



CanNorth

Canada North Environmental Services Limited Partnership

A First Nation Environmental Services Company

HUMAN HEALTH RISK ASSESSMENT FOR THE EASTERN ATHABASCA BASIN

Final Report

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EXECUTIVE SUMMARY

Several communities within the Eastern Athabasca Basin in northern Saskatchewan occur downstream of uranium mining and milling operations. The Eastern Athabasca Regional Monitoring Program (EARMP) is a joint, long-term environmental monitoring program established in 2011 under the Province of Saskatchewan's Boreal Watershed Initiative (BWI). One program under the EARMP framework is an on-going community sampling program which has been in place since 2011 to monitor the safety of traditionally harvested country foods by collecting and testing water, fish, berry, and mammal samples from six Athabasca Basin communities: Camsell Portage, Uranium City (includes two community study areas), Fond-du-Lac, Stony Rapids, Black Lake, and Wollaston Lake/Hatchet Lake.

This report presents the results of a human health risk assessment (HHRA) that was conducted using samples collected through EARMP from 2011 to 2017. The assessment evaluated exposure to the residents of each community mentioned above to constituents of potential concern associated with uranium operations that were measured in country foods and surface water, as well as in supermarket foods.

The results of the HHRA indicated that the radiological doses as a result of eating country foods are below the public dose limit and as such are not a concern from a human health perspective. Additionally, non-radiological exposures to residents are similar to those to members of the general Canadian population and are below values that are considered to be protective of health effects and therefore do not represent a cause for concern.

Overall, the results indicate that traditional collecting and eating country foods are safe and do not present health risks to members of the Eastern Athabasca Basin communities.

LIST OF ACRONYMS

ATSDR	Agency for Toxic Substances and Disease Registry
BWI	Boreal Watershed Initiative
COPC	Constituent of Potential Concern
EARMP	Eastern Athabasca Regional Monitoring Program
EPA	Environmental Protection Agency
EPC	Exposure Point Concentration
FAO	Food and Agriculture Organization of the United Nations
FCSAP	Federal Contaminated Sites Action Plan
HHRA	Human Health Risk Assessment
LOAEL	Lowest Observable Adverse Effects Level
MDL	Method Detection Limit
NOAEL	No Observable Adverse Effects Level
TDS	Total Dietary Study
TRV	Toxicity Reference Value
UCLM	Upper Confidence Level of the Mean (95% 1-sided)
WHO	World Health Organization

GLOSSARY

Background	The typical level of a chemical present in naturally occurring or uncontaminated areas.
Benchmark	A standard by which something can be measured or judged.
Cancer	A disease that happens when cells in the body begin to grow and multiply out of control.
Cancer Risk Level	A term used to describe the likelihood that someone will develop cancer over a 70-year lifetime.
Carcinogen	An agent that has the potential to cause cancer.
Cautious	As used in the term cautious estimates, this is considered a pessimistic or an over-estimate of the level, effect or hazard, as the case may be.
Constituent of Potential Concern	A substance that has the potential to alter the natural composition of air, water or soil.
Dose	The amount of a substance to which a person is exposed over some time period. Dose is a measurement of exposure.
Exposure	The amount of a constituent present in a given environment that represents a potential health threat to living organisms.
Exposure Pathway	The path from sources of COPC via air, soil, water, or food to man and other species or settings.
Hazard	Potential for exposure to radiation, or COPC to cause illness or injury to humans or ecological receptors. Hazard identification of a given substance is an informed judgment based on verifiable toxicity data from animal models or human studies.
Toxicity Assessment	Evaluating the effects of a COPC or determining a margin of safety for an organism by comparing the concentration, which causes toxic effects with an estimate of exposure to the organism.
Hepatotoxicity	A general term for liver damage.
Human Health Risk Assessment	The evaluation of whether there is likely to be an adverse health effect caused by the potential exposure to COPC in the environment.
Incremental	Increase in a concentration of some chemical or radionuclide over background conditions as a result of human activities.
Ingestion	Refers to swallowing.
Lifetime receptor	A theoretical person representing all life stages from infant to an adult, which is used to assess the risk of developing cancer. The lifetime receptor is used because often it takes a long time between exposure to a chemical and the development of cancer.

Lowest Observed Adverse Effect Level (LOAEL)	The lowest concentration or amount of a substance, found by experiment or observation, which cause an adverse effect in a target organism distinguishable from normal (control) organisms of the same species and strain.
Negligible	Refers to a level of risk that is not expected to result in an adverse health effect.
No Observed Adverse Effects Level (NOAEL)	The highest tested dose of a substance that has been reported to have no harmful effects on people or animals.
Nephrotoxicity	A general term for kidney damage.
Oral	Refers to the mouth.
Permissible Dose	Considered to be a safe level of exposure as it is the amount of a chemical that someone can be exposed to over a lifetime that does not result in an adverse health effect.
Pathway	The physical course a chemical or pollutant takes from its source to the exposed organism.
Receptor	A human exposed to a COPC released to the environment.
Risk	A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.
Risk Assessment	Qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific COPC.
Safe	Implies low or negligible risk.
Toxicological Reference Value	A value/criterion used to judge whether a predicted exposure may potentially have an adverse effect on human and/or ecological species.
Uncertainty	A quantitative expression of error.

