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FINAL REPORT

Analysis of Indoor Dust Composition

Flin Flon Manitoba and Creighton
Saskatchewan

May 8, 2008

PROJECT NO. 1032002.02

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FINAL REPORT TO

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FOR

Analysis of Indoor Dust Composition

Flin Flon Manitoba

May 8, 2008

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ANALYSIS OF INDOOR DUST COMPOSITION

1.0 INTRODUCTION

Airborne particulates inside homes tend to settle out and become part of the dust that is found on furniture and floors/carpets leading to potential exposure pathways via dermal contact and ingestion. Standard protocols were used for the sampling and analysis for contaminants of concern (COCs) in settled dust of residential homes, schools and daycare facilities within the Flin Flon Manitoba and Creighton Saskatchewan area. This data was collected for use in the human health risk assessment (HHRA) being undertaken for the community by Intrinsic Environmental Sciences Inc.

Fifty four (54) locations were sampled that included primarily houses but also apartments, daycare and educational facilities. Forty (40) of the locations had soil samples analyzed for the COCs in addition to indoor dust.

This report is presented in five sections. **Section 1** presents an introduction and outlines the scope of the current study. **Section 2** details the sampling methodologies employed. **Section 3** details the results of the assessment along with a discussion of their significance. **Section 4** provides conclusions and **Section 5** discusses limitations regarding the report and its findings.

1.1 SCOPE OF WORK

The agreed upon scope of work was set forth in the Jacques Whitford Proposal dated September 21, 2007.

2.0 METHODOLOGY

2.1 INDOOR SURFACE DUST SAMPLING

Interior sampling involved the recovery of surface dust from both hard and fabric surfaces. Surface dust sampling was carried out to determine the concentration of COCs that has accumulated on interior surfaces within the buildings. The sampling protocol was based on existing and approved government methods and designed to determine the concentration of COCs in dust that would be available for human exposure. All sample locations were documented and photographed, in the event that repeat or follow-up testing is required. The COCs considered in this project include: arsenic, barium, cadmium, chromium, copper, nickel, selenium, thallium, vanadium and zinc.

Samples were recovered using existing field protocols, including the use of disposable sterile gloves, sterile sample containers with sealing lids and strict decontamination procedures for templates and handling tools to avoid cross-contamination between samples.

2.1.1 FABRIC SURFACES

Carpet and upholstery testing was carried out to identify the concentration of metals in dust captured within the pile or fabric and that can become readily mobilized and made available for ingestion and inhalation. The Department of Environmental Health, University of Cincinnati Medical Centre Tygon Tube Sampling technique procedures, which have been standardized by the US EPA Office of Pollution Prevention & Toxics (US EPA 2000a; 2000b) and the American Society for Testing of Materials (ASTM, D7144) were used.

The procedure involves the use of a personal air sampling pump, drawing air through a standard size nozzle at a rate of 2.5 litres/min through pre-weighed 0.8 µm pore sized mixed cellulose ester (MCE) filters. The inlet nozzle of the sampler, held at a 45° angle, was drawn across a known template area (e.g., 0.01 m² for mercury and 0.09 m² for all other metals) of the fabric surface at a rate of 5.0 to 10.0 mm/sec. A total of three overlapping full passes on a side-to-side, top-to-bottom and side-to-side basis were conducted. In between each sample, the template was cleaned using a clean “ghost wipe” and a new pair of disposable gloves was donned to prevent cross contamination of samples.

Following recovery, the sample cassette was removed, labeled and forwarded to Maxxam for ICP analysis of the dust. Control samples (unused MCE filters -- approximately 1 blank per 20 field samples) were also forwarded to the Maxxam for metal analysis to determine the background metal content of the sample medium.

The results of the testing include the concentrations of COCs that can be readily taken up by the receptor and are presented on a total weight (metal) per weight (total particulate) and a weight (metal) per unit area basis.

2.1.2 HARD SURFACES

Hard surface testing was carried out to identify the concentration of metals in dust that settles on floors and other hard surfaces (e.g., window sills). The US Department of Housing & Urban Development procedures for wipe sampling for lead in house dust (US-HUD, 1990; 1995) were adopted for the collection of hard surface samples in the study locations, along with supporting protocols (ASTM 2002a; 2002b; NIOSH 1996). An adaptation of this method for all metals was applied in this study. The procedure involved the use of moistened commercial wipes (ghost wipes) to recover surface dust from hard surfaces.

Each sample was recovered using a single wipe, one clean side of which was drawn gently in an overlapping side-to-side motion across the surface of a known template-defined area (i.e. 0.01 m²

for mercury and 0.09 m² for all other metals). The wiping was carried out three times over each sample area, with the wipe being folded in half with the clean side showing, following each pass. After the third pass, the wipe was placed into a sample jar for shipment to the Maxxam for analysis of a suite of metals (using inductively coupled plasma (ICP) – need type i.e. AES or MS) for the collected dust. Control samples (unused wipes -- approximately 1 blank per 20 field samples) were also forwarded to the Maxxam for metal analysis to determine the background metal content of the sample medium.

The results of the testing include the concentrations of COCs that can be readily taken up by the receptor and are presented on a weight (metal) per unit area basis.

2.1.3 LEAD-IN-PAINT

Samples of paint chips were collected where possible and sent to Paracel labs for lead analysis by atomic absorption.

2.2 SAMPLING CONSIDERATIONS AND LIMITATIONS

Physical activity in a building can be expected to affect dust loadings on hard and fabric surfaces and, unless controlled for, could introduce significant bias into the results obtained. It is important to consider that a realistic evaluation of surface dust chemical concentrations requires a moderate level of physical activity, representative of typical disturbances associated with the presence of occupants involved in regular day-to-day activities within the building. Attempts were made to ensure this moderate level of activity during the sampling process to ensure that the results of any testing work carried out did not affect the outcome of the dust sampling. Furthermore, residents were asked not to vacuum their houses during sampling or during the 7 days preceding sampling in order to maximize dust accumulation so as to not underestimate dust levels in homes.

The original sampling plan included the collection paint chip samples from each home that was sampled for indoor dust. Sampling of paint chips was not completed unless there was additional consent from the residents /owner during the sampling period. Some residents/owners chose not to have samples taken due to potential and subsequent damage to finished surfaces.

2.3 TENANT QUESTIONNAIRE

The occupants were asked to keep a diary of time spent and activities undertaken in the house during the sampling period. A questionnaire was administered to the occupants outlining the number of people and their ages in the home; activities/hobbies undertaken in the home etc. All locations that were sampled completed a questionnaire.

2.4 SAMPLING LOCATIONS

Figure 1 summarizes the numbers, types and locations of samples taken during the project.

