene-acrylonitrile (SAN) polymers. Products made with ABS resins which may be found in buildings include telephones, bottles, packaging, refrigerator door liners, plastic pipe, building panels and shower stalls. Acrylonitrile can be released into the air by combustion of products containing ABS.

2.7 OTHER DESIGNATED SUBSTANCES

Isocyanates are a class of chemicals used in the manufacture of certain types of plastics, foams, coatings and other products. Isocyanate-based building construction materials may include rigid foam products such as foam-core panels and spray-on insulation and paints, coatings, sealants and adhesives. Isocyanates may be inhaled if they are present in the air in the form of a vapour, a mist or a dust.

Benzene is a clear, highly flammable liquid used mainly in the manufacture of other chemicals. The commercial use of benzene as a solvent has practically been eliminated, however it continues to be used as a solvent and reactant in laboratories.

Arsenic is a heavy metal used historically in pesticides and herbicides. The primary use in building construction materials was its use in the wood preservative chromated copper arsenate (CCA). CCA was used to pressure treat lumber since the 1940's. Pressure-treated wood containing CCA is no longer being produced for use in most residential settings.

Ethylene oxide is a colourless gas at room temperature. It has been used primarily for the manufacture of other chemicals, as a fumigant and fungicide and for sterilization of hospital equipment.

Coke oven emissions are airborne contaminants emitted from coke ovens and are not a potential hazard associated with building construction materials.

2.8 POLYCHLORINATED BIPHENYLS (PCBs)

The management of equipment classified as waste and containing Polychlorinated Biphenyls (PCBs) at concentrations of 50 parts per million (mg/kg) or greater is regulated by *Ontario Regulation 362, Waste Management – PCBs*. Under this regulation, PCB waste is defined as any waste material containing PCBs in concentrations of 50 mg/kg or greater. Any equipment containing PCBs at or greater than this level, such as transformers, switchgear, light ballasts and capacitors, which is removed from service due to age, failure or as a result of decommissioning, is considered to constitute a PCB waste.

In most institutional, commercial facilities and in smaller industrial facilities, the primary source of equipment potentially containing PCBs is fluorescent and H.I.D. light ballasts. Small

transformers may also be present. In larger industrial facilities, larger transformers and switch gear containing, or potentially containing, PCBs may also be present.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal *PCBs Regulations* (discussed below). When the PCB materials are classified as waste, jurisdiction falls under the Ontario Ministry of the Environment (MOE) and O.Reg. 362. All remedial and PCB management work must be carried out under the terms of a Director's Instruction issued by an MOE District Office (for quantities of PCB fluid greater than 50 litres). The PCB waste stream, regardless of quantity, must be registered with the MOE, in accordance with O.Reg. 347, General - Waste Management. O.Reg. 362 applies to any equipment containing greater than 1 kg of PCBs. Current MOE policies will, therefore, allow a one-time disposal of up to 40 ballasts as municipal waste. For quantities greater than 40, the ballasts must be classified as PCB waste and either placed into temporary storage or disposed of at an acceptable facility.

Amendments to the federal PCB regulations were passed into law on 17 September 2008. The key aspects of the new *PCBs Regulations* (superseding the Chlorobiphenyls Regulations and the Storage of PCB Materials Regulations), enacted under the *Canadian Environmental Protection Act* (CEPA), are the establishment of end of use dates for all equipment containing PCBs and storage/disposal requirements.

The regulations require that:

- all in-service PCB equipment containing PCBs >50 mg/kg at child care facilities, schools (preschool, primary and secondary), hospitals, senior citizens' care facilities, food or feed processing plants and drinking water treatment plants be removed from service by 31 December 2009;
- PCB waste stored on properties occupied by child care facilities, schools (preschool, primary and secondary), hospitals, senior citizens' care facilities, food or feed processing plants and drinking water treatment plants, and/or land within 100 m of the above properties, be removed from the storage facility and disposed of by 31 December 2009;
- all equipment having PCB concentrations >500 mg/kg at all other locations be removed from service by 31 December 2009;

- all equipment having PCB concentrations >50 mg/kg be removed from service by 31 December 2025;
- PCB-containing equipment be placed into suitable storage or disposed of at a suitable facility within 30 days following removal from service; and
- release of PCBs to the environment be limited to new more stringent limits, including 2 mg/kg PCBs for liquids and 50 mg/kg for solids containing PCBs, and a maximum of 1 gram from capacitors, transformers and other equipment containing PCBs.

Exceptions are provided for fluorescent light ballasts and pole-mounted transformers where an end of use date of 31 December 2025 has been specified. The regulations also limit the storage of PCB material to a maximum of one year from the date the regulations came into effect or one year following removal of the equipment from service, whichever is the later date.

2.9 OZONE-DEPLETING SUBSTANCES

The Federal Halocarbon Regulations, 2003 (FHR 2003) were published in August 2003 under the authority of the Canadian Environmental Protection Act, 1999. The purpose of the FHR 2003 is to reduce and prevent emissions of ozone-depleting substances and of their halocarbon alternatives to the environment from air-conditioning, refrigeration, fire-extinguishing and solvent systems that are:

- located on federal or aboriginal lands; or
- owned by federal departments, boards and agencies, Crown corporations, or federal works and undertakings.

Contractor responsibilities under the FHR 2003 include the following:

- only a certified and licensed technician may install, service, leak test or charge halocarbon containing equipment;

- if a leak test is conducted on a piece of air conditioning or refrigeration equipment, the contractor is to affix a notice containing all of the information as required in Schedule 2, item 2 of the FHR 2003, including: a) name and address of owner of the system, b) name of operator of the system, c) specific location of the system, d) description of the system, e) name of certified person, f) certificate number, g) name of employer of certified person, h) type of halocarbon in the system, i) charging capacity of the system, and j) date of last two leak tests;
- no halocarbons are to be knowingly released from a refrigeration or air conditioning system, or from a fire extinguishing system (unless to fight a fire). If any work is done on an air conditioning, refrigeration, or fire extinguishing system that may result in a release of a halocarbon, the halocarbon shall first be recovered into a container designed for that purpose;
- in the event that a halocarbon-containing system must be charged, a leak test is to first be performed. If a leak is detected for a halocarbon-containing system, the owner of the equipment (and contract authority) must be informed of the leak as soon as possible. In the case of a leak resulting in a release of greater than 100 kg, or of unknown weight from a unit with a capacity equal to or greater than 100 kg, the contractor must report the release within 24 hrs to Environment Canada at (416) 346-1971 or 1-800-268-6060 via the Ministry of the Environment Ontario Spills Action Centre; and
- upon servicing a halocarbon-containing system, the service log book for the unit is to be completed by the contractor. Before dismantling, decommissioning or destroying any halocarbon-containing system; the halocarbon(s) will be recovered and a notice shall be affixed to the system. The notice shall meet the requirements listed in Schedule 2, Item 3 of the FHR 2003.

2.10 MOULD

Moulds are forms of fungi that are found everywhere – both indoors and outdoors all year round. Outdoors, moulds live in the soil, on plants and on dead and decaying matter. More than 1000 different kinds of indoor moulds have been found in buildings. Moulds spread and reproduce by making spores, which are all small and light-weight, able to travel through air, capable of resisting dry, adverse environmental conditions, and hence capable of surviving a long time.

Moulds need moisture and nutrients to grow and their growth is stimulated by warm, damp and humid conditions.

Control of exposure to mould is required under Section 25(2)(h) of the *Ontario Occupational Health and Safety Act*, which states that employers shall take every precaution reasonable in the circumstances for the protection of workers. Recommended work practices are outlined in the following documents:

- Information Bulletin – *Abatement and Mould Remediation in Construction*. Ontario Ministry of Labour. January 2000; and
- *Mould Guidelines for the Canadian Construction Industry*. Standard Construction Document CCA 82 2004. Canadian Construction Association; and
- *EACO Mould Abatement Guidelines, Edition 2 (2010)*, Environmental Abatement Council of Ontario.

2.11 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

Urea formaldehyde foam insulation (UFFI) is a polymer manufactured at point-of-use by blending urea formaldehyde resin with a phosphoric acid catalyst and compressed air at a nozzle tip. This nozzle was used to inject the freshly mixed foam product into enclosed wall cavities. The concern with respect to the presence of UFFI in buildings relates to potential off-gassing of formaldehyde gas from improperly cured UFFI applications. The use of UFFI was banned in 1980 by the Federal Hazardous Products Act (RF 1985).

2.12 RADIOACTIVE MATERIALS

Aside from nuclear and biomedical industries, radioactive materials may be present in very small amounts within glow-in-the-dark compasses and watch faces, gas lamp mantles and in smoke detectors. Smoke detectors typically contain 1 microcurie of Americium-241. Standard smoke detectors do not require a radioactive licence and can be disposed of in a MOE certified landfill.

2.13 FUEL, OIL, AND/OR WASTE OIL STORAGE AND CHEMICALS

The majority of hazardous materials stored in bulk at industrial or commercial sites fall under the jurisdiction of regulations governing storage and handling of liquid fuels such as gasoline, diesel fuel and fuel oil. A number of other regulations, however, must also be considered, including Fire Code requirements, for the installation of containment curbing and a dump tank in hazardous or combustible products storage rooms to ensure collection of product if a loss occurs or of fire water.

Handling and control of specific products are also regulated under various items of legislation including the Occupational Health and Safety Act which prescribes requirements with respect to container labelling, Material Safety Data Sheets (MSDS) and worker training under O.Reg. 860, *Workplace Hazardous Materials Information System (WHMIS)*; and requirements with respect to handling and storage of flammable liquids under O.Reg. 851, *Regulations for Industrial Establishments*.

Solid and liquid waste in Ontario must be handled in accordance with strictly enforced regulations relating to disposal, storage, transportation and registration. The responsibility for waste management in Ontario rests with the MOE and is enforced through the application of *O.Reg. 347, General – Waste Management, amended to O.Reg. 326/03*, enacted under the *Environmental Protection Act*. This regulation, in addition to establishing methods and procedures for classification of waste streams, specifies requirements for disposal of accumulated waste, shipping manifests and registration of waste streams with the Ministry's Waste Management Branch. A generator must also ensure that accumulated wastes are disposed of on a regular basis and do not remain on the property for a period of more than 90 days without a permit of extension.

2.14 MAN-MADE MINERAL FIBRES

Man-made mineral fibres (MMMMF), also known as Synthetic Vitreous Fibres (SVF), include mineral wool (rock wool and slag wool), glass wool (fibre glass) and refractory ceramic fibres (RCF). MMMFs have been produced and widely used in Canada for the past 60 years and are commonly used in the construction industry as insulation and fire protection material.

R.R.O. 1990, Regulation 833 Control of Exposure to Biological or Chemical Agents - made under the Ontario Occupational Health and Safety Act requires that worker exposure to MMMF

be limited to specified concentrations. A time-weighted average exposure value (TWAEV), which is defined as the maximum average airborne concentration to which a worker may be exposed to in a work day or a work week, of 1 f/cc (fibre per cubic centimetre of air) is specified for continuous filament glass fibres, glass wool fibres, rock wool fibres, slag wool fibres, special purpose glass fibres and synthetic vitreous fibres not otherwise classified. The TWAEV for refractory ceramic fibres is 0.5 f/cc.

Measures to control worker exposure and the spread of dust created during the disturbance of MMMF-containing materials are provided in Synthetic Vitreous Fibres Guidelines for Construction, 2005, a document prepared by the Construction Safety Association of Ontario (CSAO).

3.0 RESULTS AND DISCUSSION

The findings of the designated substances and hazardous material survey carried out by DCS in the subject building on 24 March 2011, along with discussion of the significance of the findings with respect to regulatory compliance, are presented in the sections which follow. A floor plan of the subject building is provided in Appendix A.

3.1 ASBESTOS

During the course of our designated substances survey, representative bulk samples of material were collected by DCS staff. The samples were forwarded to the EMSL Canada Inc. laboratory in Mississauga, Ontario for asbestos analyses. EMSL is accredited for Bulk Asbestos Fiber Analysis by the National Voluntary Laboratory Accreditation Program (NVLAP). Results of bulk sample analysis for asbestos are provided in Table 3.1. Laboratory reports are provided in Appendix B.