1.0 INTRODUCTION

The Eastern Athabasca Regional Monitoring Program (EARMP) is a joint, long-term environmental monitoring program established in 2011 under the Province of Saskatchewan's Boreal Watershed Initiative (BWI). One of the primary goals of the BWI is to assess the ecological integrity of Saskatchewan's northern watersheds in order to address potential environmental concerns and to identify sustainable management practices in the region. The EARMP framework includes two programs: a community program and a technical program. The EARMP technical program was designed to identify potential cumulative effects downstream of uranium mining and milling operations in the Eastern Athabasca region of northern Saskatchewan (see Figure 1.1).

One program under the EARMP framework is an on-going community sampling program which has been in place since 2011 to monitor the safety of traditionally harvested country foods by collecting and testing water, fish, berry, and mammal samples from the seven communities in the Athabasca region: Black Lake Denesuline First Nation, Fond du Lac Denesuline First Nation, Stony Rapids, Wollaston Lake, Hatchet Lake Denesuline First Nation, Camsell Portage, and Uranium City (see Figure 1.2). The communities of Wollaston Lake and Hatchet Lake Denesuline First Nation are assessed together under the EARMP community program, creating a total of six community study area.

A human health risk assessment (HHRA) was completed in 2013 by SENES Consultants Ltd. (SENES 2013) to estimate potential risks to the residents of the aforementioned Athabasca Basin communities using country foods data collected in 2011 and 2012. Since then more data have been collected including samples of small animals such as spruce grouse and snowshoe hare which were not considered in 2013. This current report serves as an updated HHRA, considering all data in the EARMP program gathered between 2011 and 2017.

Figure 1.1 Athabasca Basin

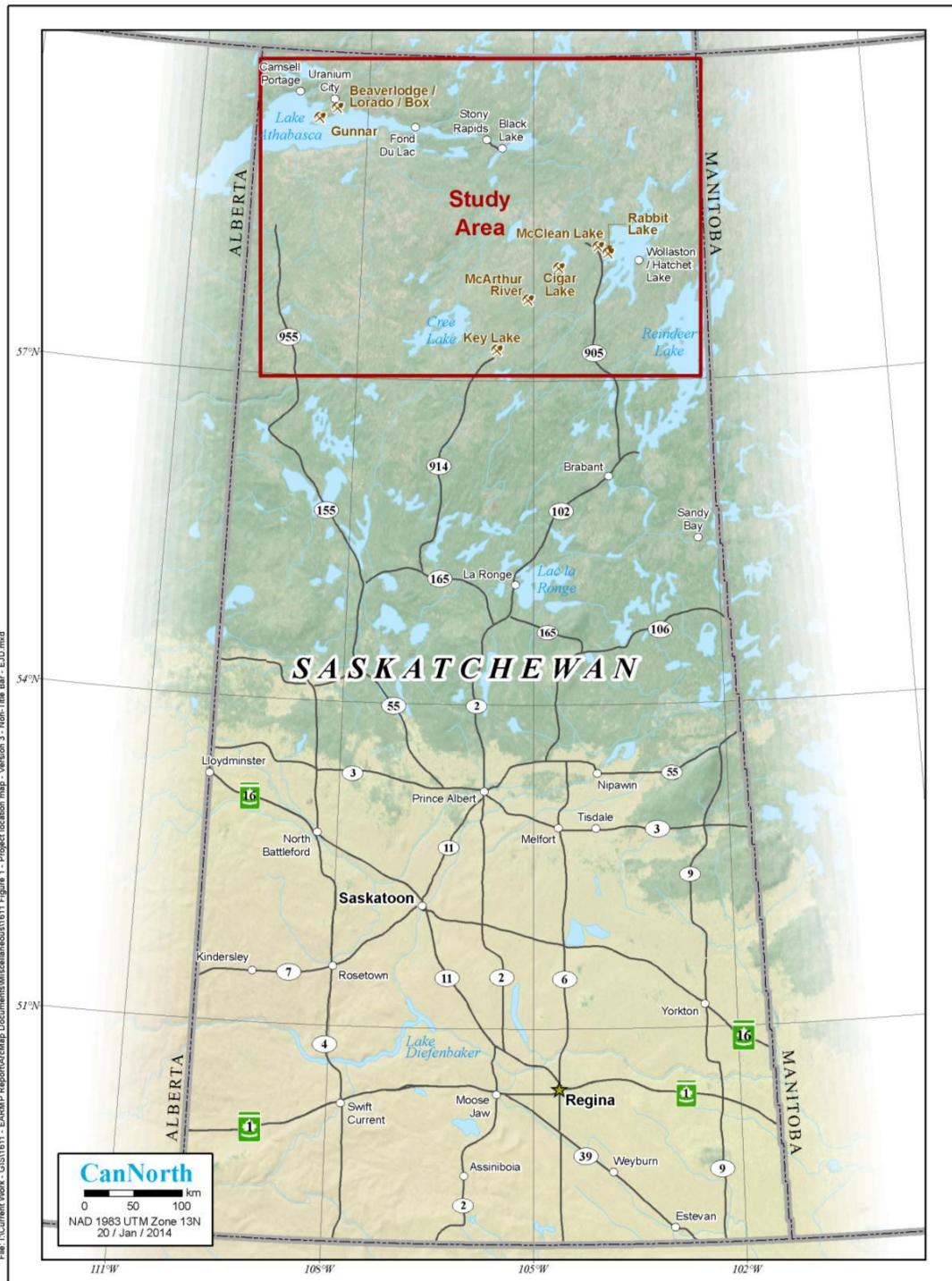
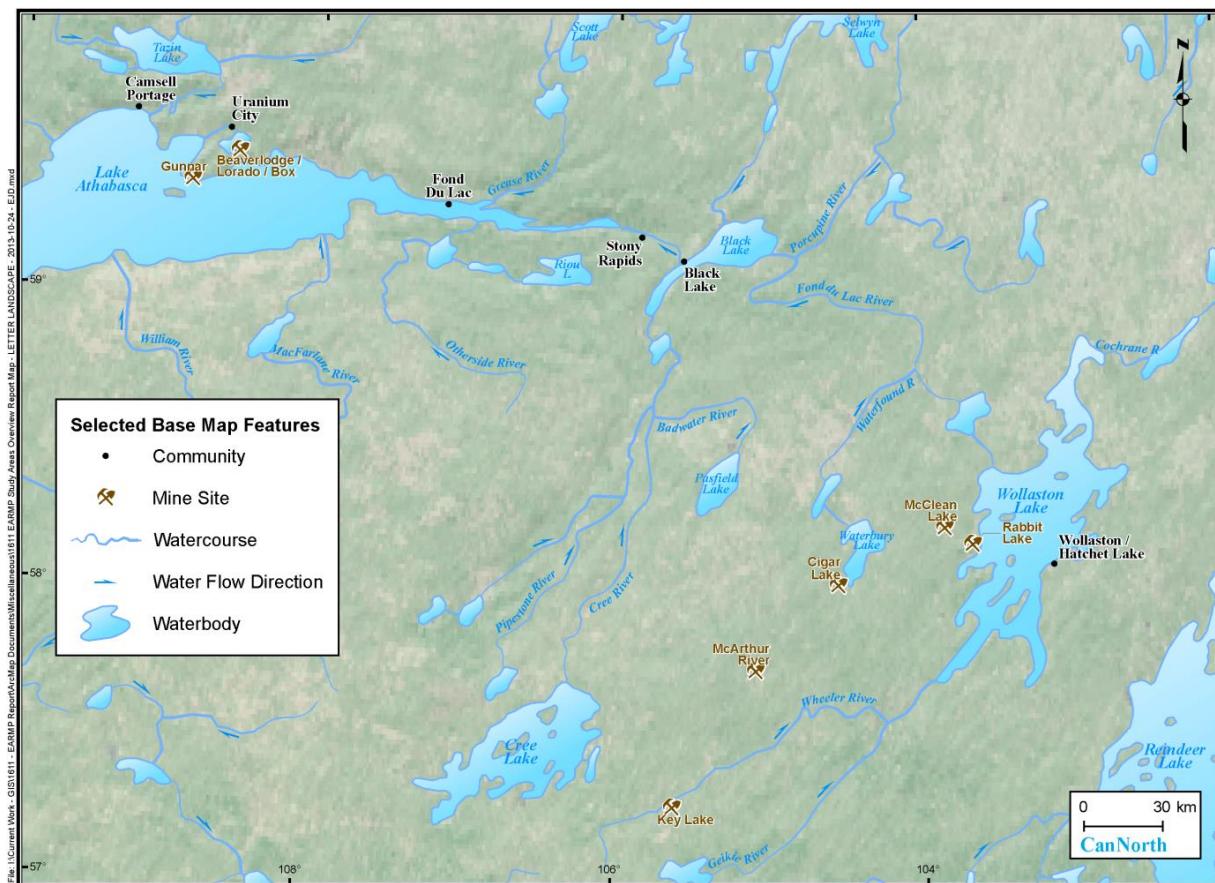