Figure 1 – Summary of Indoor Dust Samples Collected and Location Types

Series	Locations in Each Area	Address Type	Total Fabric Samples	Total Hard Surface Samples	Total Lead in Paint Samples	Number of Locations without Corresponding Soil Samples
100 Creighton	8	Houses	34	18	6	0
200 West Flin Flon	21	1 Apartment 1 School 2 Daycares Houses	74	47	15	5 Houses 1 Apartment
300 East Flin Flon	21	1 Apartment 1 School Houses	81	53	15	6 Houses 1 Apartment
400 Channing	4	Houses	18	9	3	1
Totals	54	2 Apartments 2 Schools 2 Daycares 48 Houses	207	127	39	14

2.4.1 FABRIC SURFACES

Fabric surface dust samples were collected within the locations from a number of surfaces, including:

- the centre of the most frequently used play area for children under the age of six;
- the main entrance used for access and egress from the house;
- the secondary, less heavily used entrance to the house;
- the main hallway of the house and evident route of high traffic flow;
- and from two items of upholstered furniture such as:
 - a regularly used chesterfield; and
 - an easy chair.

Up to 5 samples were recovered from fabric surfaces in each residence. Every attempt was made to recover the same number of samples from each residence. Where variations exist (e.g. no carpet) additional samples were recovered from other surfaces deemed similar at the time of sampling. If there were no carpets, area rugs were sampled. If there was an insufficient number of surfaces for soft surface samples, additional hard surface samples were collected. Samples were collected where the toddlers and children were reported to spend the largest portion of their active time.

2.4.2 HARD SURFACES

Dust samples within the locations were collected from hard surfaced areas, including a commonly contacted portion of:

- the kitchen tiled floor;
- the sill of a window commonly accessed and most likely to be contacted by a child (typically in the main living area).

A total of 2 samples (one from a window sill and one from a tiled floor) were recovered from hard surfaces in each residence. Every attempt was made to recover the same number of samples from each residence. Samples were collected in the main living area where toddlers and children were reported to spend the largest portion of their active time.

2.4.3 LEAD-IN-PAINT

Based on the historical use of lead-based paints and the age of the community, samples of paint were recovered from the interior of the homes selected for the indoor dust assessment. The data from the lead paint assessment is combined with the indoor dust sampling results and may be used in the risk assessment.

2.5 LABORATORY ANALYSIS

2.5.1 METALS

MCE filters (fabric samples) and wipes (hard surface samples) were sent to Maxaam Analytics for metals analysis by ICP-AES or MS. All metals with the exception of mercury could be analyzed on the same medium. A separate sample for each location was required for the analysis of mercury. Results were reported as the micrograms of each metal on filters and wipes. Sample results were corrected for residual metals in collecting media by subtracting the average weight of each metal

contained on all field blanks from the metal weights reported for each of the dust samples. Paint chip samples were sent to Paracel labs for lead analysis. Results are expressed in parts per million (ppm.)

2.5.2 PARTICULATE

Total micrograms of particulate for the fabric (microvacuum) samples were determined by collecting samples on matched weight filters. The total weight of dust collected was determined gravimetrically by weighing the filters following sample collection (microvacuuming).

3.0 RESULTS AND DISCUSSION

Appendix A contains Tables 1 to 8 that present the results for all fabric and hard surface metal composition. The COCs presented in the tables include: arsenic, barium, cadmium, chromium, copper, nickel, selenium, thallium, vanadium and zinc.

A confidential sample identifier is used to indicate the type and location of each sample. This sample identifier may be traced to actual locations using a cross reference table contained on a CD appended to this report.

The labelling protocol for fabric and hard surface samples is demonstrated with the following example:

A – HS – 01

A = location Identifier (with distinct street address)

HS = hard surface sample (FS = fabric surface sample)

01 = location of the sample within the building

The tables also include a written description of where the sample was taken within the house or building. Corresponding sample identifiers for the soil samples are also given in the tables (where data exists for both soil and dust samples.)

Example photographs of sample locations are given in Appendix B. These illustrate the templates used for surface area demarcation, as well as the types of samples collected at a typical location. The full list of photographs (identified by location) and responses to tenant questionnaires are contained on a CD appended to this report. Floor layout drawings indicating the location of all fabric, hard surface and paint chip samples and the laboratory certificates of analysis are also on a CD appended to this report.

3.1 FABRIC SAMPLES

Fabric dust samples collected using the microvacuum method were analyzed for the metal COCs. Results are expressed in micrograms (μg) metal per total dust particulate (g) collected for each sample. Tables 1 to 4 contain results for all fabric samples collected at each location. Table 1 includes results for Creighton, Table 2 for Flin Flon West, Table 3 from Flin Flon East and Table 4 from Channing.

Very few of the fabric samples contained dust with detectable metal concentrations other than zinc. If the total particulate collected for a sample was less than 100 micrograms, then the sample result is expressed as “insufficient particulate collected” or “ipc.” This is due to the uncertainty of the gravimetric determination of small masses of particulate. If the mass of metal was not detectable by the analytical method, then the sample result is expressed as “below detection limit” or “bdl.”

Due to the low mass of particulate collected (and resulting issues with analytical sensitivities) using the microvacuum method, it is recommended that selected fabric surfaces within buildings be resampled using a High Volume Small Surface Sampler (HVS3) from CS₃ Inc. or a Pullman Holt vacuum cleaner designed for the collection of household dust. This method should collect greater masses of particulate and consequently a greater metal loading on the membrane filters that will reduce issues with analytical detection limits. These results could be supplemented to the values determined obtained with the microvacuum method used in the current project.

There are no government criteria or standards that these results can be benchmarked against. The significance of these results will be provided by the forthcoming human health risk assessment.

3.2 HARD SURFACE SAMPLES

Hard surface dust samples collected using the wipe method were analyzed for the metal COCs. Results are expressed in micrograms (μg) metal per surface area wiped in cm^2 . Tables 5 to 8 contain results for all fabric samples collected at each location. Table 5 has results for Creighton, Table 6 for Flin Flon West, Table 7 for Flin Flon East and Table 8 for Channing.

There are very few health related guidelines for dust on indoor surfaces containing the COCs within the scope of this project. For lead, the US EPA and HUD recommend $40 \mu\text{g}/\text{ft}^2$ ($0.043 \mu\text{g}/\text{cm}^2$) for uncarpeted floors and $250 \mu\text{g}/\text{ft}^2$ ($0.269 \mu\text{g}/\text{cm}^2$) for window sills. One of the samples marginally exceeded the lead guidelines for surfaces sampled. The kitchen floor sample (AD-HS-01) indicated $0.049 \mu\text{g}/\text{cm}^2$ compared with the floor guideline of $0.043 \mu\text{g}/\text{cm}^2$.

Most of the other samples had varying amounts of the other 10 COCs, but the significance of these results will be provided by the human health risk assessment.