**TABLE 3.1
SUMMARY OF RESULTS OF ANALYSIS OF BULK SAMPLES
FOR ASBESTOS CONTENT**

SAMPLE N ^o	LOCATION	DESCRIPTION	ASBESTOS CONTENT
123-TH-1A	Room 123	Ceiling tile mastic – brown colour	None Detected (TEM)
121-TH-1B	Room 121	Ceiling tile mastic – brown colour	None Detected
114-TH-1C	Room 114	Ceiling tile mastic – brown colour	None Detected
114-CLK-2A	Room 114	Caulking on interior window frame – green colour	3.1% chrysotile (TEM)
113-CLK-2B	Room 113	Caulking on interior window frame – green colour	None Detected
122-CLK-2C	Room 122	Caulking on interior window frame – green colour	None Detected
113-CLK-3A	Room 113	Caulking between concrete column and concrete wall – white colour	None Detected (TEM)
110A-CLK-3B	Room 110A	Caulking between concrete column and concrete wall – beige colour	None Detected
127-CLK-3C	Room 127	Caulking between expansion joints in concrete block wall – white colour	None Detected
119-M-5A	Room 119	Carpet mastic – brown colour mixed with black colour mastic	None Detected (TEM)

TABLE 3.1 Cont'd.
SUMMARY OF RESULTS OF ANALYSIS OF BULK SAMPLES
FOR ASBESTOS CONTENT

SAMPLE N^o	LOCATION	DESCRIPTION	ASBESTOS CONTENT
121-M-5B	Room 121	Carpet mastic – brown colour	None Detected
115-M-5C	Room 115	Carpet mastic – brown colour	None Detected
115-TH-6A	Room 115	Black paper on glass-fibre thermal insulation on ducting	None Detected (TEM)
115-TH-6B	Room 115	Black paper on glass-fibre thermal insulation on ducting	None Detected
130-TH-6C	Room 130	Black paper on glass-fibre thermal insulation on ducting	None Detected
130-TH-8	Room 130	Thermal insulation on heat piping pipe fitting	50% chrysotile
130-TH-9	Room 130	Paper under canvas on glass-fibre insulation on ducting	None Detected
130-TH-10A	Room 130	Air duct connector sleeve – white colour	95% chrysotile
130-TH-11	Room 130	Cement air duct	65% chrysotile
EXT-CLK-12A	Exterior	Caulking on exterior window frames – gray colour	None Detected (TEM)
EXT-CLK-12B	Exterior	Caulking on exterior window frames – gray colour	None Detected
EXT-CLK-12C	Exterior	Caulking on exterior window frames – gray colour	None Detected
103-PL-1A	Room 103	Top coat and scratch coat plaster on ceiling	None Detected
104-PL-1B	Room 104	Top coat and scratch coat plaster on ceiling	None Detected
134-PL-1C	Room 134	Top coat and scratch coat plaster on ceiling	None Detected
123-DW-1A	Room 123	Drywall joint compound on gypsum board on wall	None Detected
119-DW-1B	Room 119	Drywall joint compound on gypsum board on wall	None Detected
126-DW-1C	Room 126	Drywall joint compound on gypsum board on ceiling	None Detected
137-DW-1D	Room 137	Drywall joint compound on gypsum board on wall	None Detected
111-DW-1E	Room 111	Drywall joint compound on gypsum board on wall	None Detected
123-CT-1A	Room 123	2' x 2' suspended ceiling tile – random fissure – heavy stipple face	None Detected
114-CT-1B	Room 113	2' x 2' suspended ceiling tile – random fissure – heavy stipple face	None Detected
122-CT-1C	Room 122	2' x 2' suspended ceiling tile – random fissure – heavy stipple face	None Detected
123-CT-2A	Room 123	12" x 12" ceiling tile – pin hole pattern	None Detected
114-CT-2B	Room 114	12" x 12" ceiling tile – pin hole pattern	3% chrysotile

TABLE 3.1 Cont'd.
SUMMARY OF RESULTS OF ANALYSIS OF BULK SAMPLES
FOR ASBESTOS CONTENT

SAMPLE N ^o	LOCATION	DESCRIPTION	ASBESTOS CONTENT
118-CT-3A	Room 118	12" x 12" ceiling tile – large and small uniform hole pattern	None Detected
118-CT-3B	Room 118	12" x 12" ceiling tile – large and small uniform hole pattern	None Detected
118-CT-3C	Room 118	12" x 12" ceiling tile – large and small uniform hole pattern	None Detected
129-CT-4A	Room 129	2' x 4' suspended ceiling tile – fissure on 2'	None Detected
129-CT-4B	Room 129	2' x 4' suspended ceiling tile – fissure on 2'	None Detected
129-CT-4C	Room 129	2' x 4' suspended ceiling tile – fissure on 2'	None Detected
135-CT-5	Room 135	12" x 12" ceiling tile – pin hole pattern – cellulose – stapled to drywall substrate	None Detected
113-FT-1	Room 113	12" vinyl floor tile – white with gray-blue flecks	None Detected (TEM)
122-VSF-3A	Room 122	Vinyl sheet flooring – white colour	None Detected (TEM)
122-VSF-3B	Room 122	Vinyl sheet flooring – white colour	None Detected
122-VSF-3C	Room 122	Vinyl sheet flooring – white colour	None Detected
126-FT-4	Room 126	12" vinyl floor tile – gray with gray fleck	None Detected (TEM)
129-VSF-6A	Room 129	Vinyl sheet flooring with a jute backing – white colour	None Detected (TEM)
129-VSF-6B	Room 129	Vinyl sheet flooring with a jute backing – white colour	None Detected
129-VSF-6C	Room 129	Vinyl sheet flooring with a jute backing – white colour	None Detected
112-FT-7A	Room 112	Vinyl floor tile – gray with heavy gray directional flecks – size unknown	6.6% chrysotile
108-FT-9A	Room 108	9" vinyl floor tile – gray with faint directional brown fleck	0.9% chrysotile
111-M-10	Room 111	Black mastic on 9" orange coloured vinyl floor tile	3.1% chrysotile
WW03-101-FT1	Room 101	Vinyl floor tile – salmon coloured, 12" x 12"	10-20% chrysotile⁽¹⁾
WW03-127-FT1	Room 127	Vinyl floor tile – salmon coloured, 9" x 9"	10-20% chrysotile⁽¹⁾
WW03-117-FT1	Room 117	Vinyl floor tile – white coloured, 12" x 12"	None Detected ⁽¹⁾

TABLE 3.1 Cont'd.
SUMMARY OF RESULTS OF ANALYSIS OF BULK SAMPLES
FOR ASBESTOS CONTENT

SAMPLE N ^o	LOCATION	DESCRIPTION	ASBESTOS CONTENT
WW03-124-FT1	Room 124	Vinyl floor tile – white coloured, 12” x 12”	None Detected ⁽¹⁾
WW03-126-FT1	Room 126	Vinyl floor tile –white coloured, 12” x 12”	None Detected ⁽¹⁾
WW03-04A	Room 117	Black floor tile Mastic	3% Chrysotile ⁽²⁾

NOTES:

“Asbestos-containing material” is defined as material that contains 0.5% or more asbestos.

Chrysotile = Chrysotile asbestos.

Results which indicate asbestos-containing materials (i.e. $\geq 0.5\%$ asbestos) are shown in bold type.

(1) Bulk sample results, descriptions and locations derived from a report entitled *Designated Substances and Hazardous Materials Survey, Warkworth Institution, Cambellford, Ontario, WW03 – Administration Building* dated March 2005 prepared by XCG Consultants Limited.

(2) Bulk sample result, description and location derived from a report entitled *Asbestos Update Survey, Warkworth Medium Security Institution, Cambellford, Ontario, Building WW03* dated March 2009 prepared by DST Consulting Engineers Inc.

Bulk samples were analyzed by Polarized Light Microscopy (PLM) analysis, except where "TEM" is noted, in which case Transmission Electron Microscopy analysis was also performed.

Determination of the locations of asbestos-containing material was made based on the results of bulk sample analysis, review of existing information, visual observations and physical characteristics of the applications as well as our knowledge of the uses of asbestos in building materials.

Based on visual observations, results of laboratory analyses of samples collected by DCS and review of existing information supplied to DCS by PWGSC on behalf of CSC the asbestos-containing materials found to be present in the subject building included 9” and 12”vinyl floor tiles, floor tile mastic, 12” ceiling tiles, caulking on interior window frames, thermal insulation on pipe fittings, air duct connector sleeves on fan units and cement ducting. A room-by-room summary of asbestos-containing materials is provided in Table 3.2.

Asbestos-containing floor mastics are tar-like adhesives used to adhere the tiles to the substrate.

The asbestos-containing cement circular air duct observed jutting out of the north wall in the east corner of Room 130 appears to be buried below the building north of the north wall (see Photograph N^{os} 1 and 2 in Appendix E).

The asbestos-containing air duct connector sleeves observed in Room 130 are comprised of woven asbestos fibre (white in colour - see Photograph N^o 3 in Appendix E).

The asbestos-containing 12" x 12" ceiling tiles glued to gypsum board substrate, both exposed and above suspended ceiling tile systems, observed throughout the facility, have a pin-hole pattern on the face of the tile (see Photograph N^o 4 in Appendix E). Remnant asbestos-containing 12" x 12" ceiling tile material attached to the ceiling tile mastic on the gypsum board substrate was observed in several rooms above the suspended ceiling tile systems (see Photograph N^o 5 in Appendix E).

The laboratory was unable to separate the layers of plaster (top coat and second coat) and therefore analyzed the three plaster samples as composite samples. Asbestos was not detected in these three samples. Additional samples of plaster layers should be tested for asbestos prior to removal or disturbance of these materials.

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS

LOCATION	MATERIAL AND ESTIMATED QUANTITY	FRIABLE	CONDITION ¹	ACCESSIBILITY ²	ACTION ³	ASBESTOS CONTENT	COMMENTS
Room 101	Vinyl floor tile (~6 m ²)	No	G	A	7	10-20% Chrysotile	
	Floor tile mastic (~6 m ²)	No	-	D	7	3.1% Chrysotile	
Room 102	Vinyl floor tile (~12 m ²)	No	G	A	7	10-20% Chrysotile	
	Floor tile mastic (~12 m ²)	No	-	D	7	3.1% Chrysotile	
Room 103							NACMO
Room 104							NACMO
Room 105	Vinyl floor tile (~6 m ²)	No	G	A	7	10-20% Chrysotile	
	Floor tile mastic (~6 m ²)	No	-	D	7	3.1% Chrysotile	
	12" x 12" ceiling tile (~6 m ²)	No	G	C Exposed	7	3.0% Chrysotile	

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 106	12" x 12" ceiling tile (~12 m ²)	No	G	C Exposed	7	3.0% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under the ceramic flooring
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	
Room 107	12" x 12" ceiling tile (~12 m ²)	No	G	C Exposed	7	3.0% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under the ceramic flooring
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 108	Vinyl floor tile under carpet (~12 m ²)	No	G	A	7	0.9% Chrysotile
	Floor tile mastic (~12 m ²)	No	-	D	7	3.1% Chrysotile
	12" x 12" ceiling tile (~12 m ²)	No	G	C Exposed	7	3.0% Chrysotile
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile
Room 109	Vinyl floor tile (~6 m ²)	No	G	A	7	10-20% Chrysotile
	Floor tile mastic (~6 m ²)	No	-	D	7	3.1% Chrysotile
	12" x 12" ceiling tile (~6 m ²)	No	G	C Exposed	7	3.0% Chrysotile

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 110	Vinyl floor tile (~8 m ²)	No	G	A	7	10-20% Chrysotile	
	Floor tile mastic (~8 m ²)	No	-	D	7	3.1% Chrysotile	
	12" x 12" ceiling tile (~8 m ²)	No	G	C Exposed	7	3.0% Chrysotile	
Room 110A	Vinyl floor tile (~4 m ²)	No	G	A	7	10-20% Chrysotile	Asbestos-containing caulking maybe present on the interior window frames behind the plywood walls
	Vinyl floor tile mastic (~4 m ²)	No	-	D	7	3.1% Chrysotile	
Room 111	Vinyl floor tile under carpet (~12 m ²)	No	G	A	7	10-20% Chrysotile	
	Floor tile mastic (~12 m ²)	No	-	D	7	3.1% Chrysotile	
	12" x 12" ceiling tile (~12 m ²)	No	G	C Exposed	7	3.0% Chrysotile	
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 112	Vinyl floor tile under carpet (~8 m ²)	No	-	D	7	0.90% Chrysotile	Four asbestos-containing 12' x 12' ceiling tiles are lying loose on top of the suspended ceiling tiles
	Floor tile mastic (~8 m ²)	No	-	D	7	3.1% Chrysotile	
	12" x 12" ceiling tile above suspended ceiling tile (~8 m ²)	No	G	C Concealed	5	3.0% Chrysotile	
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	
Room 113	12" x 12" ceiling tile (~12 m ²)	No	G	C Exposed	7	3.0% Chrysotile	Asbestos-containing floor tile mastic may be present below the vinyl floor tile
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 114	12" x 12" ceiling tile above suspended ceiling tile (~12 m ²)	No	G	C Concealed	7	3.0% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under the ceramic flooring
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	
115	12" x 12" ceiling tile above suspended ceiling tile (~8 m ²)	No	G	C Concealed	5	3.0% Chrysotile	One asbestos-containing 12" x 12" ceiling tile lying loose on top of suspended ceiling tiles and two 12" x 12" ceiling tiles delaminating from the gypsum board substrate Asbestos-containing floor tile mastic may be present below the vinyl floor tile under the carpet
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