Figure 1.2 Community sampling program study locations

1.1 Definition of a Human Health Risk Assessment

An HHRA is a scientific process used to describe and estimate the likelihood of potential risks (i.e., adverse health effects) to humans resulting from exposure to environmental contaminants (i.e., chemicals). Figure 1.3 demonstrates that HHRA is a stepwise process to answer:

- What are we concerned about? – what are the chemicals and radionuclides of concern.
- Who is being exposed? – what communities and age groups.
- How are they being exposed? – what are the exposure pathways.

All three of these components must be present in order for there to be a risk. It should be noted that a number of chemicals and radionuclides are found naturally in the environment including country foods.

It is also noted that the HHRA does not provide a direct assessment of cause and effect concerning current health problems or effects. Any link between exposure and actual health effects comes from epidemiological studies, which include surveys of health problems in a community, and compares them to health problems in other cities and populations where the same type of exposure does not occur.

Figure 1.3 Schematic of risk assessment process



1.2 Objective

The EARMP community program was developed to address potential concerns about the safety of country foods that community members routinely consume. The objective of the HHRA is to quantify the likely change in exposure and risk for people in the area from exposure to Constituents of Potential Concern (COPC) in country foods obtained from the communities within the Athabasca Basin where uranium mining and milling operations occur.

1.3 Scope of Risk Assessment

Data from the EARMP community program are available for water, fish, berries, large and small mammals, and birds; therefore the HHRA considered exposure from drinking water and eating country food. There are other exposures from air, soil, and dust but these exposures tend to be lower than the water and food ingestion pathways with no distinguishable difference from background exposures, and were not considered. Background exposures from store-bought food were also taken into account in the assessment. The risk assessment relied on a substantial database of available monitoring data from 2011 to 2017, as well as anecdotal information regarding where hunting, trapping, and gathering occur in the Athabasca Basin. The risk assessment followed guidance outlined by Health Canada (2010a, 2012).