3.3 PAINT CHIP SAMPLES

Table 9 contains analytical results of the paint chip samples for lead. Corresponding dust sample location identifiers and soil sample identifiers are referenced in the table. The floor layouts in the accompanying CD also show the location of the samples.

Two criteria are presented for lead content in paint samples.

According to the proposed Surface Coating Materials Regulations (April 2005), by Health Canada's Occupational Health and Safety Agency, a paint is considered to be a lead-based paint if the concentration of lead in the paint is equal to or greater than 0.06 percent by weight (weight of lead to weight of paint), which is equivalent to 600 parts per million (ppm.)

The Hazardous Products Act in Canada and the United States Department of Housing and Urban Development (HUD) have set a criteria of 0.5 % lead (by weight) or 5,000 ppm for determining if a paint application should be considered lead-based. The US Centre for Disease Control (CDC) notes that the 0.5 % level is based on practical, not health concerns, so care must be taken when this criteria is applied.

Elevated lead content (above the stated criteria) in paint was noted at a number of locations in walls, ceilings and window sills. There is no evidence of a correlation between elevated lead in paint samples and fabric or hard surface lead in dust concentrations.

4.0 CONCLUSIONS

A number of fabric samples contained dust with detectable metal (primarily zinc) concentrations.

One of the hard surface samples marginally exceeded the lead guidelines for surfaces recommended by the US HUD/EPA. Elevated lead content (above the stated criteria) in paint was noted at a number of locations in walls, ceilings and window sills. There is no evidence of a correlation between elevated lead in paint samples and fabric or hard surface lead in dust concentrations.

The significance of the results contained within this report will be determined by the ongoing human health risk assessment being conducted for the community by Intrinsik Environmental Sciences Inc.

5.0 CLOSURE

This report has been prepared by Jacques Whitford Limited on behalf of, and for the exclusive use of Intrinsic Environmental Sciences Inc. and Hudson Bay Mining and Smelting Inc. The report may not be used or relied upon by any other person or entity without the expressed written consent of Jacques Whitford, Intrinsic Environmental Sciences Inc. and Hudson Bay Mining and Smelting Inc.

Any use, which a third party makes of this report, or any reliance on decisions made based on it, is the responsibility of such third parties. Jacques Whitford Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

The information and conclusions contained in this report are based upon work undertaken by trained professionals and technical staff in accordance with generally accepted engineering and scientific practices current at the time the work was performed. Conclusions in this report should not be construed as legal advice.

The conclusions are based on conditions encountered by Jacques Whitford at the time the work was performed. Should additional information become available, Jacques Whitford requests that this information be brought to our attention so that we may re-assess the conclusions presented herein.

This report was prepared by Zack Kranjec, with the senior technical review provided by Todd Irick, M.Sc, CRSP, CIH.

We trust that this information is sufficient for your requirements at the present time. Should you or your colleagues have any questions or require any additional information, please do not hesitate to contact the undersigned at your convenience.

Yours truly,

JACQUES WHITFORD LIMITED



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APPENDIX A

Analytical Results Tables 1 to 9

Table 1-Creighton Fabric Sample Dust

Soil Sample ID	Dust Sample ID	Sample Location	Units	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Thallium (Tl)	Vanadium (V)	Zinc (Zn)
CS106	AL-FS-01	Lower level living room	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	533
CS106	AL-FS-02	Lower level corridor	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	102
CS106	AL-FS-03	Main level armchair	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	787
CS106	AL-FS-04	Main level sofa	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	824
CS106	AL-FS-05	Staircase	µg/g	bdl	307	bdl	812	366	bdl	bdl	bdl	bdl	bdl	bdl	404
CS109	AW-FS-01	Basement rug 1	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS109	AW-FS-02	Basement rug 2	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS109	AW-FS-03	Infant room carpet	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS111	AB-FS-01	West entrance rug	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS111	AB-FS-02	Room 114 kindergarden rug	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS111	AB-FS-03	Room 208 rug	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS111	AB-FS-04	Resource center couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS111	AB-FS-05	Main office floor	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	5397
CS114	T-FS-01	Main level living room carpet	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS114	T-FS-02	Lower level family room floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS114	T-FS-03	Main entrance	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS114	T-FS-04	Computer room floor	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	623
CS114	T-FS-05	Main corridor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS119	S-FS-01	Main level living room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS119	S-FS-02	Main entrance way	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS119	S-FS-03	Computer / play room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS121	BD-FS-01	Entrance rug	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS121	BD-FS-02	Living room couch	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	402
CS121	BD-FS-03	Living room floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS127	AD-FS-01	Living room chair	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS127	AD-FS-02	Staircase corridor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS127	AD-FS-03	Play room basement	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS127	AD-FS-04	Play room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS127	AD-FS-05	Child's bedroom	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
CS130	AK-FS-01	Living room main floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS130	AK-FS-02	Hallway main floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS130	AK-FS-03	Living room sectional couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
CS130	AK-FS-04	Lower level living room	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	318
CS130	AK-FS-05	Lower level living room couch	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
none	U-FS-01	Main level living room carpet	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
none	U-FS-02	Main level living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
none	U-FS-03	Main level corridor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
none	U-FS-04	Main level play room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
none	U-FS-05	Main entrance	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc

Analytical Detection Limit
 bdl = below detection limit
 ipc = insufficient particulate collected

µg	<10	<1.0	<0.3	<0.5	<1.0	<3.0	<0.003	<1.0	<10	<3.0	<0.5	<0.5
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Table 3-West Flin Flon Fabric Sample Dust