116	12" x 12" ceiling tile (~12 m ²)	No	G	C Exposed	7	3.0% Chrysotile	Asbestos-containing floor tile mastic may be present below the vinyl floor tile
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	
Room 117							No access at the time of inspection
Room 118							Asbestos-containing floor tile and/or floor tile mastic may be present under the carpet Asbestos-containing caulking may be present on the interior window frames behind the gypsum board walls
Room 119	12" x 12" ceiling tile above suspended ceiling tile (~12 m ²)	No	G	C Concealed	7	3.0% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under the carpet
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 120							Asbestos-containing floor tile and/or floor tile mastic may be present under the carpet
Room 121	Remnant asbestos-containing ceiling tile material remains attached to ceiling tile mastic above suspended ceiling tiles (~2m ²)	No	G	C Concealed	7	3.1% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under the carpet
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	
Room 122	Vinyl floor tile inside pipe chase on west wall (~1 m ²)	No	G	C Concealed	7	10-20% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under vinyl sheet flooring Asbestos-containing caulking may be present on the interior window frames behind the gypsum board walls
	Floor tile mastic inside pipe chase on west wall (~1 m ²)	No	-	D	7	3.1% Chrysotile	

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 123	12" x 12" ceiling tile above suspended ceiling tile (~3 m ²)	No	G	C Concealed	7	3.0% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under the carpet Asbestos-containing caulking may be present on the interior window frames behind the gypsum board walls
	Remnant asbestos-containing ceiling tile material remains attached to ceiling tile mastic above suspended ceiling tiles (~2m ²)	No	G	C Concealed	7	3.0% Chrysotile	
Room 124	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under the carpet
Room 125	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under the ceramic flooring

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 126	Vinyl floor tile second layer under top layer (~5 m ²)	No	-	D	7	10-20% Chrysotile	
	Floor tile mastic on second floor tile layer (~5 m ²)	No	-	D	7	3.1% Chrysotile	
	Three 12" x 12" ceiling tiles lying loose on top of the plaster ceiling (~0.5 m ²)	No	G	C Concealed Accessible through the suspended ceiling system in Room 119	5	3.0% Chrysotile	
Room 127	Vinyl floor tile (~150 m ²)	No	G	A	7	10-20% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under the ceramic flooring
	Floor tile mastic (~150 m ²)	No	-	D	7	3.1% Chrysotile	

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 128	Vinyl floor tile (~8 m ²)	No	G	A	7	3.0% Chrysotile	
	Floor tile mastic (~8m ²)	No	-	D	7	3.1% Chrysotile	
	12" x 12" ceiling tile (~8 m ²)	No	G	C Exposed	7	3.0% Chrysotile	
Room 129	12" x 12" ceiling tile above suspended ceiling tile (~8 m ²)	No	G	C Concealed	7	3.0% Chrysotile	Asbestos-containing floor tile and/or floor tile mastic may be present under vinyl sheet flooring
Room 130	Thermal insulation on pipe fittings (~35 pipe fittings)	Yes	P	B and C Exposed	1	50% Chrysotile	Damaged asbestos-containing thermal insulation was observed on two pipe fittings and asbestos-containing thermal insulation debris (fallen material) was observed on the floor throughout the room.
	Air duct connector sleeves on fan unit (~1 m ²)	No	G	C Exposed	7	95% Chrysotile	
	Cement air duct (~1 m ²)	No	G	B	7	65% Chrysotile	
Room 132							Asbestos-containing floor tile and/or floor tile mastic may be present under the ceramic flooring

TABLE 3.2
SUMMARY OF ASBESTOS-CONTAINING MATERIALS
Cont'd

Room 133							Asbestos-containing floor tile and/or floor tile mastic may be present under vinyl sheet flooring
Room 134							NACMO
Room 135							Asbestos-containing floor tile and/or floor tile mastic may be present under the carpet
Room 136	12" x 12" ceiling tile (~12 m ²)	No	G	C Exposed	7	3.0% Chrysotile	Asbestos-containing floor tile mastic may be present below the vinyl floor tile
	Caulking on the interior window frames (~0.25 m ²)	No	G	A	7	3.1% Chrysotile	
Room 137							Asbestos-containing floor tile and/or floor tile mastic may be present under the carpet
Room 138							Asbestos-containing floor tile and/or floor tile mastic may be present under the carpet
Shaft 1							NACMO
Exterior							NACMO

NOTES:

- (1) Condition rated as per "Assessment of Condition" as defined in PWGSC DP 057 – Asbestos Management. In evaluating the condition of mechanical insulation (on boilers, breeching, ductwork, piping, tanks, equipment etc.) the following criteria are used:
GOOD Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e. scuffs or stains), but the jacketing is not penetrated.

FAIR Minor penetration damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.

POOR Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired. (see Appendix D).

- (2) "Evaluation of Accessibility" as defined in PWGSC DP 057 – Asbestos Management,

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

ACCESS (A) Areas of the building within reach (from floor level) of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level.

ACCESS (B) Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.

ACCESS (C)

EXPOSED Areas of the building above 8'0" where use of a ladder is required to reach the ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.

ACCESS (C)

CONCEALED Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces, etc. Observations are limited to the extent visible from the access points.

ACCESS (D) Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc., where demolition of the ceiling, wall or equipment, etc., is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the surveyor's ability to visually examine the materials in Access D. (see Appendix D).

- (3) "Action Matrix and Action Descriptions" as defined in PWGSC DP 057 – Asbestos Management (see Appendix D).

- (4) NACMO = No Asbestos-Containing Materials Observed

Asbestos may also be present in materials which were not sampled during the course of the survey carried out by DCS, including, but not limited to the roof membrane, fire doors, cementitious ceramic tile bases, ceramic tile grout, ceramic tile mastics, cementitious floor levelling compounds, gaskets in piping, components of electrical equipment (e.g. electric wiring insulation, non-metallic sheathed cable, electrical panel partitions, arc chutes, high-grade electrical paper, etc.) etc. Asbestos-containing materials (e.g. thermal insulation on piping systems etc.) may also be present in locations that are presently inaccessible (e.g., in pipe chases, behind walls). Confirmatory testing of any such materials could be undertaken as the need arises (i.e., at the time of renovations) or the materials can be assumed to contain asbestos.

If any materials which may contain asbestos and which were not tested during the course of the designated substances survey are discovered during any construction or renovation activities, the work shall not proceed until such time as the required notifications have been made and an appropriate course of action is determined.

3.2 LEAD

Three paint chip samples and one mortar sample were collected by DCS during the course of the survey. Samples were submitted to the Maxxam Analytics laboratory in Mississauga, Ontario for analysis of lead. Maxxam is accredited by the Standards Council of Canada to perform lead analysis. The results of analysis are presented in Table 3.3.

Lead was detected in two of the paint samples collected by DCS. Lead was not detected in the other paint sample nor in the mortar sample. During the course of our investigations lead paint applications on concrete walls below the windows in Rooms 106, 108, 112 and 114 were observed to be delaminating from the walls (a total area of less than 0.5 square metre per room). All other paint applications were noted to be in good condition.

Results of testing of paint samples by XCG Consultants Limited in 2005 are also summarized in Table 3.3. Three of the six samples analyzed had lead levels greater than 90 ppm (mg/kg).

Lead may also be present in materials which were not sampled during the course of the survey carried out by DCS, including, but not limited to, the solder on the seals of bell joints of any cast iron drainpipes and in the solder on the sweated-on joints between copper pipe and fittings.

TABLE 3.3

SUMMARY OF PAINT AND MORTAR SAMPLE ANALYSES FOR LEAD CONTENT

SAMPLE N ^o	SAMPLE LOCATION	SAMPLE DESCRIPTION	CONDITION	LEAD CONTENT
114-P1	Room 114	Multilayered cream coloured paint on concrete walls	Good	130 mg/kg
121-P2	Room 121	Black coloured paint on metal floor heating grate	Good	8,700 mg/kg
110A-P3	Room 110A	Cream coloured paint on metal door frame	Good	<50 mg/kg
126-Mortar1	Room 126	Mortar in concrete block walls	Good	<5 ug/g
WW03-DP1	Room 101	Door paint from main entrance on the south side – yellow colour	Good	<20 ppm (mg/kg) ⁽¹⁾
WW03-101-WP1	Room 101	Wall paint from interior east side – beige colour	Good	196 ppm (mg/kg)⁽¹⁾
WW03-102-DP1	Room 102	Door and wall paint from the exterior north side (hallway side) – green colour	Good	9,775 ppm (mg/kg)⁽¹⁾
WW03-126-WP1	Room 126	Wall paint from interior north side – salmon colour	Good	33 ppm (mg/kg) ⁽¹⁾
WW03-127-WP1	Room 127	Wall paint from interior south side – cream colour	Good	<20 ppm (mg/kg) ⁽¹⁾
WW03-130-DP1	Room 130	Door paint from entrance to room – orange colour	Good	55,693 ppm (mg/kg)⁽¹⁾

NOTES:

< = less than

mg/kg = milligrams per kilogram

ppm = parts per million

ug/kg = 1 ppm

“Lead-based paint” is defined in the Surface Coating Materials Regulations as paint containing 0.009% (90 mg/kg) or more lead. Results exceeding this limit are shown in bold.

Condition: Good = no significant peeling or deterioration.

Fair = minor area of peeling or deterioration.

Poor = major peeling or deterioration.

(1) Paint sample results, descriptions and locations derived from a report entitled *Designated Substances and Hazardous Materials Survey, Warkworth Institution, Cambellford, Ontario, WW03 – Administration Building* dated March 2005 prepared by XCG Consultants Limited.

3.3 MERCURY

During the course of our site investigation, fluorescent light tubes were observed throughout the facility. Mercury should be assumed to be present as a gas in all fluorescent light tubes. A mercury-containing thermostat was observed mounted on the wall in Room 127. Silent electrical light switches observed throughout the facility may also contain mercury.

If fluorescent light tubes are removed, they should be properly recycled for mercury. If the mercury-containing thermostat in Room 127 is removed, it should be disposed as mercury waste. If the silent electrical light switches found throughout the facility are removed they should be checked for mercury content and if found to contain or suspected of containing mercury, be disposed as mercury waste.

Mercury may be present in paint applications, albeit likely in low concentrations. The measures and procedures outlined above for the control of exposure to lead from paint applications during construction activities will also serve to control potential exposure to mercury in paint.

3.4 SILICA

Building materials observed which should be considered to contain silica include concrete, concrete block, mortar, cementitious ceramic tile bases, ceramic tile grout, drywall, drywall joint compound, plaster, acoustic ceiling tiles, cement ducting and cementitious thermal insulation on pipe fittings.

Removal or other disturbance of silica-containing materials during any renovations, demolition or construction work should be conducted following procedures outlined in the Ministry of Labour *Guideline –Silica on Construction Projects*. Demolition activities, including dismantling and break up of concrete, masonry, etc. are not classified as specific operations in the guidelines and would, therefore, constitute a Type 1 operation. If power tools are used to cut, grind, chip or break and remove concrete or masonry, then the work is classified as Type 2. Note that drilling holes in concrete or rock is classified as a Type 1 operation, if the work is not part of a tunnelling operation or road construction. Additional information on the classification of work involving lead is provided in Appendix C, Table C-3.

3.5 VINYL CHLORIDE

As mentioned in Section 2.5 above, vinyl chloride would only be a potential exposure concern in the event of combustion of PVC products. No PVC products were observed during the course of our site inspections.

3.6 ACRYLONITRILE

As mentioned in Section 2.6 above, acrylonitrile would only be a potential exposure concern in the event of combustion of ABS products. No ABS piping was observed during the course of our site inspections.

3.7 OTHER DESIGNATED SUBSTANCES

Other “designated substances” include arsenic, benzene, ethylene oxide, isocyanates, and coke oven emissions. Arsenic may be present at low levels in paint applications. The measures and procedures outlined above for control of potential exposure to lead in paint during demolition activities will also serve to control potential exposure to any arsenic in paint. No other designated substances were found to be present in the subject building.

3.8 POLYCHLORINATED BIPHENYLS (PCBs)

Light ballasts, such as those associated with the type of fluorescent lights (T12s) observed throughout the facility, may contain PCBs.

Three transformers in Room 130 appear to be air-cooled (dry) type transformers which would not contain PCB dielectric fluids.

3.9 OZONE-DEPLETING SUBSTANCES (ODS)

A wall-mounted air-conditioning unit observed in Room 105 may contain ozone-depleting substances as a coolant. Several small refrigerator units which may contain ozone-depleting substances as a coolant were observed throughout the facility. No nameplate information on refrigerators was reviewed. Four roof-top air conditioning units were observed during the course of our site inspections. Two of the roof-top air-conditioning units manufactured by *West Columbia* were clearly marked as containing *HCFC-22* coolant which is an ozone-depleting

substance. The other two air-conditioning units were manufactured by *Trane*. No nameplate information regarding the type of coolant used in these units was evident. A representative from Trane informed DCS (based on the model numbers on the units) that the coolant used in both air-conditioning units is R-22, which is an ozone-depleting substance.