Country food intake rates were developed from information collected during the Hatchet Lake and Uranium City community dietary surveys (CanNorth 2000, 2011) and measured concentrations of COPC in the country foods collected during the EARMP community program (2011 to 2017) were used in the HHRA.

The assumptions made in the evaluation were intended to err on the side of caution and therefore likely result in over-estimated intakes. The level of caution in these assumptions is consistent with the approach typically adopted in risk assessments (Health Canada 2012).

2.0 SITE CHARACTERIZATION

The EARMP community program focuses on the collection of country foods from communities established within the Athabasca Basin in northern Saskatchewan. This section provides a brief description of the study areas as well as summaries of the EARMP community program data that were used in the HHRA. All the details are provided in the main report.

2.1 Study Area

The Athabasca Basin in northern Saskatchewan is the only region in the world known to host high grade uranium deposits and, consequently, a number of communities established within the basin are located downstream of uranium mining operations. Active operations in the region shown in Figure 1.2 include the Key Lake, McArthur River, Cigar Lake, Rabbit Lake, and McClean Lake mine sites; although it should be noted that Rabbit Lake has been in care and maintenance since 2016 and production from the McArthur River mining and Key Lake milling operations has been temporarily suspended. In addition, other decommissioned and/or abandoned uranium mine sites are located in the region near the community of Uranium City.

The EARMP community program focused on the communities of Wollaston Lake/Hatchet Lake (considered one area, hereinafter referred to as Wollaston Lake), Black Lake, Stony Rapids, Fond du Lac, Uranium City, and Camsell Portage. The Wollaston Lake and Hatchet Lake Band communities are located adjacent to one another on the eastern shore of Wollaston Lake. The Black Lake, Stony Rapids, and Fond du Lac communities are all located progressively downstream along the Fond du Lac River, which flows from Wollaston Lake to Lake Athabasca. Uranium City is located near the north shore of Lake Athabasca and approximately 8 km west of the decommissioned Beaverlodge Mine Site. Two fish locations were assessed for this location since samples for the EARMP community program were collected from Prospector's Bay of Lake Athabasca as well as the Crackingstone River inlet to Lake Athabasca. The Crackingstone River inlet is sampled for the EARMP technical program that was established to determine whether cumulative effects are occurring in aquatic environments downstream of mining and milling operations; however, the inlet is fished by the community of Uranium City (CanNorth 2014) and thus fish from this location are considered in the HHRA. Camsell Portage is located on the northern shore of Lake

Athabasca, approximately 35 km northwest of Uranium City. It is the most northern and isolated community in Saskatchewan and is considered a background location.

Information on land use by communities in the area is provided by two dietary surveys that have been completed: (1) the Hatchet Lake Dietary Survey (CanNorth 2000) that was completed in 2000 for communities residing around Wollaston Lake; and (2) the Uranium City Country Foods Study (CanNorth 2011) that was completed in 2011 specifically for Uranium City residents.

Barren-ground caribou are hunted from November to March in the general area north of Wollaston Lake towards the border with the Northwest Territories and east over the Manitoba border, while moose are found locally across the regional study area in small numbers and are available year-round. Snowshoe hare and other small mammals are also available locally (CanNorth 2000). Other hunting and gathering activities tend to occur close to nearby lakes and small waterbodies, power lines in the area, and areas easily accessed by roads and corridors. Berries and edible plants are collected in the area.

Wollaston Lake represents the most important fishing area for Hatchet Lake Band members, while Lake Athabasca represents the most important fishing area for Uranium City residents. Other fishing areas include Rabbabou Bay, the Cochrane River, and other various lakes in the area (i.e., Waspion Lake, Kingsley Lake, and Charcoal Lake reported by Hatchet Lake Band members, and Milliken Lake, Donaldson Lake, and Rogers Lake reported by Uranium City residents). The Crackingstone River inlet is also fished by residents of Uranium City, but primarily for Arctic grayling and sucker species which are consumed in small amounts.

2.2 Constituents of Potential Concern

The selection of radiological and non-radiological COPC to carry through the HHRA was based on over 30 years of experience at uranium mine sites in northern Saskatchewan. The COPC are the same as those considered in the previous HHRA (SENES 2013), with the exception of cadmium which has been included in the current HHRA due to its bioaccumulation in moose kidneys. In summary, the COPC considered in this HHRA include arsenic, cadmium, cobalt, copper, lead, molybdenum, nickel, selenium and uranium, as well as the uranium-series radionuclides (lead-210, polonium-210, radium-226, and thorium-230).

2.3 Review of Available Data

Water and country food samples have been collected and analysed as part of the EARMP community program since 2011. Results have been summarized in standalone reports for the 2011/2012 (CanNorth 2014), 2014/2015 (CanNorth 2015), 2015/2016 (CanNorth 2016), and 2016/2017 (CanNorth 2017) monitoring periods. Data from each monitoring period are compared to available guidelines, to levels of constituents measured in country foods collected throughout northern Saskatchewan during other monitoring programs (i.e., regional reference range), and to levels measured in samples from the first two years of collection (2011 and 2012) that are considered to be baseline. The analyses have consistently shown that levels of constituents in country foods are low and have been similar to baseline and regional levels (CanNorth 2014, 2015, 2016, 2017).