Soil Sample ID	Dust Sample ID	Sample Location	Units	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Thallium (Tl)	Vanadium (V)	Zinc (Zn)
FF302	AV-FS-01	Main level living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF302	AV-FS-02	Corridor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF302	AV-FS-03	Main level living room floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF306	R-FS-01	Main level living room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF306	R-FS-02	Main level play room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF306	R-FS-03	Main level living room chair	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF306	R-FS-04	Basement play area floor	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	596
FF309	AR-FS-01	Living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF309	AR-FS-02	Office floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF309	AR-FS-03	Living room chair	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF309	AR-FS-04	Corridor in main level at entrance	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF315	AG-FS-01	Living room floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF315	AG-FS-02	Main corridor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF315	AG-FS-03	Main entrance	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
FF315	AG-FS-04	Downstairs living room carpet	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF315	AG-FS-05	Downstairs couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF321	O-FS-01	Lower level floor	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
FF321	O-FS-02	Lower level armchair	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF321	O-FS-03	Lower level staircase corridor	µg/g	bdl	8088	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	12353
FF336	BA-FS-01	Main level living room carpet	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	614
FF336	BA-FS-02	Main entrance	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	1740
FF336	BA-FS-03	Main level couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF336	BA-FS-04	Sitting room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF339	AN-FS-01	Living room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF339	AN-FS-02	Lower level living room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF339	AN-FS-03	Lower level living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF339	AN-FS-04	Living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF345	AA-FS-01	Basement floor corridor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF345	AA-FS-02	Living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF345	AA-FS-03	Living room chair	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF345	AA-FS-04	Main level nursery	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF353	M-FS-01	Living room armchair	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF353	M-FS-02	Corridor floor	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
FF353	M-FS-03	Family room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF353	M-FS-04	Family room floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF353	M-FS-05	Living room floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF357	P-FS-01	Living room floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF357	P-FS-02	Corridor floor	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	1852
FF357	P-FS-03	Lower level computer room chair	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF357	P-FS-04	Lower level class/teaching area	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF360	J-FS-01	Main floor living room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF360	J-FS-02	Lower level family room	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
FF360	J-FS-03	Main entrance	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF360	J-FS-04	Main corridor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF360	J-FS-05	Lower level living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF363	Z-FS-01	Living room carpet	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF363	Z-FS-02	Living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF363	Z-FS-03	Main corridor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF363	Z-FS-04	Main entrance vestibule	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	6106
FF365	G-FS-01	Entrance rug	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF365	G-FS-02	Living room chair	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF366	F-FS-01	Living room floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF366	F-FS-02	Main entrance	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF366	F-FS-03	Corridor floor	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	538
none	AO-FS-01	Living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
none	AO-FS-02	Main entrance rug	µg/g	bdl	bdl	413	bdl	3645	bdl	bdl	bdl	bdl	bdl	bdl	2041

Analytical Detection Limit
 bdl = below detection limit
 ipc = insufficient particulate collected

µg	<10	<1.0	<0.3	<0.5	<1.0	<3.0	<0.003	<1.0	<10	<3.0	<0.5	<0.5
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Table 4-Channing Fabric Sample Dust

Soil Sample ID	Dust Sample ID	Sample Location	Units	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Thallium (Tl)	Vanadium (V)	Zinc (Zn)
FF401	V-FS-01	Main level living room carpet	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
FF401	V-FS-02	Computer room carpet	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF401	V-FS-03	Main level living room chair	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
FF401	V-FS-04	Entrance rug	µg/g	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	930
FF401	V-FS-05	Play room floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF402	BE-FS-01	Living room carpet	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF402	BE-FS-02	Main entrance vestibule	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF402	BE-FS-03	Main corridor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF402	BE-FS-04	Kitchen	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF404	AP-FS-01	Lower level living room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF404	AP-FS-02	Main level play room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF404	AP-FS-03	Main level living room	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF404	AP-FS-04	Main level living room couch	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc
FF404	AP-FS-05	Main level bedroom floor	µg/g	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc	ipc

Analytical Detection Limit
 bdl = below detection limit
 ipc = insufficient particulate collected

µg	<10	<1.0	<0.3	<0.5	<1.0	<3.0	<0.003	<1.0	<10	<3.0	<0.5	<0.5
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Table 5-Creighton Hard Surface Dust

Soil Sample IDs	Sample ID	Sample Location	Units	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Thallium (Tl)	Vanadium (V)	Zinc (Zn)
CS106	AL-HS-01	Kitchen floor	µg/cm ²	bdl	0.001	bdl	bdl	0.004	bdl	0.00007	bdl	<0.01	bdl	bdl	0.01
CS106	AL-HS-02	Main level living room window	µg/cm ²	bdl	0.004	bdl	0.0021	bdl	bdl	0.00012	bdl	<0.01	bdl	bdl	0.04
CS109	AW-HS-01	Kitchen	µg/cm ²	0.02	0.004	0.0006	0.0013	bdl	bdl	bdl	bdl	<0.01	bdl	bdl	0.04
CS109	AW-HS-02	Preschool room window	µg/cm ²	0.02	0.007	bdl	0.0027	bdl	bdl	0.00024	bdl	<0.01	bdl	bdl	0.06
CS109	AW-HS-03	Preschool room window	µg/cm ²	bdl	0.003	0.0005	0.0008	bdl	bdl	0.00105	bdl	<0.01	bdl	bdl	0.02
CS109	AW-HS-04	Infant feeding play room	µg/cm ²	0.01	0.051	0.001	0.0036	bdl	0.010	0.00058	bdl	<0.01	bdl	0.0018	0.13
CS111	AB-HS-01	Resource room window	µg/cm ²	bdl	bdl	bdl	bdl	bdl	bdl	0.00004	bdl	<0.01	bdl	bdl	0.01
CS111	AB-HS-02	Gym floor	µg/cm ²	0.02	0.008	0.002	0.0019	bdl	0.018	0.00012	bdl	<0.01	bdl	0.0012	0.31
CS114	T-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	bdl	bdl	0.00020	bdl	<0.01	bdl	bdl	0.00
CS114	T-HS-02	Bedroom 1 window sill	µg/cm ²	bdl	bdl	bdl	bdl	0.005	0.005	0.00372	bdl	<0.01	bdl	bdl	0.01
CS119	S-HS-01	Kitchen floor	µg/cm ²	bdl	0.001	bdl	bdl	0.003	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
CS119	S-HS-02	Living room window sill	µg/cm ²	bdl	0.008	0.0007	0.0030	0.043	0.059	0.00025	bdl	<0.01	bdl	0.0009	0.08
CS121	BD-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
CS121	BD-HS-02	Entrance floor	µg/cm ²	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	<0.01	bdl	bdl	0.00
CS127	AD-HS-01	Kitchen floor	µg/cm ²	bdl	0.006	0.0004	0.0092	0.040	0.049	0.00008	bdl	<0.01	bdl	bdl	0.07
CS127	AD-HS-02	Living room window sill	µg/cm ²	bdl	0.004	bdl	0.0021	0.013	bdl	0.00023	bdl	<0.01	bdl	bdl	0.04
CS130	AK-HS-01	Kitchen floor	µg/cm ²	0.01	0.005	bdl	0.0013	0.010	bdl	0.00018	bdl	<0.01	bdl	bdl	0.02
CS130	AK-HS-02	Main floor living room window sill	µg/cm ²	bdl	0.003	bdl	0.0010	0.014	0.007	0.00039	bdl	<0.01	bdl	bdl	0.02
none	U-HS-01	Kitchen floor	µg/cm ²	bdl	0.001	bdl	0.0022	0.006	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
none	U-HS-02	Living room window sill	µg/cm ²	bdl	0.004	0.0005	0.0021	0.032	0.004	0.00007	bdl	<0.01	bdl	bdl	0.05

(A) US HUD/EPA floor guideline

(B) US HUD/EPA windowsill guideline

0.043 (A)
0.269 (B)

analytical detection limit
bdl = below detection limit

µg/cm ²	<0.01	<0.001	<0.0003	<0.0006	<0.001	<0.003	<0.00003	<0.001	<0.001	<0.001	<0.0006	<0.01
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Table 6-East Flin Flon Hard Surface Dust