3.10 MOULD

During the course of our site investigations, suspect mould covering an area of approximately one square metre was observed on the surface of the canvas covering on the thermal insulation on the ducting in Room 130. The suspect mould-impacted thermal insulation on the ducting observed in Room 130 should be removed using CCA Level 2 mould remediation procedures. Mould may be present in locations that are presently inaccessible (e.g., behind walls, the back side of drywall applications and behind millwork).

3.11 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

UFFI was not observed during the course of the investigation.

3.12 RADIOACTIVE MATERIALS

One smoke detector that may contain radioactive materials was observed attached to the ceiling in Room 105. Standard smoke detectors do not require a radioactive licence and can be disposed in a MOE certified landfill.

3.13 FUEL, OIL, WASTE OIL, AND CHEMICALS

No fuel, oil, waste oil, or other hazardous chemicals were observed during the course of the investigation.

3.14 MAN-MADE MINERAL FIBRE

During the course of our site investigations man-made mineral fibres in the form of glass fibre thermal insulation on piping and ducts were observed throughout the Administration Building.

The following recommendations are made in the CSAO guideline for the removal, maintenance and demolition of materials which contain MMMF:

- Where practicable, the insulation should be lightly misted with water before and during removal.
- The work area should be isolated by safety tape and warning signs.
- In most situations, a NIOSH-approved N95 air-purifying respirator, dust-resistant safety goggles, and disposable coveralls will provide adequate protection. However, if the activity generates substantial amounts of dust, a more protective respirator may be necessary. For example, major demolition may require a full-facepiece respirator or a supplied-air respirator instead of a half-facepiece air-purifying respirator.
- All waste material should be placed in covered, sealed waste disposal containers as it is removed. If the material is wet, it should be placed in waterproof containers.
- Material to be removed should be handled carefully and not thrown about. Rough handling will release dust and fibres into the air.
- Before maintenance or removal, ventilation duct openings and other openings that could permit the spread of fibres should be temporarily sealed.
- Work areas should be kept clean and scrap material removed as often as necessary to keep the area clean.

4.0 SUMMARY AND RECOMMENDATIONS

A summary of the findings of the designated substances and hazardous materials survey conducted by DCS in the Administration Building and our recommendations, are as follows:

Asbestos-Containing Materials

Asbestos-containing materials found to be present in the Administration Building included 9” and 12”vinyl floor tiles, floor tile mastic, 12” ceiling tiles, caulking on interior window frames, thermal insulation on pipe fittings, isolation sleeve material on fan units and cement ducting.

1. Cleanup the fallen pipe fitting insulation debris present on the floor and other surfaces in Room 130 and remove or repair damaged insulation on two pipe fittings using Type 2 procedures as specified in O.Reg. 278/05.

The estimated contractor cost to perform the cleanup work is \$2,000 +HST.

2. Remove four 12” x 12” asbestos-containing ceiling tiles lying loose on top of the suspended T-bar ceiling tiles in Room 112. Remove one 12” x12” asbestos-containing ceiling tile lying loose on top of the suspended T-bar ceiling tiles and remove two 12” x 12” asbestos-containing ceiling tiles delaminating from the gypsum board substrate in Room 115. Remove three 12” x12” asbestos-containing ceiling tiles lying loose on top of the plaster ceiling in Room 126 accessible through the T-bar ceiling system in Room 119. For all above asbestos removal operations use Type 1 procedures as specified in O.Reg. 278/05.

The estimated cost to perform the removal work is \$1,500 + HST.

3. Develop and implement an Asbestos Management Plan (AMP) to provide formalized procedures which, when adopted, will ensure compliance with applicable regulatory requirements and will also ensure that all reasonable steps are taken to minimize potential exposures to airborne asbestos fibres for staff, contractors, and others engaged in operational, maintenance, or renovation/demolition activities in the Administration Building. The AMP should include provision for assignment of responsibilities, completion of asbestos reassessments, notifications to employees and contractors regarding the presence

of asbestos-containing materials, adoption of appropriate work practices, training and record-keeping.

The estimated consulting cost to develop an Asbestos Management Plan is \$2,500 +HST.

4. Any work involving disturbance of asbestos-containing materials should be performed in accordance with the measures and procedures specified in Ontario Regulation 278/05.

Lead

Lead was detected in two samples of paint chips collected by DCS during the course of the designated substances survey (and in three samples referenced in a previous report by XCG Consultants). All paint applications were noted to be in good condition (i.e. no peeling or deterioration) except for some areas on concrete walls in Rooms 106, 108, 112 and 114.

5. Remove loose and delaminating paint on concrete walls below the windows in Rooms 106, 108, 112 and 114 following procedures outlined in the Ministry of Labour Guideline - *Lead on Construction Projects*. If the removal work is done with non-powered hand tools (other than manual scraping or sanding), or with a power tool in conjunction with an effective dust collection system (i.e., a HEPA air filtration system capable of controlling airborne lead concentration levels to below 0.05 mg/m³), then the work is classified as Type 1. If the removal work involves manual scraping or sanding using non-powered hand tools, then the work is classified as Type 2a. Additional information on the classification of work involving lead is provided in Appendix C, Table C-2.

The estimated contractor cost to perform the cleanup work is \$1,500 +HST.

Mercury

Mercury-containing equipment identified in the Administration Building included fluorescent light tubes and a thermostat. The silent light switches may also contain mercury.

6. If fluorescent light tubes are removed, they should be removed intact from the fixtures to prevent potential breakage and worker exposure to mercury and they

should be recycled for mercury. If any mercury-containing equipment (e.g. thermostat, silent electrical switches) is removed, the mercury should be handled and disposed as mercury waste.

Silica

Building materials observed which should be considered to contain silica included concrete, concrete block, mortar, cementitious ceramic tile bases, ceramic tile grout, drywall, drywall joint compound, plaster, acoustic ceiling tiles, cement ducting and cementitious thermal insulation on pipe fittings.

7. Removal or other disturbance of silica-containing materials during any renovations, demolition or construction work should be conducted following measures and procedures outlined in the Ministry of Labour *Guideline - Silica on Construction Projects*.

Polychlorinated Biphenyls

Light ballasts, such as those associated with the type of fluorescent lights (T12s) observed throughout the facility may contain PCBs.

8. In order to verify if a light ballast contains PCBs or not, in the event that it is to be removed, the date code stamped on the bottom (or back) of the ballast should be checked on each ballast removed by an electrician at the time of dismantling of the lights for comparison with information published by the manufacturers and by the federal government regarding which ballasts contain PCB fluids. Any ballasts manufactured prior to January 1980 should be assumed to contain PCBs unless otherwise indicated. The publication entitled *Identification of Lamp Ballasts Containing PCBs, Report EPS 2/CC/2 (revised)*, by Environment Canada, dated August 1991, provides guidance in this regard.

Ozone-Depleting Substances

Equipment which contains ODS, or may contain ODS, observed in the Administration Building included a wall-mounted air-conditioning unit, several refrigerators and four roof-top air-conditioning units.

9. If any ODS-containing equipment is to be removed then the contractor responsibilities under the FHR 2003 must be adhered to (see Section 2.9).

Mould

10. Remove suspect mould-impacted thermal insulation on ducting in Room 130 using CCA Level 2 mould remediation procedures.

5.0 USE AND LIMITATIONS OF THIS DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT

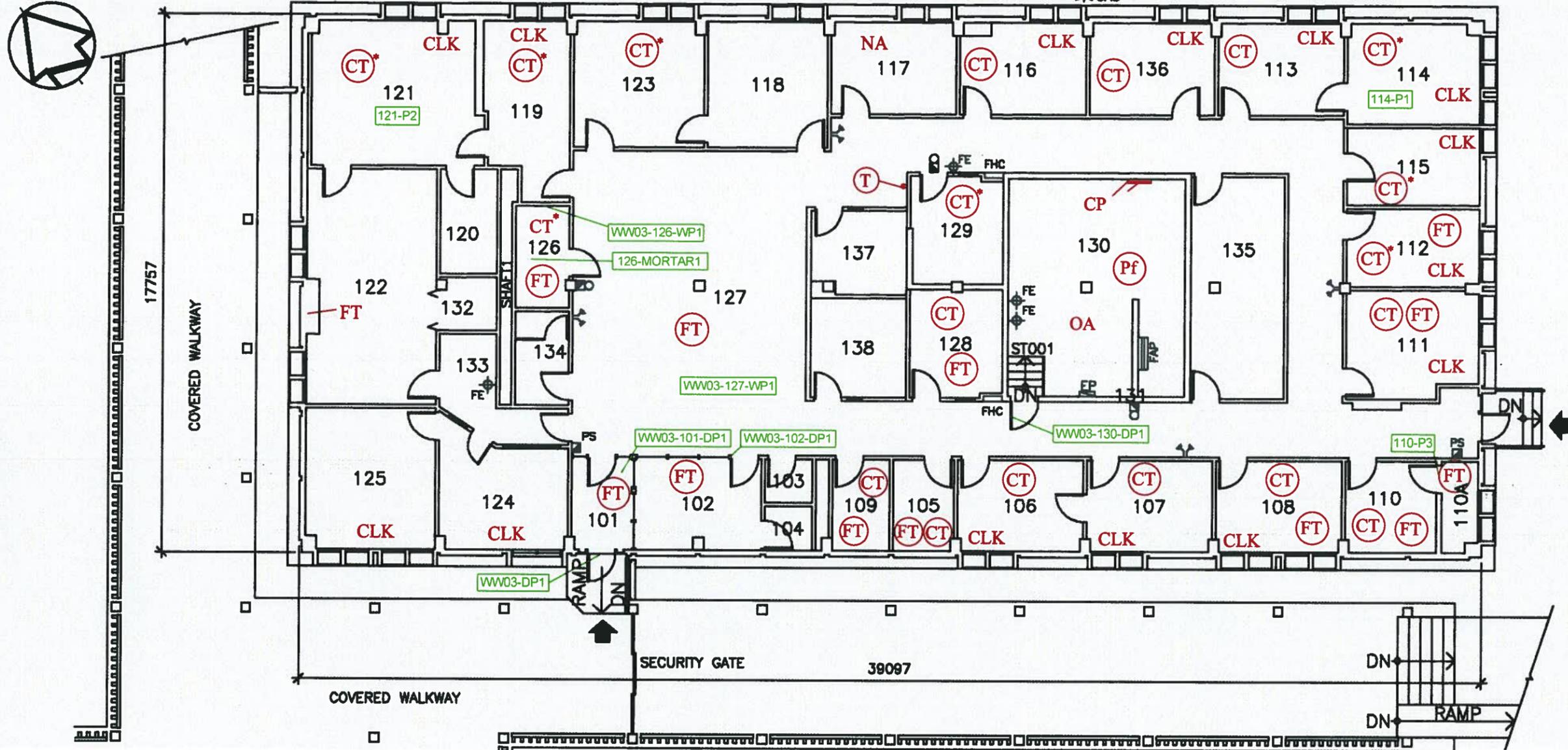
This report, prepared for Public Works and Government Services Canada (PWGSC), on behalf of Correctional Service of Canada (CSC) does not provide certification or warranty, expressed or implied, that the investigation conducted by DCS identified all designated substances (as defined in the *Ontario Occupational Health and Safety Act*) in the subject building. The work undertaken by DCS was directed to provide information on the presence of designated substances and other hazardous materials in building construction materials based on visual inspections of readily-accessible areas in the Administration Building at Warkworth Institution and on the results of laboratory analysis of a limited number of bulk samples for asbestos and a limited number of paint samples for lead. The material in the report reflects DCS' best judgment in light of the information available at the time of the investigation, which was performed on 24 March 2011.

This report was prepared by DCS for PWGSC on behalf of CSC. Any use which any other party makes of the report, or reliance on, or decisions to be based on it, is the responsibility of such parties.