The data considered in the assessment from the various sampling programs are summarized in Attachment A and the following sections. All available data collected by EARMP from 2011 to 2017 were considered as this HHRA is an update to the evaluation carried out in 2013 (SENES 2013), although small mammal data collected as part of the Uranium City Country Foods Study (CanNorth 2011; CanNorth and SENES 2013) were also considered. Samples are submitted for analysis for a full suite of constituents for each environmental medium; however, the focus here is on COPC that were identified in Section 2.2). Uranium-238 was not analyzed and thus is not discussed here¹. Concentrations below the method detection limit (MDL) were set equal to one half the MDL.

2.3.1 Large Mammals

Barren-ground caribou and moose flesh and organ samples are available from most locations. However it is noted that people in Camsell Portage and Uranium City primarily eat moose from the local study area whereas people in the other communities consume primarily barren-ground caribou from the Beverly herd.

¹ For the assessment, concentrations of uranium-238 were derived from concentrations of chemical uranium, as discussed in Section 4.2

2.3.1.1 Barren-ground caribou and Moose Flesh

There are enough moose flesh samples to adequately characterize Camsell Portage (N=13) and Uranium City (N=10), and enough barren-ground caribou flesh samples (N=81) to characterize the study area. A summary of the concentrations for each COPC in moose and barren-ground caribou at each location is presented in Figure 2.1. It should be noted that there were five barren-ground caribou samples that had elevated lead concentrations due to the presence of lead shot. These samples were removed from the data set for lead as the flesh sent for analysis represents a small portion of the animal.

There is a large variability shown in the data with measured concentrations spanning several orders of magnitude. Concentrations of COPC in barren-ground caribou flesh are similar among locations, which is expected given that all samples are from the same herd (Beverly). All concentrations of COPC in moose flesh were similar among locations as well as Camsell Portage which is considered to be a background location. A study conducted by Thomas et al. (2005) provided measured concentrations of metals and radionuclides in moose flesh from an established background location (i.e., Meadow Lake in Midwestern Saskatchewan). A comparison of the concentrations from Thomas et al. (2005) to Camsell Portage indicated that concentrations were similar among the background locations. Thorium-230 was generally measured below the MDL.

Figure 2.1 Summary of COPC concentrations in barren-ground caribou and moose flesh

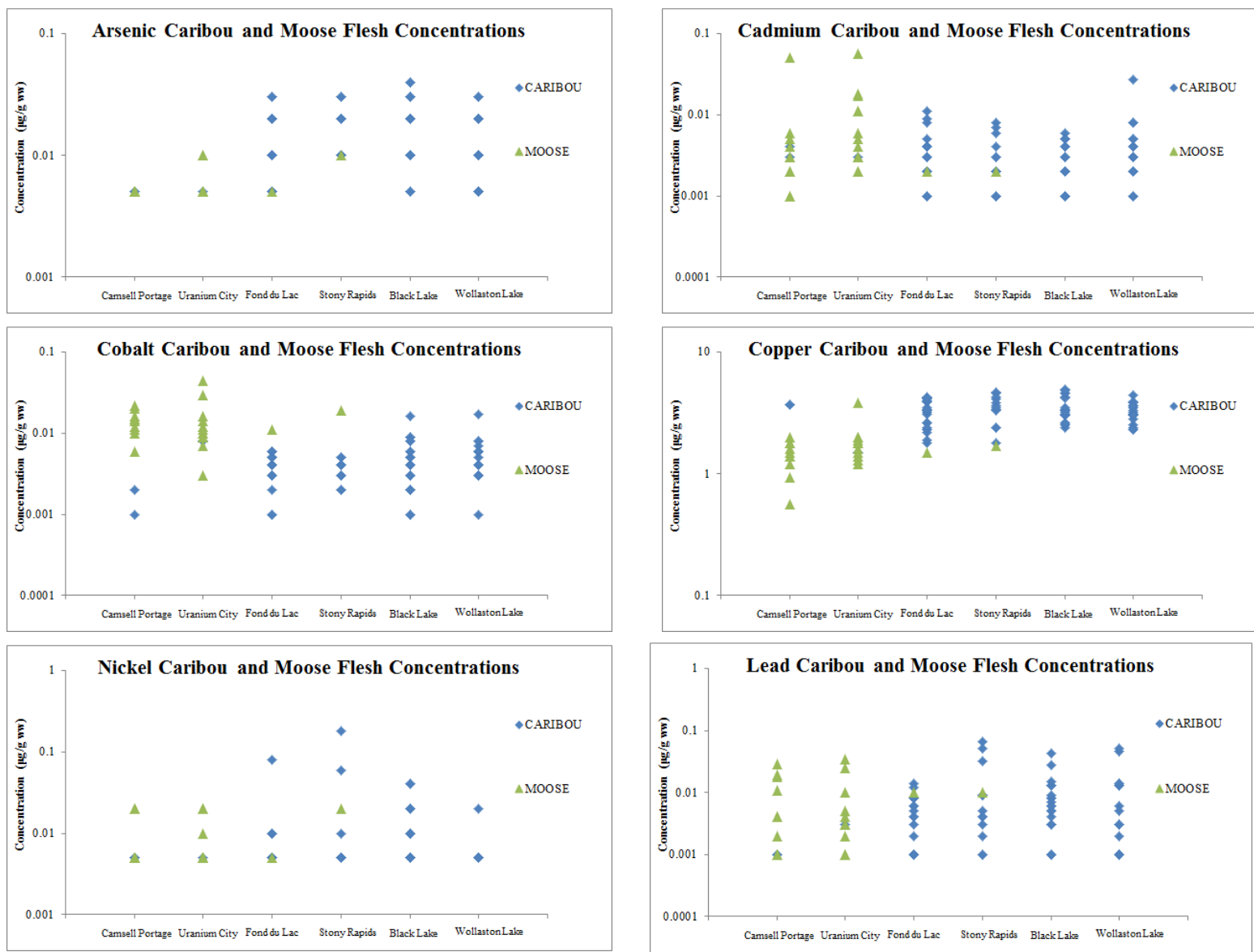


Figure 2.1 Summary of COPC concentrations in barren-ground caribou and moose flesh (Cont'd)