Soil Sample IDs	Sample ID	Sample Location	Units	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Thallium (Tl)	Vanadium (V)	Zinc (Zn)
FF207	B-HS-01	Kitchen floor	µg/cm ²	bdl	0.004	0.0007	0.0018	0.063	0.008	0.00203	bdl	<0.01	bdl	0.0010	0.08
FF207	B-HS-02	Dining room window sill	µg/cm ²	0.03	0.032	0.006	0.0356	0.978	0.222	0.00267	0.009	<0.01	bdl	0.0073	1.01
FF211	AX-ME-HS-01	Living room window sill	µg/cm ²	bdl	0.111	0.0005	0.0006	0.029	bdl	0.00031	bdl	<0.01	bdl	bdl	0.11
FF211	AX-ME-HS-02	Kitchen floor	µg/cm ²	bdl	0.014	bdl	0.0011	0.020	0.006	0.00056	bdl	<0.01	bdl	bdl	0.05
FF214	K-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	0.0011	0.004	bdl	0.00004	bdl	<0.01	bdl	bdl	0.01
FF214	K-HS-02	Kitchen window sill	µg/cm ²	0.01	0.006	0.001	0.0011	0.200	0.009	0.00082	bdl	<0.01	bdl	bdl	0.22
FF220	H-HS-01	Corridor floor	µg/cm ²	bdl	0.003	0.0006	0.0020	0.099	0.012	0.01170	bdl	<0.01	bdl	bdl	0.18
FF220	H-HS-02	Rec room window sill	µg/cm ²	0.02	0.012	0.004	0.0051	0.633	0.049	0.00071	0.006	<0.01	bdl	0.0019	0.64
FF223	AY-ME-HS-01	Kitchen floor	µg/cm ²	bdl	0.004	bdl	0.0009	0.026	0.005	0.00015	bdl	<0.01	bdl	0.0006	0.06
FF223	AY-ME-HS-02	Living room window sill	µg/cm ²	0.01	0.024	0.001	0.0023	0.222	0.133	0.00058	bdl	<0.01	bdl	0.0008	0.22
FF240	AH-HS-01	Kitchen floor	µg/cm ²	bdl	0.003	bdl	0.0006	0.013	bdl	0.00006	bdl	<0.01	bdl	bdl	0.11
FF240	AH-HS-02	Circle room window sill	µg/cm ²	0.01	0.007	0.002	0.0033	0.156	0.024	0.00032	bdl	<0.01	bdl	0.0008	0.16
(FF240)	AI-HS-01	Play area north at fridge	µg/cm ²	bdl	0.002	bdl	0.0008	0.011	bdl	0.00004	bdl	<0.01	bdl	bdl	0.23
(FF240)	AJ-HS-01	Lunch room 2nd floor	µg/cm ²	bdl	0.003	bdl	<0.0006	0.008	bdl	bdl	bdl	<0.01	bdl	bdl	0.09
(FF240)	AJ-HS-02	Kindergarden window	µg/cm ²	bdl	0.005	bdl	0.0008	0.018	bdl	0.00005	bdl	<0.01	bdl	bdl	0.05
FF240	AJ--HS-03	Gym floor	µg/cm ²	bdl	0.008	bdl	0.0008	0.041	0.011	0.00023	bdl	<0.01	bdl	bdl	0.06
FF242	AC-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	0.0006	0.004	bdl	0.00004	bdl	<0.01	bdl	bdl	0.01
FF242	AC-HS-02	Living room window sill	µg/cm ²	0.01	0.002	bdl	0.0031	0.022	bdl	0.00009	bdl	<0.01	bdl	bdl	0.07
FF248	AQ-HS-01	Main level floor at kitchen sink	µg/cm ²	bdl	0.002	bdl	0.0013	0.006	bdl	bdl	bdl	<0.01	bdl	bdl	0.02
FF248	AQ-HS-02	Main level living room window sill	µg/cm ²	bdl	0.005	bdl	0.0021	0.027	bdl	0.00007	bdl	<0.01	bdl	bdl	0.05
FF248	AQ-HS-03	Main level corridor	µg/cm ²	bdl	bdl	bdl	bdl	0.002	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
FF249	Q-HS-01	Kitchen floor	µg/cm ²	bdl	0.007	0.0007	0.0038	0.026	0.010	0.00038	0.004	<0.01	bdl	bdl	0.22
FF249	Q-HS-02	Living room window sill	µg/cm ²	0.02	0.034	0.01	0.0144	0.300	0.059	0.00051	0.01	<0.01	bdl	0.0029	0.82
FF253	Y-HS-01	Kitchen floor	µg/cm ²	bdl	0.009	bdl	0.0010	0.026	bdl	0.00020	bdl	<0.01	bdl	bdl	0.04
FF253	Y-HS-02	Corridor floor	µg/cm ²	bdl	bdl	bdl	bdl	0.002	bdl	0.00004	bdl	<0.01	bdl	bdl	0.01
FF256	A-HS-01	Kitchen floor	µg/cm ²	bdl	0.001	bdl	0.0016	0.011	bdl	0.00005	bdl	<0.01	bdl	bdl	0.02
FF256	A-HS-02	Bathroom window sill	µg/cm ²	0.04	0.02	0.013	0.0056	1.100	0.074	0.00038	0.0	<0.01	bdl	0.0029	0.83
FF259	BC-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	0.006	bdl	0.00004	bdl	<0.01	bdl	bdl	0.01
FF259	BC-HS-02	Kitchen window sill	µg/cm ²	bdl	0.002	0.0006	bdl	0.048	0.005	0.00030	bdl	<0.01	bdl	bdl	0.07
FF259	BC-HS-03	Bathroom window sill	µg/cm ²	0.01	0.005	0.001	0.0012	0.122	0.007	0.00088	bdl	<0.01	bdl	bdl	0.15
FF261	L-HS-01	Kitchen floor	µg/cm ²	bdl	0.006	0.0005	0.0014	0.017	0.006	0.00008	bdl	<0.01	bdl	bdl	0.03
FF261	L-HS-02	Bedroom floor	µg/cm ²	bdl	bdl	bdl	bdl	0.002	bdl	0.00066	bdl	<0.01	bdl	bdl	0.00