APPENDIX A

FLOOR PLAN

WW03 ADMINISTRATION BUILDING



- LEGEND:**
- 101 FUNCTIONAL SPACE
 - THROUGHOUT FUNCTIONAL SPACE
 - * ABOVE CEILING ASSEMBLY
 - CT ASBESTOS CEILING TILES AND OR REMNANT CEILING TILES ON CEILING TILE MASTIC
 - FT ASBESTOS FLOOR TILES AND FLOOR TILE MASTIC
 - CLK ASBESTOS CAULKING
 - Pf ASBESTOS ON PIPE FITTINGS
 - CP ASBESTOS CEMENT PRODUCT
 - OA ASBESTOS AIR DUCT CONNECTORS
 - T MERCURY-CONTAINING THERMOSTAT
 - NA NO ACCESS
 - 114-P1 PAINT SAMPLE LOCATION

- NOTES:**
1. Asbestos floor tiles and/or floor tile mastic may be present below carpets, ceramic flooring and non - asbestos floor tiles and sheet flooring as outlined in Table 3.2
 2. Asbestos caulking on interior window frames may be present behind drywall and plywood walls as outlined in Table 3.2

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

1. ED RM DOC. #77479, DATE: OCT. 2008

DCS
 DECOMMISSIONING CONSULTING SERVICES LIMITED

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY
 ADMINISTRATION BUILDING
 WARKWORTH INSTITUTION
 FLOOR PLAN

Drawn By: P.A.L.	Approved By: J.S.D.	Project No: 700765-8
Date: April 2011	Scale: N.T.S.	Drawing No: 700765-8-1

May 04, 2011 - 12:33pm - USER: stopper
 Z:\0000_Series\700765-008\DWG\700765-008 SITE AND FLOOR PLAN.dwg

APPENDIX B
LABORATORY REPORTS

DCS

**EMSL Canada Inc.**

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Proj: 700765-8/WARKWORTH

EMSL Order: 551100914
Customer ID: 55DCSL97
Collected:
Received: 3/29/2011

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116**Method**

Client Sample ID:	123-TH-1A	Lab Sample ID:	551100914-0001
Sample Description	ROOM 123CEILING TILE MASTIC - BROWN COLOUR		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM Grav. Reduction	4/04/2011	Brown /Various	0.0% 100% None Detected
TEM Grav. Reduction	4/04/2011	Brown /Various	0.0% 100% None Detected
Client Sample ID:	121-TH-1B	Lab Sample ID:	551100914-0002
Sample Description	ROOM 121CEILING TILE MASTIC - BROWN COLOUR		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM Grav. Reduction	4/04/2011	Brown /Various	0.0% 100% None Detected
Client Sample ID:	114-TH-1C	Lab Sample ID:	551100914-0003
Sample Description	ROOM 114CEILING TILE MASTIC - BROWN COLOUR		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM Grav. Reduction	4/04/2011	Brown /Various	0.0% 100% None Detected
Client Sample ID:	114-CLK-2A	Lab Sample ID:	551100914-0004
Sample Description	ROOM 114CAULKING ON INTERIOR WINDOW FRAME - GREEN COLOUR		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM Grav. Reduction	4/04/2011	White /Various	<1% 100% None Detected
TEM Grav. Reduction	4/04/2011	White /Various	0.0% 96.9% 3.1% Chrysotile
Client Sample ID:	113-CLK-2B	Lab Sample ID:	551100914-0005
Sample Description	ROOM 113CAULKING ON INTERIOR WINDOW FRAME - GREEN COLOUR		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM Grav. Reduction	4/04/2011	White /Various	<1% 100% None Detected
Client Sample ID:	122-CLK-2C	Lab Sample ID:	551100914-0006
Sample Description	ROOM 122CAULKING ON INTERIOR WINDOW FRAME - GREEN COLOUR		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM Grav. Reduction	4/04/2011	White /Various	0.0% 100% None Detected
Client Sample ID:	113-CLK-3A	Lab Sample ID:	551100914-0007
Sample Description	ROOM 113CAULKING BETWEEN CONCRETE COLUMN & CONCRETE WALL - WHITE COLOUR		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM Grav. Reduction	4/04/2011	White	0.0% 100% None Detected
TEM Grav. Reduction	4/04/2011	White	0.0% 100% None Detected



EMSL Canada Inc.

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121 Granton Drive
Unit 11
Richmond Hill, ON L4B 3N4
Proj: 700765-8/WARKWORTH

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 110A-CLK-3B
Sample Description: ROOM 110CAULKING BETWEEN CONCRETE COLUMN & CONCRETE WALL - BEIGE COLOUR
Lab Sample ID: 551100914-0008

Table with 7 columns: TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, Comment. Row 1: PLM Grav. Reduction, 4/04/2011, Gray /Blue /Green, 0.0%, 100%, None Detected.

Client Sample ID: 127-CLK-3C
Sample Description: ROOM 127CAULKING BETWEEN CONCRETE COLUMN & CONCRETE BLOCK WALL - WHITE COLOUR
Lab Sample ID: 551100914-0009

Table with 7 columns: TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, Comment. Row 1: PLM Grav. Reduction, 4/04/2011, White /Various /Yellow, 0.0%, 100%, None Detected.

Client Sample ID: 119-M-5A
Sample Description: ROOM 119CARPET MASTIC - BROWN COLOUR MIXED WITH BLACK COLOUR MASTIC
Lab Sample ID: 551100914-0010

Table with 7 columns: TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, Comment. Rows: PLM Grav. Reduction, TEM Grav. Reduction.

Client Sample ID: 121-M-5B
Sample Description: ROOM 121CARPET MASTIC - BROWN COLOUR
Lab Sample ID: 551100914-0011

Table with 7 columns: TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, Comment. Row 1: PLM Grav. Reduction, 4/04/2011, Gray /Yellow, 0.0%, 100%, None Detected.

Client Sample ID: 115-M-5C
Sample Description: ROOM 115CARPET MASTIC - BROWN COLOUR
Lab Sample ID: 551100914-0012

Table with 7 columns: TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, Comment. Row 1: PLM Grav. Reduction, 4/04/2011, Yellow, 0.0%, 100%, None Detected.

Client Sample ID: 115-TH-6A
Sample Description: ROOM 115BLACK PAPER ON GLASS-FIBRE THERMAL INSULATION ON DUCTING
Lab Sample ID: 551100914-0013

Table with 7 columns: TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, Comment. Rows: PLM Grav. Reduction, TEM Grav. Reduction.

Client Sample ID: 115-TH-6B
Sample Description: ROOM 115BLACK PAPER ON GLASS-FIBRE THERMAL INSULATION ON DUCTING
Lab Sample ID: 551100914-0014

Table with 7 columns: TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, Comment. Row 1: PLM Grav. Reduction, 4/04/2011, Black /Yellow, 0.82%, 99.2%, None Detected.

Client Sample ID: 130-TH-6C
Sample Description: ROOM 130BLACK PAPER ON GLASS-FIBRE THERMAL INSULATION ON DUCTING
Lab Sample ID: 551100914-0015

Table with 7 columns: TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, Comment. Row 1: PLM Grav. Reduction, 4/04/2011, Brown /Yellow, 0.0%, 100%, None Detected.

Client Sample ID: 130-TH-8
Sample Description: ROOM 130THERMAL INSULATION ON HEAT PIPING
Lab Sample ID: 551100914-0016

Table with 7 columns: TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, Comment. Row 1: PLM, 4/04/2011, Gray, 0%, 50%, 50% Chrysotile.



EMSL Canada Inc.

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Decommissioning Consulting Services Ltd.
121 Granton Drive
Unit 11
Richmond Hill, ON L4B 3N4
Proj: 700765-8/WARKWORTH

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Table for Client Sample ID: 130-TH-9. Sample Description: ROOM 130 PAPER UNDER CANVAS ON GLASS-FIBRE INSULATION ON DUCTING. Lab Sample ID: 551100914-0017. TEST: PLM, Analyzed Date: 4/04/2011, Color: Brown, Non-Asbestos: 90% Fibrous, 10% Non-Fibrous, Asbestos: None Detected.

Table for Client Sample ID: 130-TH-10A. Sample Description: ROOM 130 ISOLATION SLEEVE ON DUCTING - WHITE COLOUR. Lab Sample ID: 551100914-0018. TEST: PLM, Analyzed Date: 4/04/2011, Color: White, Non-Asbestos: 0% Fibrous, 5% Non-Fibrous, Asbestos: 95% Chrysotile.

Table for Client Sample ID: 130-TH-10B. Sample Description: ROOM 130 ISOLATION SLEEVE ON DUCTING - WHITE COLOUR. Lab Sample ID: 551100914-0019. TEST: PLM, Analyzed Date: 4/04/2011, Comment: Stop Positive (Not Analyzed).

Table for Client Sample ID: 130-TH-10C. Sample Description: ROOM 130 ISOLATION SLEEVE ON DUCTING - WHITE COLOUR. Lab Sample ID: 551100914-0020. TEST: PLM, Analyzed Date: 4/04/2011, Comment: Stop Positive (Not Analyzed).

Table for Client Sample ID: 130-TH-11. Sample Description: ROOM 130 CEMENT AIR DUCT. Lab Sample ID: 551100914-0021. TEST: PLM, Analyzed Date: 4/04/2011, Color: Gray, Non-Asbestos: 0% Fibrous, 35% Non-Fibrous, Asbestos: 65% Chrysotile.

Table for Client Sample ID: EXT-CLK-12A. Sample Description: EXTERIOR CAULKING ON EXTERIOR WINDOW FRAMES - GRAY COLOUR. Lab Sample ID: 551100914-0022. TEST: PLM Grav. Reduction, TEM Grav. Reduction, Analyzed Date: 4/04/2011, Color: Brown / Gray, Non-Asbestos: 0.0% Fibrous, 100% Non-Fibrous, Asbestos: None Detected.

Table for Client Sample ID: EXT-CLK-12B. Sample Description: EXTERIOR CAULKING ON EXTERIOR WINDOW FRAMES - GRAY COLOUR. Lab Sample ID: 551100914-0023. TEST: PLM Grav. Reduction, Analyzed Date: 4/04/2011, Color: Gray / Tan, Non-Asbestos: 0.46% Fibrous, 99.5% Non-Fibrous, Asbestos: None Detected.

Table for Client Sample ID: EXT-CLK-12C. Sample Description: EXTERIOR CAULKING ON EXTERIOR WINDOW FRAMES - GRAY COLOUR. Lab Sample ID: 551100914-0024. TEST: PLM Grav. Reduction, Analyzed Date: 4/04/2011, Color: Gray / Tan, Non-Asbestos: 0.72% Fibrous, 99.3% Non-Fibrous, Asbestos: None Detected.

Table for Client Sample ID: 103-PL-1A. Sample Description: ROOM 103 HOMOGENIZED SAMPLE OF TOP COAT & SCRATCH COAT PLASTER ON CEILING. Lab Sample ID: 551100914-0025. TEST: PLM Grav. Reduction, Analyzed Date: 4/04/2011, Color: White / Green, Non-Asbestos: 0.0% Fibrous, 100% Non-Fibrous, Asbestos: None Detected.

Table for Client Sample ID: 104-PL-1B. Sample Description: ROOM 104 HOMOGENIZED SAMPLE OF TOP COAT & SCRATCH COAT PLASTER ON CEILING. Lab Sample ID: 551100914-0026. TEST: PLM Grav. Reduction, Analyzed Date: 4/04/2011, Color: White / Peach, Non-Asbestos: 0.0% Fibrous, 100% Non-Fibrous, Asbestos: None Detected.



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Attn: Jean Daigle
Decommissioning Consulting Services Ltd.
121 Granton Drive
Unit 11
Richmond Hill, ON L4B 3N4
Proj: 700765-8/WARKWORTH

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 134-PL-1C **Lab Sample ID:** 551100914-0027
Sample Description: ROOM 134HOMOGENIZED SAMPLE OF TOP COAT & SCRATCH COAT PLASTER ON CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	4/04/2011	Gray /White	0.0%	100%	None Detected	

Client Sample ID: 123-DW-1A **Lab Sample ID:** 551100914-0028
Sample Description: ROOM 123DRYWALL JOINT COMPOUND ON GYPSUM BOARD ON WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	4/04/2011	Gray /White /Various	0.0%	100%	None Detected	

Client Sample ID: 119-DW-1B **Lab Sample ID:** 551100914-0029
Sample Description: ROOM 119DRYWALL JOINT COMPOUND ON GYPSUM BOARD ON WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	4/04/2011	White	0.0%	100%	None Detected	

Client Sample ID: 126-DW-1C **Lab Sample ID:** 551100914-0030
Sample Description: ROOM 126DRYWALL JOINT COMPOUND ON GYPSUM BOARD ON CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	4/04/2011	White	0.0%	100%	None Detected	

Client Sample ID: 137-DW-1D **Lab Sample ID:** 551100914-0031
Sample Description: ROOM 137DRYWALL JOINT COMPOUND ON GYPSUM BOARD ON WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	4/04/2011	White /Cream	0.0%	100%	None Detected	

Client Sample ID: 111-DW-1E **Lab Sample ID:** 551100914-0032
Sample Description: ROOM 111DRYWALL JOINT COMPOUND ON GYPSUM BOARD ON WALL

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	4/04/2011	Tan /White /Yellow	0.0%	100%	None Detected	

Client Sample ID: 123-CT-1A **Lab Sample ID:** 551100914-0033
Sample Description: ROOM 1232'x2' SUSPENDEED CEILING TILE - RANDOM FISSURE - HEAVY STIPPLE FACE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/04/2011	Gray/White	75%	25%	None Detected	

Client Sample ID: 114-CT-1B **Lab Sample ID:** 551100914-0034
Sample Description: ROOM 1142'x2' SUSPENDEED CEILING TILE - RANDOM FISSURE - HEAVY STIPPLE FACE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/04/2011	Gray/White	70%	30%	None Detected	

Client Sample ID: 122-CT-1C **Lab Sample ID:** 551100914-0035
Sample Description: ROOM 1222'x2' SUSPENDEED CEILING TILE - RANDOM FISSURE - HEAVY STIPPLE FACE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/04/2011	Gray/White	70%	30%	None Detected	

Client Sample ID: 123-CT-2A **Lab Sample ID:** 551100914-0036
Sample Description: ROOM 12312"x12" CEILING TILE - PIN HOLE PATTERN

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	4/04/2011	Gray	80%	20%	None Detected	



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Attn: Jean Daigle

Decommissioning Consulting Services Ltd.