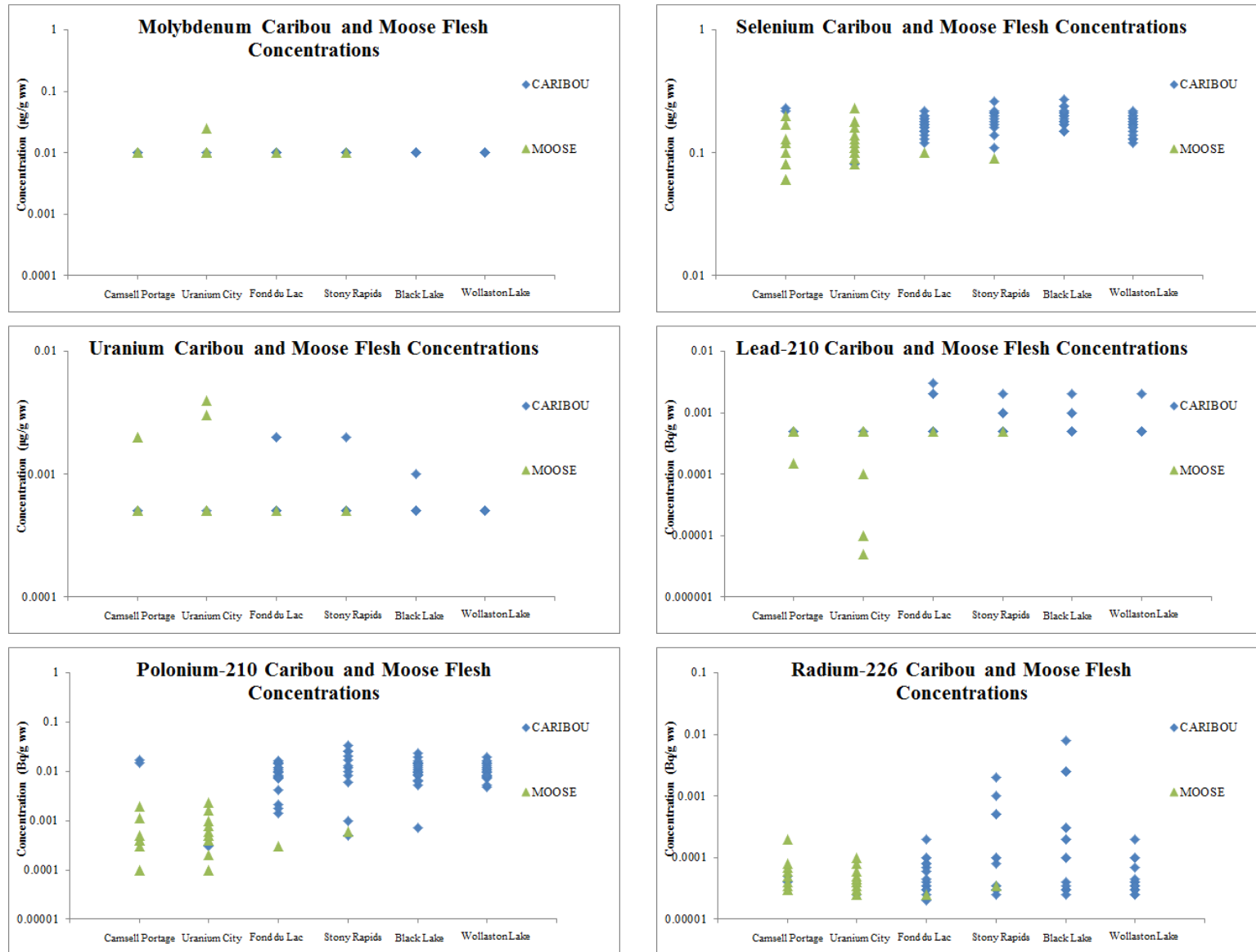
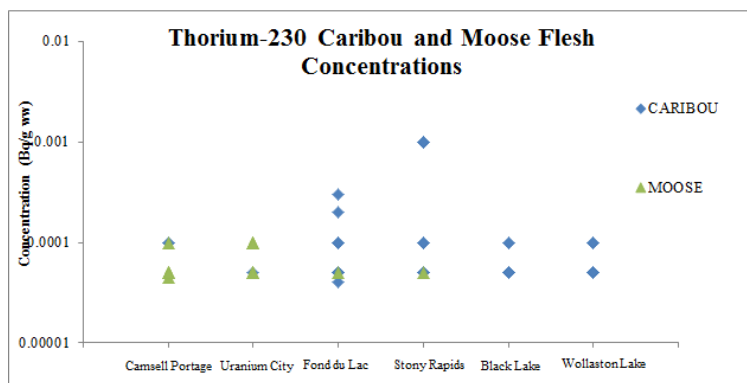


Figure 2.1 Summary of COPC concentrations in barren-ground caribou and moose flesh (Cont'd)



Note: Camsell Portage was considered a background location.