FF261	L-HS-03	Living room window sill	µg/cm ²	0.03	0.033	0.007	0.0091	0.733	0.054	bdl	0.006	<0.01	bdl	bdl	0.64
FF266	I-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	0.004	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
FF266	I-HS-02	Rear entrance window sill	µg/cm ²	bdl	0.005	0.0004	0.0009	0.030	bdl	0.00248	bdl	<0.01	bdl	bdl	0.03
FF270	X-HS-01	Kitchen floor	µg/cm ²	bdl	0.002	0.0003	bdl	0.026	bdl	0.00014	bdl	<0.01	bdl	bdl	0.02
FF270	X-HS-02	Living room window sill	µg/cm ²	bdl	0.005	0.0007	0.0010	0.054	0.003	0.00019	bdl	<0.01	bdl	bdl	0.04
FF270	X-HS-03	Corridor	µg/cm ²	0.03	0.004	0.0010	0.0013	0.051	0.006	0.00021	bdl	<0.01	bdl	bdl	0.05
none	C-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	0.0006	0.005	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
none	C-HS-02	Main corridor	µg/cm ²	bdl	bdl	bdl	bdl	0.003	bdl	bdl	bdl	<0.01	bdl	bdl	0.00
none	C-HS-03	Kitchen window sill	µg/cm ²	bdl	0.002	0.0011	0.0006	0.101	0.007	bdl	bdl	<0.01	bdl	bdl	0.18
none	D-HS-01	Kitchen floor	µg/cm ²	bdl	0.001	0.0006	0.0016	0.006	bdl	0.00009	bdl	<0.01	bdl	bdl	0.02
none	D-HS-02	Dining room window sill	µg/cm ²	0.09	0.052	0.01	0.0156	1.556	0.256	0.01360	0.008	0.01	bdl	0.0110	2.33
none	E-HS-01	Kitchen floor	µg/cm ²	bdl	0.007	bdl	0.0014	0.017	0.004	0.00017	bdl	<0.01	bdl	bdl	0.03
none	E-HS-02	Kitchen window sill	µg/cm ²	0.02	0.016	0.009	0.0041	0.889	0.046	0.00471	bdl	<0.01	bdl	0.0029	0.69
none	N-HS-01	Room 118 window sill	µg/cm ²	bdl	0.006	0.0007	0.0032	0.027	0.007	0.00017	0.008	<0.01	bdl	bdl	0.12
none	N-HS-02	Room 118 top shelf	µg/cm ²	bdl	0.017	0.001	0.0089	0.076	0.021	0.00087	0.006	<0.01	bdl	0.0020	0.36
none	N-HS-03	Music room floor	µg/cm ²	bdl	0.005	bdl	0.0018	0.009	bdl	0.00013	bdl	<0.01	bdl	bdl	0.13
none	N-HS-04	Gym mezzanine	µg/cm ²	0.02	0.189	0.006	0.0322	0.278	0.081	0.01620	bdl	<0.01	0.004	bdl	0.95
none	N-HS-05	Rom 201 window sill	µg/cm ²	bdl	bdl	bdl	bdl	0.003	bdl	0.00166	bdl	<0.01	bdl	bdl	0.02
none	N-HS-06	Room 201 top of fridge	µg/cm ²	bdl	0.003	bdl	0.0012	0.017	bdl	0.00021	bdl	<0.01	bdl	bdl	0.07
none	W-HS-01	Kitchen floor	µg/cm ²	bdl	0.004	0.0004	0.0006	0.021	bdl	bdl	bdl	<0.01	bdl	bdl	0.02
none	W-HS-02	Family room window sill	µg/cm ²	bdl	bdl	bdl	bdl	0.003	bdl	0.00857	bdl	<0.01	bdl	bdl	0.00
none	AF-HS-01	Kitchen floor	µg/cm ²	bdl	0.001	0.0004	0.0006	0.012	bdl	0.00007	bdl	<0.01	bdl	bdl	0.03
none	AF-HS-02	Kitchen floor	µg/cm ²	bdl	0.002	0.0005	0.0009	0.024	bdl	0.00008	bdl	<0.01	bdl	bdl	0.06
none	AS-HS-01	Living room window sill	µg/cm ²	bdl	bdl	bdl	bdl	0.003	bdl	0.00053	bdl	<0.01	bdl	bdl	0.01
none	AS-HS-02	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	<0.01	bdl	bdl	0.00
none	AT-HS-01	Science classroom	µg/cm ²	bdl	0.010	0.007	0.0017	0.107	0.006	0.00073	0.004	<0.01	bdl	bdl	0.10
none	AT-HS-02	Staircase	µg/cm ²	bdl	0.004	bdl	0.0016	0.020	bdl	0.00028	bdl	<0.01	bdl	bdl	0.06
none	AT-HS-03	Kitchen floor	µg/cm ²	bdl	0.006	0.0005	0.0022	0.019	bdl	0.00006	bdl	<0.01	bdl	0.0016	0.12
none	AT-HS-04	Ground level entrance	µg/cm ²	bdl	0.008	bdl	0.0019	0.017	bdl	0.00011	bdl	<0.01	bdl	bdl	0.09
none	AT-HS-05	Classroom	µg/cm ²	bdl	0.008	0.001	0.0011	0.083	0.006	0.00042	bdl	<0.01	bdl	bdl	0.10
none	AU-HS-01	Living room window sill	µg/cm ²	bdl	0.005	0.003	0.0016	0.060	0.006	0.00009	0.01	<0.01	bdl	bdl	0.15
none	AU-HS-02	Kitchen floor	µg/cm ²	bdl	0.002	<0.0003	bdl	0.005	bdl	<0.00003	bdl	<0.01	bdl	bdl	0.01
none	BB-HS-01	Gym entrance floor	µg/cm ²	bdl	0.006	bdl	0.0019	0.021	0.006	0.00018	bdl	<0.01	bdl	0.0008	0.08
none	BB-HS-02	Cafeteria kitchen floor	µg/cm ²	bdl	0.002	0.0006	0.0010	0.012	bdl	0.00017	bdl	<0.01	bdl	bdl	0.09