121 Granton Drive

Unit 11

Richmond Hill, ON L4B 3N4

Proj: 700765-8/WARKWORTH

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID:	114-CT-2B	Lab Sample ID:	551100914-0037
Sample Description	ROOM 11412"x12" CEILING TILE - PIN HOLE PATTERN		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM	4/04/2011	Gray/White	80% 17% 3% Chrysotile

Client Sample ID:	115-CT-2C	Lab Sample ID:	551100914-0038
Sample Description	ROOM 11512"x12" CEILING TILE - PIN HOLE PATTERN		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM	4/04/2011		Stop Positive (Not Analyzed)

Client Sample ID:	118-CT-3A	Lab Sample ID:	551100914-0039
Sample Description	ROOM 11812"x12" CEILING TILE - LARGE AND SMALL UNIFORM HOLE PATTERN		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM	4/04/2011	Gray/White	70% 30% None Detected

Client Sample ID:	118-CT-3B	Lab Sample ID:	551100914-0040
Sample Description	ROOM 11812"x12" CEILING TILE - LARGE AND SMALL UNIFORM HOLE PATTERN		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM	4/04/2011	Gray/White	70% 30% None Detected

Client Sample ID:	118-CT-3C	Lab Sample ID:	551100914-0041
Sample Description	ROOM 11812"x12" CEILING TILE - LARGE AND SMALL UNIFORM HOLE PATTERN		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM	4/04/2011	Gray/White	70% 30% None Detected

Client Sample ID:	129-CT-4A	Lab Sample ID:	551100914-0042
Sample Description	ROOM 1292'x4' SUSPENDED CEILING TILE - FISSURE ON 2'		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM	4/04/2011	Gray/White	75% 25% None Detected

Client Sample ID:	129-CT-4B	Lab Sample ID:	551100914-0043
Sample Description	ROOM 1292'x4' SUSPENDED CEILING TILE - FISSURE ON 2'		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM	4/04/2011	Gray/White	75% 25% None Detected

Client Sample ID:	129-CT-4C	Lab Sample ID:	551100914-0044
Sample Description	ROOM 1292'x4' SUSPENDED CEILING TILE - FISSURE ON 2'		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM	4/04/2011	Gray/White	70% 30% None Detected

Client Sample ID:	135-CT-5	Lab Sample ID:	551100914-0045
Sample Description	ROOM 13512"x12" CEILING TILE - PIN HOLE PATTERN - CELLULOSE - STAPLED TO DRYWALL SUBSTRATE		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
PLM	4/04/2011	Brown/White	90% 10% None Detected

Client Sample ID:	113-FT-1	Lab Sample ID:	551100914-0046
Sample Description	ROOM 11312" VINYL FLOOR TILE - WHITE WITH GRAY-BLUE FLECKS		
TEST	Analyzed Date	Color	Non-Asbestos Fibrous Non-Fibrous Asbestos Comment
TEM Grav. Reduction	4/04/2011	Tan /White /Cream	0.0% 100% None Detected



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Unit 11
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Proj: 700765-8/WARKWORTH

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Table for Client Sample ID: 122-VSF-3A. Includes columns for TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, and Comment. Results for PLM and TEM Grav. Reduction are shown.

Table for Client Sample ID: 122-VSF-3B. Includes columns for TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, and Comment. Results for PLM Grav. Reduction are shown.

Table for Client Sample ID: 122-VSF-3C. Includes columns for TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, and Comment. Results for PLM Grav. Reduction are shown.

Table for Client Sample ID: 126-FT-4. Includes columns for TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, and Comment. Results for TEM Grav. Reduction are shown.

Table for Client Sample ID: 129-VSF-6A. Includes columns for TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, and Comment. Results for PLM and TEM Grav. Reduction are shown.

Table for Client Sample ID: 129-VSF-6B. Includes columns for TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, and Comment. Results for PLM Grav. Reduction are shown.

Table for Client Sample ID: 129-VSF-6C. Includes columns for TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, and Comment. Results for PLM Grav. Reduction are shown.

Table for Client Sample ID: 112-FT-7A. Includes columns for TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, and Comment. Results for PLM Grav. Reduction are shown.

Table for Client Sample ID: 112-FT-7B. Includes columns for TEST, Analyzed Date, Color, Non-Asbestos (Fibrous, Non-Fibrous), Asbestos, and Comment. Results for PLM Grav. Reduction are shown.



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Attn: Jean Daigle

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121 Granton Drive

Unit 11

Richmond Hill, ON L4B 3N4

Proj: 700765-8/WARKWORTH

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 112-FT-7C Lab Sample ID: 551100914-0056
Sample Description: ROOM 112/VINYL FLOOR TILE - GRAY WITH HEAVY GRAY DIRECTIONAL FLECKS - SIZE UNKNOWN

Table with columns: TEST, Analyzed Date, Color, Non-Asbestos Fibrous, Non-Fibrous, Asbestos, Comment. Row: PLM Grav. Reduction, 4/04/2011, Positive Stop (Not Analyzed)

Client Sample ID: 108-FT-9A Lab Sample ID: 551100914-0057
Sample Description: ROOM 1089" VINYL FLOOR TILE - GRAY WITH FAINT DIRECTIONAL BROWN FLECK

Table with columns: TEST, Analyzed Date, Color, Non-Asbestos Fibrous, Non-Fibrous, Asbestos, Comment. Row: PLM Grav. Reduction, 4/04/2011, Black /Beige, 0.0%, 99.1%, 0.9% Chrysotile

Client Sample ID: 108-FT-9B Lab Sample ID: 551100914-0058
Sample Description: ROOM 1089" VINYL FLOOR TILE - GRAY WITH FAINT DIRECTIONAL BROWN FLECK

Table with columns: TEST, Analyzed Date, Color, Non-Asbestos Fibrous, Non-Fibrous, Asbestos, Comment. Row: PLM Grav. Reduction, 4/04/2011, Positive Stop (Not Analyzed)

Client Sample ID: 108-FT-9C Lab Sample ID: 551100914-0059
Sample Description: ROOM 1089" VINYL FLOOR TILE - GRAY WITH FAINT DIRECTIONAL BROWN FLECK

Table with columns: TEST, Analyzed Date, Color, Non-Asbestos Fibrous, Non-Fibrous, Asbestos, Comment. Row: PLM Grav. Reduction, 4/04/2011, Positive Stop (Not Analyzed)

Client Sample ID: 111-M-10 Lab Sample ID: 551100914-0060
Sample Description: ROOM 111BLACK MASTIC ON 9" ORANGE COLOURED VINYL FLOOR TILE

Table with columns: TEST, Analyzed Date, Color, Non-Asbestos Fibrous, Non-Fibrous, Asbestos, Comment. Row: PLM Grav. Reduction, 4/05/2011, Black, 0.0%, 96.9%, 3.1% Chrysotile

Report amended: 04/05/2011 10:37:17 Replaces initial report from: 04/04/2011 12:30:27 Reason Code: Data Entry-Results Changed

Analyst(s)

Kevin Pang (10)
Merriam Haffar (35)

Handwritten signature of Kevin Pang
Kevin Pang
or other Approved Signatory

Any questions please contact Kevin Pang.

None Detected = <0.5%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. 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 of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Your P.O. #: 700765-8
Your Project #: 700765-8
Site: WARKWORTH/BUILDING 3

Attention: Jean Daigle
Decommissioning Consulting Services Limited
121 Granton Dr
Unit 11
Richmond Hill, ON
L4B 3N4

Report Date: 2011/04/04

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B141772
Received: 2011/03/29, 08:02

Sample Matrix: Paint
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Total Metals Analysis by ICP	1	2011/04/01	2011/04/01	CAM SOP-00408	EPA 6010
Metals in Paint	3	2011/04/01	2011/04/01	CAM SOP-00408	EPA 6010

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key



Andrea Rieth

04 Apr 2011 15:47:14 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MATHURA THIRUKKUMARAN, CS Rep
Email: MThirukkumaran@maxxam.ca
Phone# (905) 817-5700

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Page 1 of 6

Maxxam Job #: B141772
 Report Date: 2011/04/04

Decommissioning Consulting Services Limited
 Client Project #: 700765-8
 Project name: WARKWORTH/BUILDING 3
 Your P.O. #: 700765-8

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		JA6657	JA6657	JA6658	JA6659	JA6660		
Sampling Date								
	Units	114-P1	114-P1 Lab-Dup	121-P2	110A-P3	126-MORTAR1	RDL	QC Batch

Metals								
Lead (Pb)	mg/kg	130	120	8700	<50		50	2446810
Acid Extractable Lead (Pb)	ug/g					<5	5	2447389

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch

Maxxam Job #: B141772
Report Date: 2011/04/04

Decommissioning Consulting Services Limited
Client Project #: 700765-8
Project name: WARKWORTH/BUILDING 3
Your P.O. #: 700765-8

Package 1	16.0°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Results relate only to the items tested.

Decommissioning Consulting Services Limited
 Attention: Jean Daigle
 Client Project #: 700765-8
 P.O. #: 700765-8
 Project name: WARKWORTH/BUILDING 3

Quality Assurance Report
 Maxxam Job Number: MB141772

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2446810 APT	Matrix Spike [JA6657-01]	Lead (Pb)	2011/04/01		94	%	75 - 125
	QC Standard	Lead (Pb)	2011/04/01		104	%	75 - 125
	Method Blank	Lead (Pb)	2011/04/01	<50		mg/kg	
	RPD [JA6657-01]	Lead (Pb)	2011/04/01	NC		%	35
2447389 APT	Matrix Spike	Acid Extractable Lead (Pb)	2011/04/01		101	%	75 - 125
	QC Standard	Acid Extractable Lead (Pb)	2011/04/01		108	%	75 - 125
	Method Blank	Acid Extractable Lead (Pb)	2011/04/01	<5		ug/g	
	RPD	Acid Extractable Lead (Pb)	2011/04/01	NC		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Validation Signature Page

Maxxam Job #: B141772

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



BRAD NEWMAN, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

INVOICE INFORMATION:		REPORT INFORMATION (If differs from invoice):		PROJECT INFORMATION:		MAXXAM JOB NUMBER:
Company Name: Decommissioning Consulting Services Limited	Contact Name: Jean Daigle	Company Name:	Contact Name:	Quotation #	P.O. #:	
Address: 121 Granton Drive, Unit 11 Richmond Hill, Ontario, L4B 3M4	Phone: 905-882-5984 Fax: 905-882-8962	Address:	Phone:	Project #:	Project Name:	CHAIN OF CUSTODY #:
Email: jdaigle@dcsltd.ca		Email:	Fax: 905-882-8962	Location:	Sampled By:	

REGULATORY CRITERIA	ANALYSIS REQUESTED (Please be specific):	TURNAROUND TIME (TAT) REQUIRED:
<p>Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form</p> <p><input type="checkbox"/> MISA Reg. 153 <input type="checkbox"/> Sewer Use</p> <p><input type="checkbox"/> PWQO <input type="checkbox"/> Table 1 <input type="checkbox"/> Residential / Parkland <input type="checkbox"/> Sanitary</p> <p><input type="checkbox"/> Reg. 558 <input type="checkbox"/> Table 2 <input type="checkbox"/> Industrial / Commercial <input type="checkbox"/> Storm</p> <p><input type="checkbox"/> Table 3 <input type="checkbox"/> Medium / Fine Municipality: _____</p> <p><input type="checkbox"/> Table 6 <input type="checkbox"/> Coarse</p> <p>Other (specify): _____ Report Criteria on C of A ? <input type="checkbox"/></p>	<p>29-Mar-11 08:02</p> <p>ENV-051 ESS</p> <p>B141772</p>	<p>PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS</p> <p>Regular (Standard) TAT: <input checked="" type="checkbox"/> 5 to 7 Working Days</p> <p>Rush TAT: Rush Confirmation # _____ (call Lab for #)</p> <p><input type="checkbox"/> 1 day <input type="checkbox"/> 2 days <input type="checkbox"/> 3 days</p> <p>DATE Required: _____</p> <p>TIME Required: _____</p> <p><small>Please note that TAT for certain tests such as BOD and Dissolved Metals are > 5 days - contact your Project Manager for details.</small></p>

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM				Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	Lead	# of Cont.	COMMENTS / TAT COMMENTS
Sample Identification	Date Sampled	Time Sampled	Matrix (GW, SW, Soil, etc.)					
1 114-P1			Paint chips	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Paint chips for lead analysis
2 121-P2			Paint chips	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Paint chips for lead analysis
3 110A-P3			Paint chips	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Paint chips for lead analysis
4 126-Mortar1			Mortar	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Mortar for lead analysis
5								
6								
7								
8								
9								
10								
11								
12								

RELINQUISHED BY: (Signature/Print) <i>Jean Daigle</i>	RECEIVED BY: (Signature/Print) <i>ASHAD BHARDWAJ</i>	Date: 2011/03/29	Time: 08:07	# JARS USED AND NOT SUBMITTED	Laboratory Use Only Temperature (°C) on Receipt 10/10/10°C
--	---	---------------------	----------------	-------------------------------	--

* MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS *No ill?*

APPENDIX C

SUMMARY OF ASBESTOS, LEAD AND SILICA WORK CLASSIFICATIONS

TABLE C-1
SUMMARY OF CLASSIFICATION OF
TYPE 1, 2 AND 3 OPERATIONS
(Ont. Reg. 278/05)

TYPE 1 OPERATIONS

- removing less than 7.5 m² asbestos-containing ceiling tiles;
- removing non-friable asbestos-containing material other than ceiling tiles, if the material is removed without being broken, cut, drilled, abraded, ground, sanded or vibrated;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is wetted and the work is done only using non-powered, hand-held tools; and
- removing less than 1 m² of drywall in which asbestos-containing joint compounds have been used.