2.3.1.2 Mammal Organs

Mammal organ meats are characterized by barren-ground caribou and moose heart, kidney and liver. A summary of the concentrations in barren-ground caribou and moose organ meats for each COPC at each location is presented in Figure 2.2.

Cadmium concentrations in moose and barren-ground caribou kidneys are elevated compared to heart and flesh. Similarly, lead concentrations in moose kidneys are elevated especially in Fond du Lac. Lead-210 concentrations are similar to concentrations in organs from the Qamanirjuaq herd (see Attachment A). All other COPC in organs were similar to background, therefore an evaluation of cadmium and lead in moose organs and cadmium in barren-ground caribou organs was carried out as described in in Section 6.4. A study conducted by Thomas et al. (2005) provided measured concentrations of uranium and radionuclides in moose kidney and liver from a background location. A comparison of the concentrations from Thomas et al. (2005) to Camsell Portage indicated that concentrations were similar among the background locations.

Figure 2.2 Summary of COPC concentrations in barren-ground caribou and moose organs

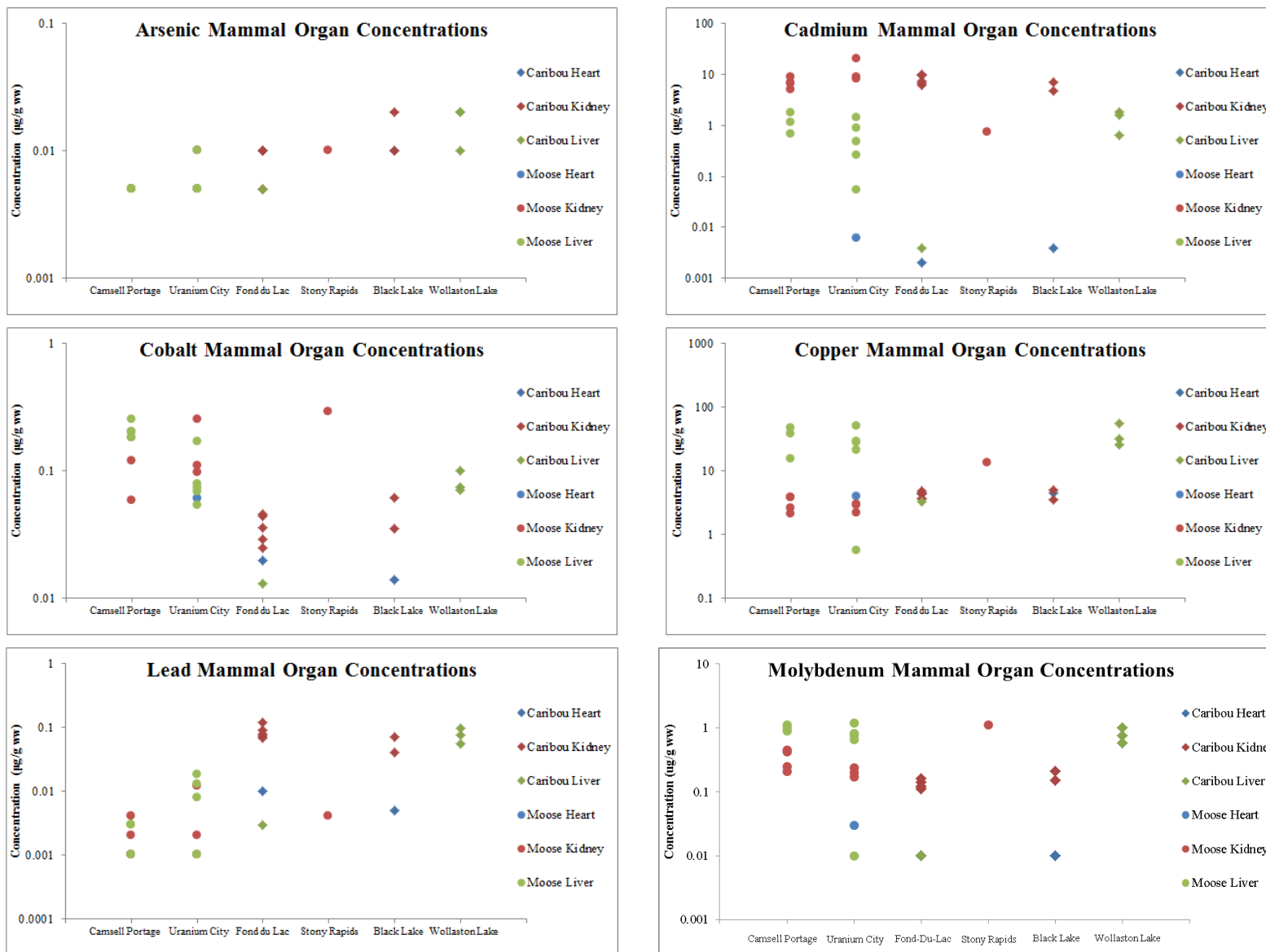


Figure 2.2 Summary of COPC concentrations in barren-ground caribou and moose organs (Cont'd)