(A) US HUD/EPA floor guideline
(B) US HUD/EPA windowsill guideline

0.043 (A)
0.269 (B)

analytical detection limit
bdl = below detection limit

µg/cm ²	<0.01	<0.001	<0.0003	<0.0006	<0.001	<0.003	<0.00003	<0.001	<0.001	<0.001	<0.0006	<0.01
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Table 7-West Flin Flon Hard Surface Dust

Soil Sample IDs	Sample ID	Sample Location	Units	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Thallium (Tl)	Vanadium (V)	Zinc (Zn)
FF302	AV-HS-01	Corridor	µg/cm ²	0.01	0.006	0.0010	0.0028	0.122	0.006	0.00012	0.01	<0.01	bdl	0.0008	0.14
FF302	AV-HS-02	Kitchen	µg/cm ²	bdl	0.003	0.0005	0.0010	0.008	bdl	0.00004	bdl	<0.01	bdl	bdl	0.02
FF306	R-HS-01	Play room window sill	µg/cm ²	bdl	0.006	0.001	0.0007	0.076	0.008	0.00011	bdl	<0.01	bdl	0.0006	0.10
FF306	R-HS-02	Main level living room window	µg/cm ²	0.01	0.006	0.002	0.0017	0.167	0.013	0.00009	bdl	<0.01	bdl	0.0009	0.25
FF306	R-HS-03	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	bdl	bdl	0.00005	bdl	<0.01	bdl	bdl	0.01
FF309	AR-HS-01	Office window sill	µg/cm ²	bdl	0.001	bdl	bdl	0.003	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
FF309	AR-HS-02	Living room window sill	µg/cm ²	0.02	0.007	bdl	0.0020	0.020	0.005	0.00011	bdl	<0.01	bdl	bdl	0.03
FF309	AR-HS-03	Kitchen floor	µg/cm ²	bdl	bdl	bdl	0.0010	0.005	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
FF315	AG-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	0.001	bdl	bdl	bdl	<0.01	bdl	bdl	0.00
FF315	AG-HS-02	Kitchen window sill	µg/cm ²	bdl	0.002	bdl	0.0007	0.010	bdl	0.00009	bdl	<0.01	bdl	bdl	0.09
FF321	O-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	0.005	bdl	0.00005	bdl	<0.01	bdl	bdl	0.01
FF321	O-HS-02	Kitchen window sill	µg/cm ²	0.012	0.002	bdl	0.0009	0.029	bdl	0.00031	bdl	<0.01	bdl	bdl	0.04
FF336	BA-HS-02	Kitchen window sill	µg/cm ²	bdl	0.012	bdl	0.0010	0.016	0.014	0.00011	bdl	<0.01	bdl	bdl	0.04
FF339	AN-HS-01	Lower level living room window sill	µg/cm ²	bdl	0.005	0.001	0.0009	0.043	0.005	0.00004	bdl	<0.01	bdl	bdl	0.04
FF339	AN-HS-02	Main level kitchen floor	µg/cm ²	0.04	0.004	0.001	bdl	0.006	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
FF339	AN-HS-04	Main level living room window sill	µg/cm ²	0.02	0.012	0.001	0.0043	0.178	0.010	0.00045	bdl	<0.01	bdl	0.0016	0.23
FF345	AA-HS-01	Kitchen floor	µg/cm ²	0.09	0.006	0.002	0.0020	0.019	0.004	0.00009	bdl	<0.01	bdl	0.0008	0.05
FF345	AA-HS-02	Living room window sill	µg/cm ²	bdl	0.002	0.001	0.0007	0.008	bdl	0.00005	bdl	<0.01	bdl	bdl	0.02
FF353	M-HS-01	Master bedroom window sill	µg/cm ²	0.02	0.010	0.004	0.0027	0.389	0.028	0.00050	0.004	<0.01	bdl	0.0018	0.33
FF353	M-HS-02	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	0.003	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
FF357	P-HS-01	Main level living room window	µg/cm ²	0.01	0.074	0.002	0.0052	0.189	0.026	0.00087	bdl	<0.01	bdl	0.0008	0.19
FF357	P-HS-02	Kitchen floor	µg/cm ²	bdl	0.001	bdl	0.0014	0.006	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
FF360	J-HS-01	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	<0.001	bdl	0.00004	bdl	<0.01	bdl	bdl	0.00
FF360	J-HS-02	Living room window sill	µg/cm ²	bdl	0.003	bdl	0.0021	0.033	bdl	0.01190	bdl	<0.01	bdl	bdl	0.12
FF363	Z-HS-01	Kitchen floor	µg/cm ²	0.01	0.004	bdl	0.0013	0.034	0.004	0.00021	bdl	<0.01	bdl	bdl	0.09
FF363	Z-HS-02	Bedroom window	µg/cm ²	bdl	0.014	bdl	0.0028	0.023	bdl	0.00011	bdl	<0.01	bdl	0.0008	0.43
FF365	G-HS-01	Kitchen floor	µg/cm ²	bdl	0.001	bdl	bdl	0.008	bdl	0.00006	bdl	<0.01	bdl	bdl	0.01
FF365	G-HS-02	Corridor floor	µg/cm ²	bdl	0.005	0.0004	0.0016	0.028	0.006	0.00008	bdl	<0.01	bdl	bdl	0.04
FF365	G-HS-03	Living room window sill	µg/cm ²	0.01	0.009	0.002	0.0041	0.233	0.021	0.00729	bdl	<0.01	bdl	bdl	0.29
FF366	F-HS-01	Kitchen floor	µg/cm ²	bdl	0.001	0.0004	0.0009	0.009	bdl	0.00007	bdl	<0.01	bdl	bdl	0.02
FF366	F-HS-02	Corridor baseboard heater	µg/cm ²	bdl	0.002	0.0007	0.0020	0.024	0.009	0.00011	bdl	<0.01	0.004	bdl	0.04
FF366	F-HS-03	Sitting room window sill	µg/cm ²	0.02	0.020	0.006	0.0072	0.833	0.064	0.00534	bdl	<0.01	0.004	0.0058	0.61
none	AO-HS-01	Kitchen window sill	µg/cm ²	0.02	0.013	0.004	0.0032	0.933	0.036	0.00192	bdl	<0.01	bdl	0.0012	0.56
none	AO-HS-02	Main living area	µg/cm ²	bdl	bdl	0.0004	0.0011	0.012	bdl	0.00037	bdl	<0.01	bdl	bdl	0.01

(A) US HUD/EPA floor guideline

(B) US HUD/EPA windowsill guideline

0.043 (A)
0.269 (B)

analytical detection limit
bdl = below detection limit

µg/cm ²	<0.01	<0.001	<0.0003	<0.0006	<0.001	<0.003	<0.00003	<0.001	<0.001	<0.001	<0.0006	<0.01
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Table 8-Channing Hard Surface Dust

Soil Sample IDs	Sample ID	Sample Location	Units	Arsenic (As)	Barium (Ba)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Selenium (Se)	Thallium (Tl)	Vanadium (V)	Zinc (Zn)
FF401	V-HS-01	Kitchen floor	µg/cm ²	bdl	0.001	bdl	bdl	0.004	bdl	bdl	bdl	<0.01	bdl	bdl	0.01
FF401	V-HS-02	Computer room window sill	µg/cm ²	bdl	0.006	0.0007	0.0029	0.043	0.005	0.00014	0.004	<0.01	bdl	0.0008	0.04
FF402	BE-HS-01	Front entrance vestibule floor	µg/cm ²	bdl	0.002	0.0007	bdl	0.009	bdl	bdl	bdl	<0.01	bdl	bdl	0.02
FF402	BE-HS-02	Kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	0.003	bdl	0.00005	bdl	<0.01	bdl	bdl	0.01
FF402	BE-HS-03	Living room window sill	µg/cm ²	0.01	0.014	0.003	0.0050	0.156	0.060	0.01780	bdl	<0.01	bdl	0.0022	0.71
FF404	AP-HS-01	Main level living room window sill	µg/cm ²	bdl	0.005	bdl	0.0014	0.029	bdl	0.00021	bdl	<0.01	bdl	bdl	0.09
FF404	AP-HS-02	Main level kitchen floor	µg/cm ²	bdl	bdl	bdl	bdl	0.002	bdl	bdl	bdl	<0.01	bdl	bdl	0.01