TYPE 2 OPERATIONS

- removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling;
- removal of one square metre or less of friable asbestos-containing material;
- enclosing friable asbestos-containing material;
- applying tape or a sealant or other covering to asbestos-containing pipe or boiler insulation;
- removing 7.5 m² or more asbestos-containing ceiling tiles (if removed without being broken, cut, drilled, abraded, ground, sanded or vibrated);
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is not wetted and the work is done only using non-powered, hand-held tools;
- removal of one square metre or more of drywall in which asbestos-containing joint compounds have been used;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters;
- cleaning or removing filters used in air-handling equipment in a building that has asbestos-containing sprayed fireproofing.

TABLE C-1 (Continued)
SUMMARY OF CLASSIFICATION OF
TYPE 1, 2 AND 3 OPERATIONS
(Ont. Reg. 278/05)

TYPE 3 OPERATIONS

- removal of more than one square metre of friable asbestos-containing material;
- spray application of a sealant to friable asbestos-containing material;
- cleaning or removing air-handling equipment, including rigid ducting but not including filters, in a building that has sprayed asbestos-containing fireproofing;
- repairing or demolishing a kiln, metallurgical furnace or similar structure that is made in part of asbestos-containing refractory materials;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing materials, if the work is done using power tools that are not attached to dust-collecting devices equipped with HEPA filters.

TABLE C-2
SUMMARY OF CLASSIFICATION OF
LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, SEPTEMBER 2004

Type 1 Operations	Type 2 Operations		Type 3 Operations	
	Type 2a	Type 2b	Type 3a	Type 3b
<0.05 mg/m ³	>0.05 to 0.50 mg/m ³	>0.50 to 1.25 mg/m ³	>1.25 to 2.50 mg/m ³	>2.50 mg/m ³

Note: The classification of Type 1, 2 and 3 operations is based on presumed airborne concentrations of lead, as shown above.

TYPE 1 OPERATIONS

- application of lead-containing coatings with a brush or roller;
- removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap;
- removal of lead-containing coatings or materials using a power tool that has an effective dust collection system equipped with a HEPA filter;
- installation or removal of lead-containing sheet metal;
- installation or removal of lead-containing packing, babbitt or similar material;
- removal of lead-containing coatings or materials using non-powered hand tools, other than manual scraping or sanding;
- soldering.

TYPE 2 OPERATIONS

Type 2a Operations

- welding or high temperature cutting of lead-containing coatings or materials outdoors. This operation is considered a Type 2a operation only if it is short-term, not repeated, and if the material has been stripped prior to welding or high temperature cutting. Otherwise it will be considered a Type 3a operation;
- removal of lead-containing coatings or materials by scraping or sanding using non-powered hand tools;
- manual demolition of lead-painted plaster walls or building components by striking a wall with a sledgehammer or similar tool.

Type 2b Operations

- spray application of lead-containing coatings.

TABLE C-2 (Continued)
SUMMARY OF CLASSIFICATION OF
LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, SEPTEMBER 2004

TYPE 3 OPERATIONS

Type 3a Operations

- welding or high temperature cutting of lead-containing coatings or materials indoors or in a confined space;
- burning of a surface containing lead;
- dry removal of lead-containing mortar using an electric or pneumatic cutting device;
- removal of lead-containing coatings or materials using power tools without an effective dust collection system equipped with a HEPA filter;
- removal or repair of a ventilation system used for controlling lead exposure;
- demolition or cleanup of a facility where lead-containing products were manufactured;
- an operation that may expose a worker to lead dust, fume or mist that is not a Type 1, Type 2, or Type 3b operation

Type 3b Operations

- abrasive blasting of lead-containing coatings or materials;
- removal of lead-containing dust using an air mist extraction system.

TABLE C-3
SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION
TASKS
MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, SEPTEMBER 2004

	Type 1 Operations	Type 2 Operations	Type 3 Operations
Cristobalite and Tridymite	>0.05 to 0.50 mg/m ³	>0.50 to 2.50 mg/m ³	>2.5 mg/m ³
Quartz and Tripoli	>0.10 to 1.0 mg/m ³	>1.0 to 5.0 mg/m ³	>5.0 mg/m ³

Note: The classification of silica-containing construction tasks is based on presumed concentrations of respirable crystalline silica, as shown above.

TYPE 1 OPERATIONS

- The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction.
- Milling of asphalt from concrete highway pavement.
- Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica).
- Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
- Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.
- Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors.

TYPE 2 OPERATIONS

- Removal of silica containing refractory materials with a jackhammer.
- The drilling of holes in concrete or rock that is part of a tunnelling or road construction.
- The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
- The use of a power tool to remove silica containing materials.
- Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation).
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.
- Dry method dust cleanup from abrasive blasting operations.
- The use of compressed air outdoors for removing silica dust.
- Entry into area where abrasive blasting is being carried out for more than 15 minutes.

TABLE C-3 (Continued)
SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION
TASKS
MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, SEPTEMBER 2004

TYPE 3 OPERATIONS

- Abrasive blasting with an abrasive that contains ≥ 1 per cent silica.

Abrasive blasting of a material that contains ≥ 1 per cent silica.

APPENDIX D

EVALUATION OF ASBESTOS-CONTAINING MATERIALS AND RECOMMENDATIONS FOR CONTROL PWGSC DP057



Annex C - Appendix 1 - Evaluation of Asbestos Containing Materials (ACM) and Recommendations for Control

1. Assessment of Condition

Spray Applied Fireproofing, Insulation and Texture Finishes

In evaluating the condition of ACM spray applied as fireproofing, thermal insulation or texture, decorative or acoustic finishes, the following criteria apply:

GOOD Surface of material shows no significant signs of damage, deterioration or delamination. Up to one percent visible damage to surface is allowed within range of GOOD. Evaluation of sprayed fireproofing requires the surveyor to be familiar with the irregular surface texture typical of sprayed asbestos products. GOOD condition includes unencapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.

POOR Sprayed materials show signs of damage, delamination or deterioration. More than one percent damage to surface of ACM spray.

In observation areas, where damage exists in isolated locations, both GOOD and POOR condition may be reported. The extent or percentage of each condition will be recorded on the survey or reassessment form.

NOTE: FAIR condition is not utilized or considered as a valid criterion in the evaluation of sprayed fireproofing, sprayed insulation, or texture coat finishes.

The evaluation of ACM spray applied as fireproofing, non-mechanical thermal insulation, or texture, decorative or acoustic finishes which are present above ceilings, may be limited by the number of observations made, and by building components such as ducts or full height walls that obstruct the above ceiling observations. Persons entering the ceiling area are advised to be watchful for ACM DEBRIS prior to accessing or working above ceilings in areas of buildings with ACM, regardless of the reported condition.

Mechanical Insulation

In evaluating the condition of mechanical insulation (on boilers, breeching, ductwork, piping, tanks, equipment etc.) the following criteria are used:

GOOD Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.

FAIR Minor penetration damage to jacketed insulation (cuts, tears, nicks, deterioration or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.

POOR Original insulation jacket is missing, damaged, deteriorated or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

The evaluation of mechanical insulation may be limited by the number of observations made and building components such as ducts or full height walls that obstruct observations. In these circumstances, it is not possible to observe each foot of mechanical insulation from all angles.

Non-Friable and Potentially Friable Materials

Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos cement products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material will be treated as a friable product.

2. Evaluation of Accessibility

The accessibility of building materials known or suspected of being ACM is rated according to the following criteria:

- ACCESS (A)** Areas of the building within reach (from floor level) of all building users. Includes areas such as gymnasiums, workshops, and storage areas where activities of the building users may result in disturbance of ACM not normally within reach from floor level.
- ACCESS (B)** Frequently entered maintenance areas within reach of maintenance staff, without the need for a ladder. Includes: frequently entered pipe chases, tunnels and service areas or areas within reach from a fixed ladder or catwalk, i.e., tops of equipment, mezzanines.
- ACCESS (C) EXPOSED** Areas of the building above 8'0" where use of a ladder is required to reach the ACM. Only refers to ACM materials that are exposed to view, from the floor or ladder, without removing or opening other building components such as ceiling tiles, or service access doors or hatches. Does not include infrequently accessed service areas of the building.
- ACCESS (C) CONCEALED** Areas of the building which require the removal of a building component, including lay-in ceilings and access panels into solid ceiling systems. Includes rarely entered crawl spaces, attic spaces, etc. Observations are limited to the extent visible from the access points.
- ACCESS (D)** Areas of the building behind inaccessible solid ceiling systems, walls, or mechanical equipment, etc., where demolition of the ceiling, wall or equipment, etc., is required to reach the ACM. Evaluation of condition and extent of ACM is limited or impossible, depending on the surveyor's ability to visually examine the materials in Access D.

3. ACM Debris

Debris from Friable ACM

The presence of fallen ACM is noted separately from the presumed friable ACM source (sprayed fireproofing, thermal insulation, texture, decorative or acoustic finishes or mechanical insulation) and is referred to as DEBRIS.

Debris from Damaged Non-Friable ACM

The presence of fallen ACM, from damaged non-friable ACM, is reported separately from the non-friable ACM source. Only fallen non-friable ACM, that has become friable, is reported as DEBRIS.

The identification of the exact location or presence of DEBRIS on the top of ceiling tiles is limited by the number of observations made and the presence of building components such as ducts or full height walls that obstruct observations. Workers are advised to be watchful for the presence of DEBRIS prior to accessing, or working in proximity to, mechanical insulation or above ceiling areas of buildings with ACM, regardless of the reported presence or absence of DEBRIS.

4. Action Matrix and Action Descriptions

The Asbestos Management Program requires the following responses:

- o Immediate clean-up of DEBRIS that is likely to be disturbed;
- o The removal, repair or enclosure of friable ACM in POOR or FAIR condition where continued deterioration will result in DEBRIS that is likely to be disturbed.

The following factors shall be considered in making site-specific recommendations for compliance with the regulation, and for the practical implementation of asbestos management:

1. ACM in POOR condition is not routinely repairable.

If an abatement action is necessary, removal is the recommended action (enclosure is a viable option in unusual circumstances).

2. Mechanical insulation in FAIR condition will be repaired or removed based on the following general recommendations, applied on a case by case basis.

Repair ACM mechanical insulation found in FAIR condition in ACCESS (B) or ACCESS (C) EXPOSED areas.

Remove ACM mechanical insulation found in FAIR condition in ACCESS (B) and ACCESS (C) EXPOSED areas, where future damage to the ACM is likely to occur.

3. ACM in GOOD condition present in ACCESS (A) can be managed by surveillance, as long as it is not disturbed by future renovation, maintenance or demolition. Proactive removal of the ACM in ACCESS (A) will be considered where damage is possible by ongoing occupant activity (accidental or intentional).

4. Non-friable or manufactured products are considered in the action matrix as follows:

- Non-friable and manufactured products reported in POOR condition, or friable DEBRIS resulting from the deterioration of non-friable ACM, are treated as friable materials and the appropriate Action, depending on accessibility, is determined from the Action Matrix for friable ACM.
- For non-friable or manufactured products reported in GOOD condition, Action 7 (surveillance) is recommended regardless of Accessibility.

5. Remove all ACM from a particular area where small quantities of asbestos are present and removal will negate the need for the use of the Asbestos Management Program in that area.

The Action Matrix provided below establishes the recommended asbestos control action. The ACTIONS are described in full following the matrix.

ACTION MATRIX TABLE

FRIABLE ACM

ACCESS	CONDITION			DEBRIS
	GOOD	FAIR	POOR	
(A)	ACTION 5/7 ¹	ACTION 5/6 ²	ACTION 3	ACTION 1
(B)	ACTION 7	ACTION 6/5 ³	ACTION 3	ACTION 1
(C) exposed	ACTION 7	ACTION 6	ACTION 4	ACTION 2
(C) concealed	ACTION 7	ACTION 7	ACTION 4	ACTION 2
(D)	ACTION 7	ACTION 7	ACTION 7	ACTION 7

¹If material in **ACCESS (A)/GOOD** condition is not removed **ACTION 7** is required.

²If material in **ACCESS (A)/FAIR** condition is not removed **ACTION 6** is required.

³Remove **ACM** in **ACCESS (B)/FAIR** condition if **ACM** is likely to be disturbed.

ACTION 1 Immediate Clean-up of Debris That is Likely to be Disturbed

Restrict access that is likely to cause a disturbance of the ACM DEBRIS and clean up ACM DEBRIS immediately. Utilize correct asbestos procedures. This action is required for compliance with regulatory requirements. The surveyor should immediately notify the Regional Asbestos Coordinator of this condition.

ACTION 2 Entry Into Areas With ACM Debris - Type 2 Precautions

At locations where ACM DEBRIS can be isolated in lieu of removal or cleaned up, use appropriate means to limit entry to the area. Restrict access to the area to persons utilizing Type 2 asbestos-work precautions. The precautions will be required until the ACM DEBRIS has been cleaned up, and the source of the DEBRIS has been stabilized or removed.

ACTION 3 ACM Removal Required for Compliance

Remove ACM for compliance with regulatory requirements. Utilize asbestos procedures appropriate to the scope of the removal work.

ACTION 4 Access Into Areas Where ACM is Present and Likely to be Disturbed by Access - Type 2 Precautions

Use Type 2 asbestos precautions when entry or access into an area is likely to disturb the ACM. ACTION 4 must be used until the ACM is removed (Use ACTION 1 or 2 if DEBRIS is present).

ACTION 5 Proactive ACM Removal

Remove ACM in lieu of repair, or at locations where the presence of asbestos in GOOD condition is not desirable.

ACTION 6 ACM Repair

Repair ACM found in FAIR condition, and not likely to be damaged again or disturbed by normal use of the area or room. Upon completion of the repair work, treat ACM as

material in GOOD condition and implement ACTION 7. If ACM is likely to be damaged or disturbed, during normal use of the area or room, implement ACTION 5.

ACTION 7 Routine Surveillance

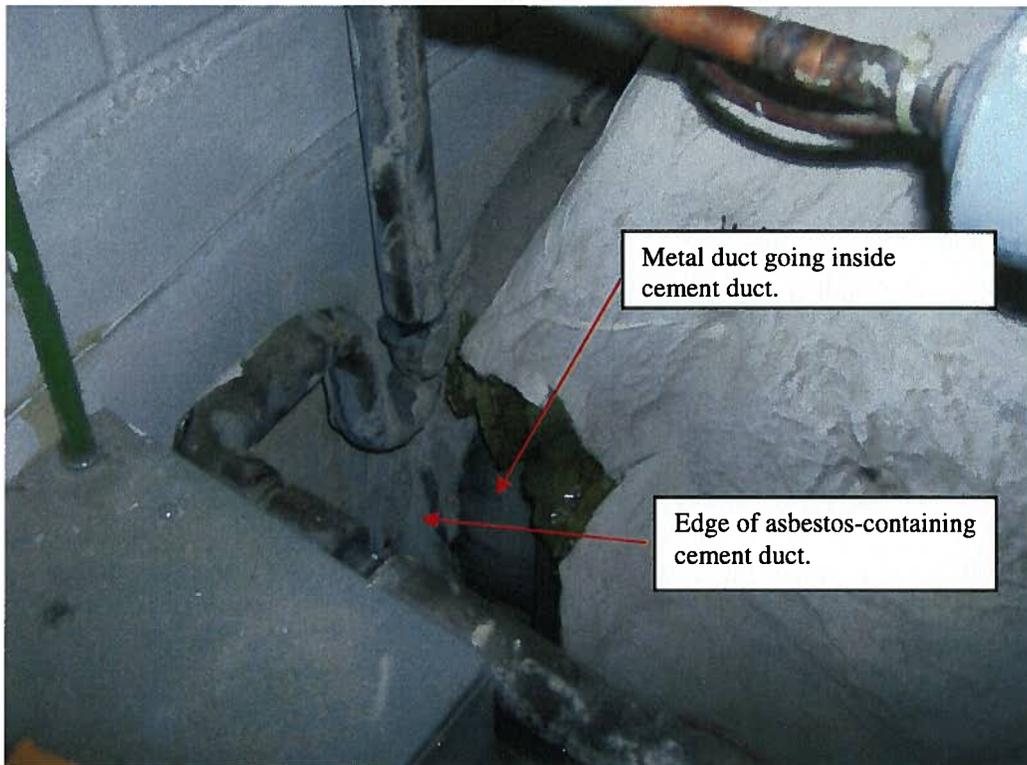
Institute routine surveillance of the ACM. Trained workers or contractors must use appropriate asbestos precautions (Type 1, Type 2 or Type 3) during disturbance of the remaining ACM.

APPENDIX E

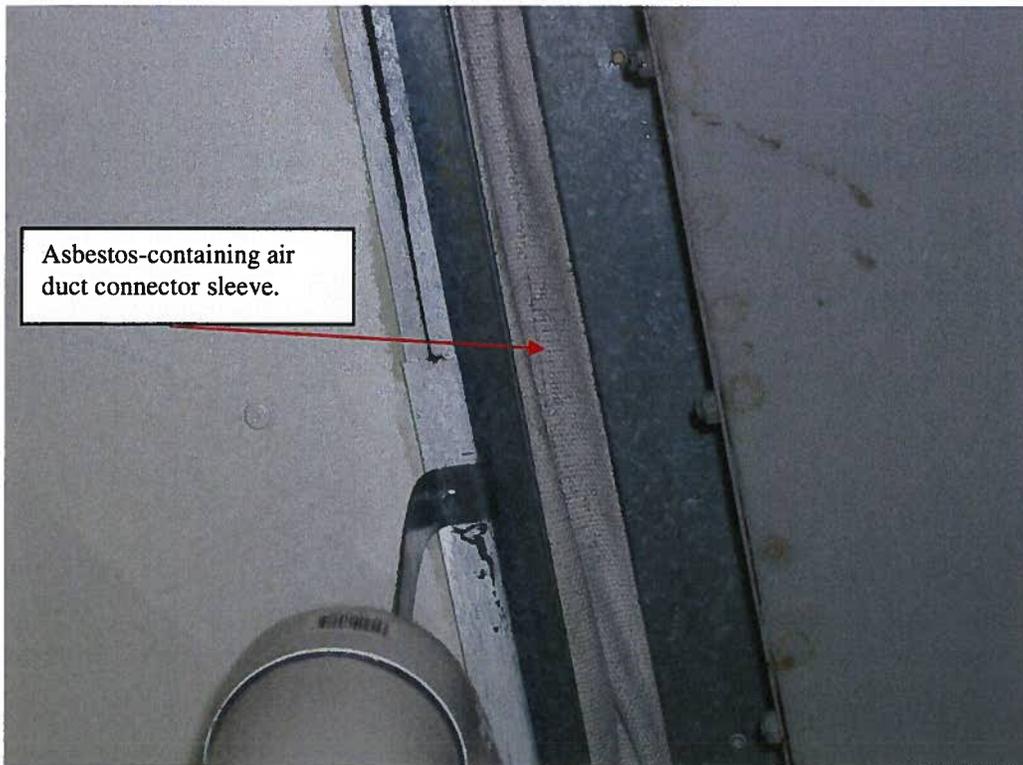
PHOTOGRAPHS



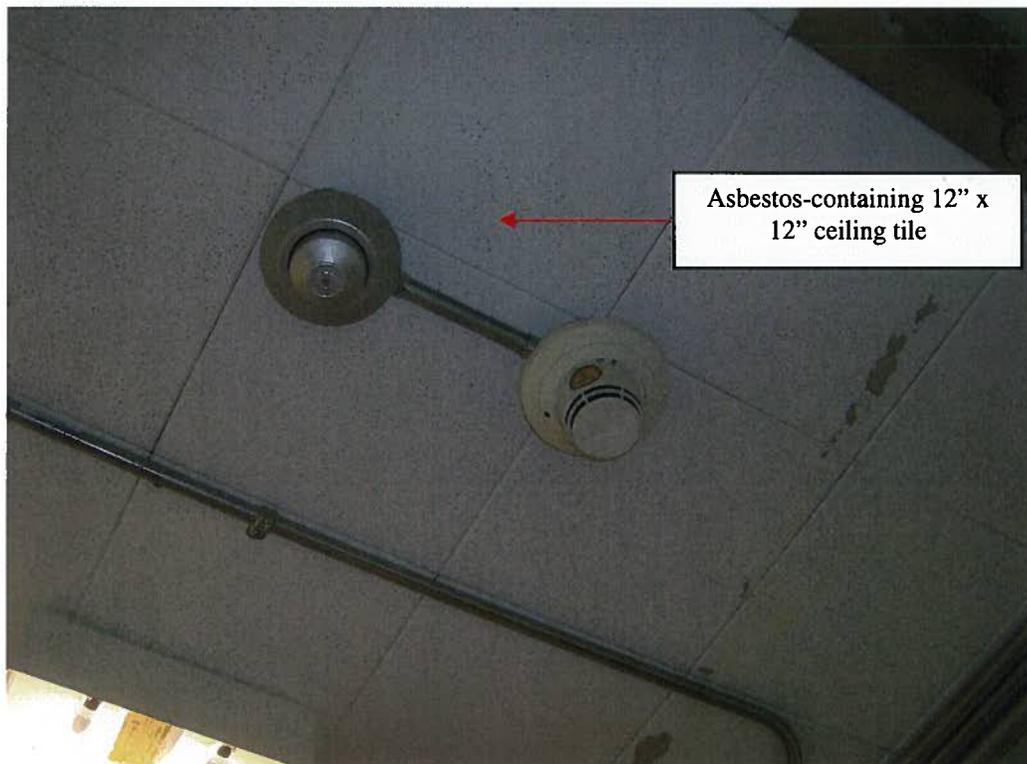
Photograph No. 1: Room 130 – Asbestos-containing cement duct penetrating north wall.



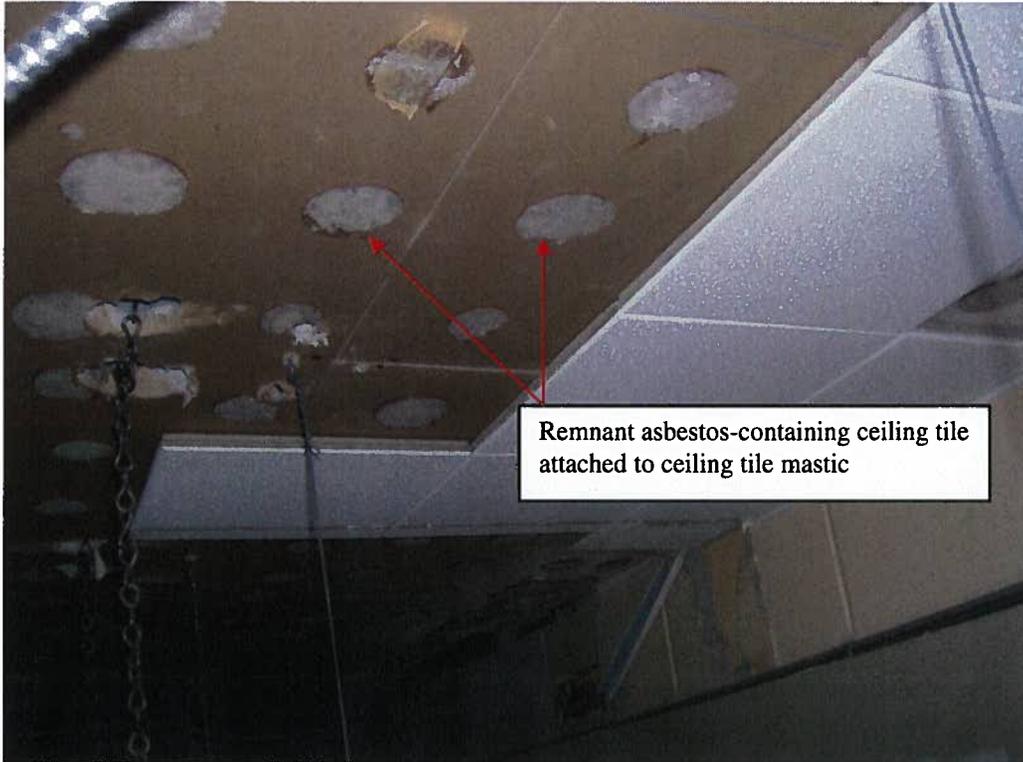
Photograph No. 2: Room 130 – Metal duct penetrating asbestos-containing cement duct in north wall.



Photograph No. 3: Room 130 – Asbestos-containing air duct connector sleeve.



Photograph No. 4: Room 105 – Exposed 12" x 12" asbestos-containing ceiling tiles.



Photograph No. 5: Room 123 – Remnant asbestos-containing ceiling tile attached to ceiling tile mastic and 12” x 12” asbestos-containing ceiling tiles located above the suspended T-bar ceiling.