(A) US HUD/EPA floor guideline

(B) US HUD/EPA windowsill guideline

0.043 (A)

0.269 (B)

analytical detection limit
bdl = below detection limit

µg/cm ²	<0.01	<0.001	<0.0003	<0.0006	<0.001	<0.003	<0.00003	<0.001	<0.001	<0.001	<0.001	<0.0006	<0.01
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Table 9. Lead Content of Paint Samples

Exceeds 600 ppm*

Exceeds 5,000 ppm**

Dust Sample ID	Lead Concentration in Paint Sample	Sample Location
AL	1000 ppm	Main level wood
AW	1800 ppm	Lower level wall
AB	NLS	NLS
T	NLS	NLS
S	1200 ppm	Basement floor / wall
BD	25000 ppm	Basement on wood
AD	<100 ppm	Basement wall
AK	150 ppm	Main level wood
U	500 ppm	Main level ceiling
B	<100 ppm	Main level wall
AX	1200 ppm	Basement floor
K	1800 ppm	Basement wall
H	NLS	NLS
AY	NLS	NLS
AJ	460 ppm	Boardroom wall
AC	<100 ppm	Basement wall
AQ	1100 ppm	Lower level
Q	130 ppm	Main level on wood
Y	<100 ppm	Family room
A	<100 ppm	Main level wall
BC	360 ppm	Main level wall
L	NLS	NLS
I	NLS	NLS
X	3200 ppm	Basement floor
AF	<2000 ppm	Main level on wood
AH	750 ppm	Circle room window sill
AI	<100 ppm	Ceiling
AS	NLS	NLS
AT	<100 ppm	Classroom 2 wall
AU	NLS	NLS
BB	NLS	NLS
C	NLS	NLS
D	<100 ppm	Basement on wood
E	NLS	NLS
N	<100 ppm	NS
W	NLS	NLS
AV	1600 ppm	Basement wall
R	<100 ppm	Main level on wall

Table 9. Lead Content of Paint Samples		
Exceeds 600 ppm*		
Exceeds 5,000 ppm**		
Dust Sample ID	Lead Concentration in Paint Sample	Sample Location
AR	6000 ppm	Wood staircase
AG	NLS	NLS
O	<400 ppm	Main level on wood
BA	3700 ppm	Main level on wood
AN	<100 ppm	Lower level wall
AA	1700 ppm	Downstairs wall
M	<100 ppm	Main level wood
P	NLS	NLS
J	<300 ppm	Main level wall
Z	<600 ppm	NS
G	<200 ppm	Main level wall
F	NLS	NLS
AO	<100 ppm	Main level wall
V	<200 ppm	NS
BE	<100 ppm	Basement floor
AP	<100 ppm	Living room window sill

Notes:

NLS = No lead sample taken

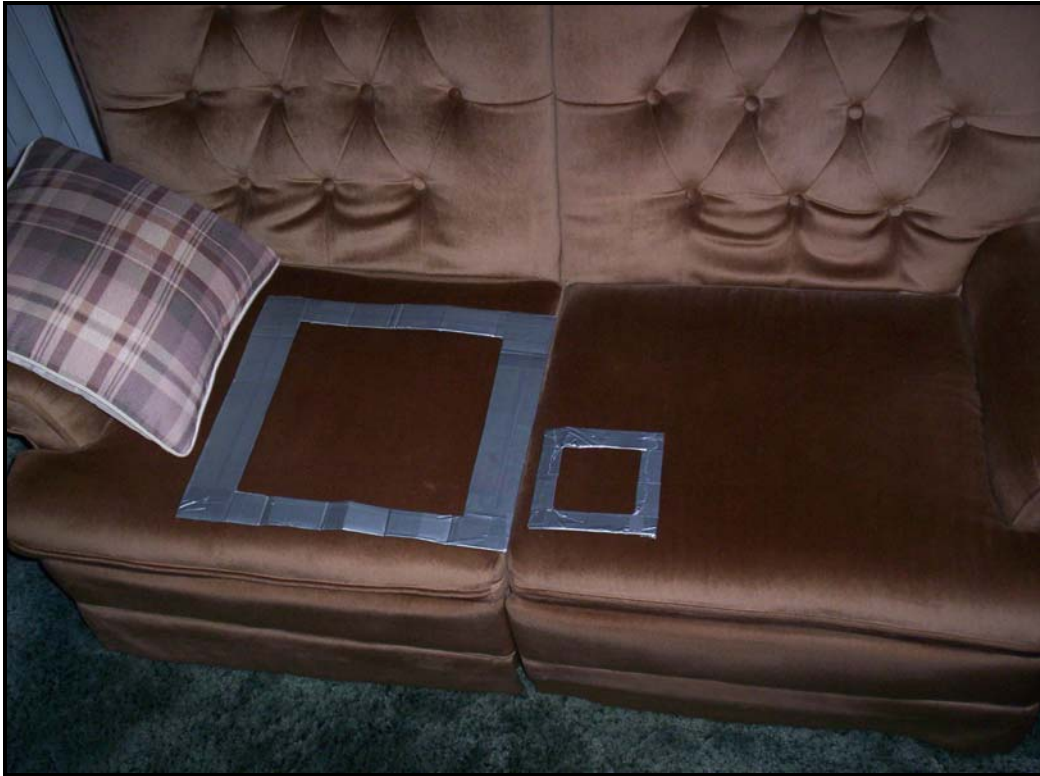
NS = location not specified

*According to the proposed Surface Coating Materials Regulations, April 2005, by Health Canada's Occupational Health and Safety Agency, a paint is considered to be a lead-based paint if the concentration of lead in the paint is equal to or greater than 0.06 percent by weight (weight of lead to weight of paint), which is equivalent to 600 ppm.

**The Hazardous Products Act in Canada and the United States Department of Housing and Urban Development (HUD) have set a criteria of 0.5 % lead (by weight) or 5,000 parts per million (ppm) for determining if a paint application should be considered lead-based. The US Centre for Disease Control (CDC) notes that the 0.5 % level is based on practical, not health concerns, so care must be taken when this criteria is applied.

APPENDIX B

Sample Photographs of Indoor Dust Collection Locations



Fabric surface samples from sofa



Fabric surface samples from carpet



Hard surface samples from floor



Hard surface samples from window sill



Lead in paint chip sample