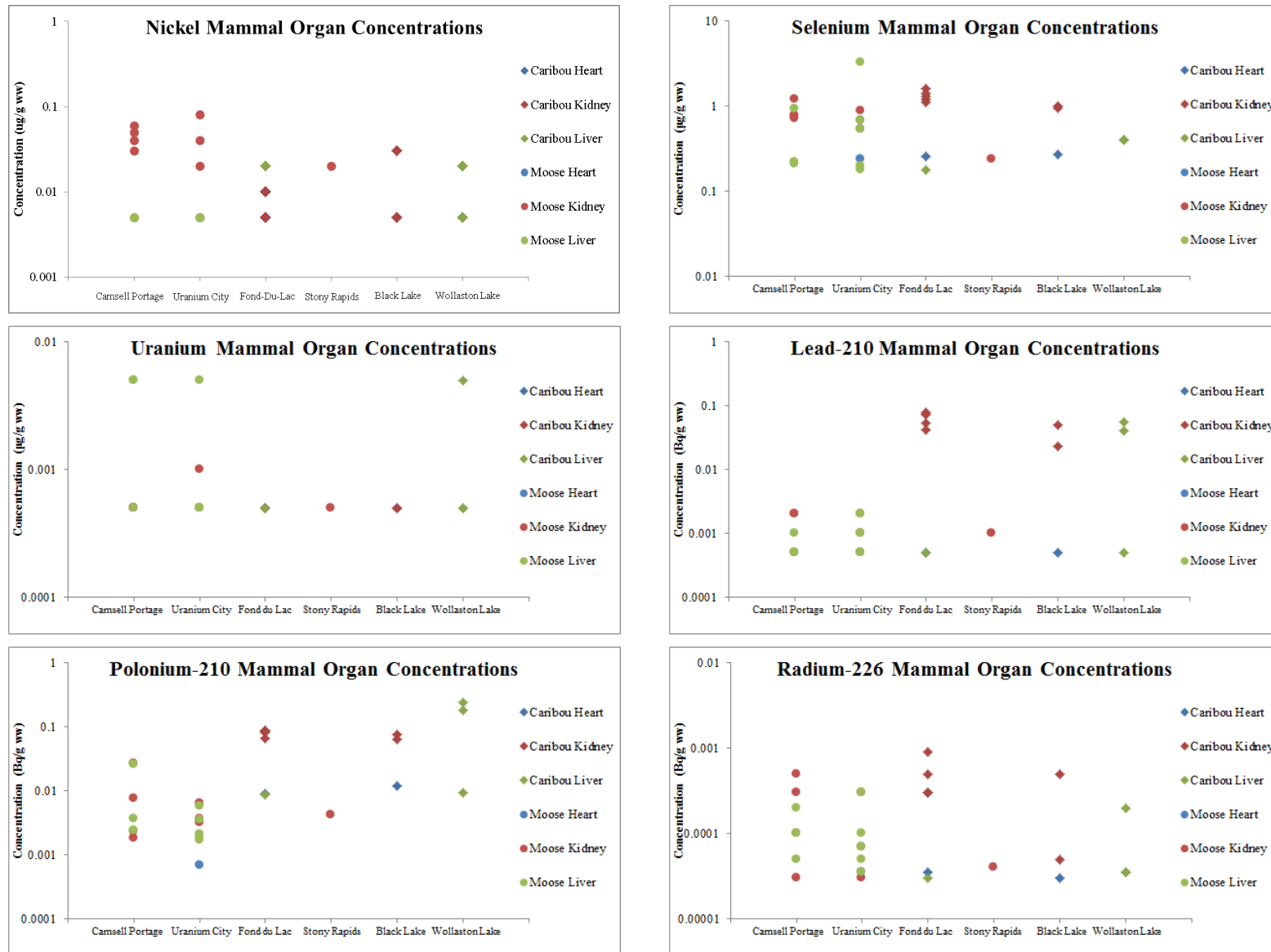
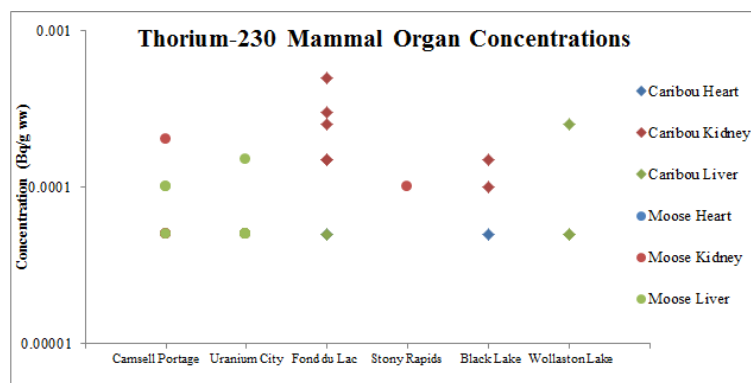


Figure 2.2 Summary of COPC concentrations in barren-ground caribou and moose organs (Cont'd)



Note: Camsell Portage was considered a background location.

2.3.2 Snowshoe Hare

Very few samples of snowshoe hare were available. Generally only three samples were available from most locations, with the exception of Uranium City (N=7) and Camsell Portage (N=8). A summary of the concentrations in snowshoe hare flesh samples for each COPC at each location is presented in Figure 2.3. The figure demonstrates that the COPC concentrations in snowshoe hare are all generally similar to background, with the exception of cadmium concentrations where the mean concentration higher in Stony Rapids than the mean at the background location (Camsell Portage). Similarly, mean selenium concentrations are higher in Black Lake and Fond du Lac than the mean at the background location (Camsell Portage).

Figure 2.3 Summary of COPC concentrations in snowshoe hare flesh

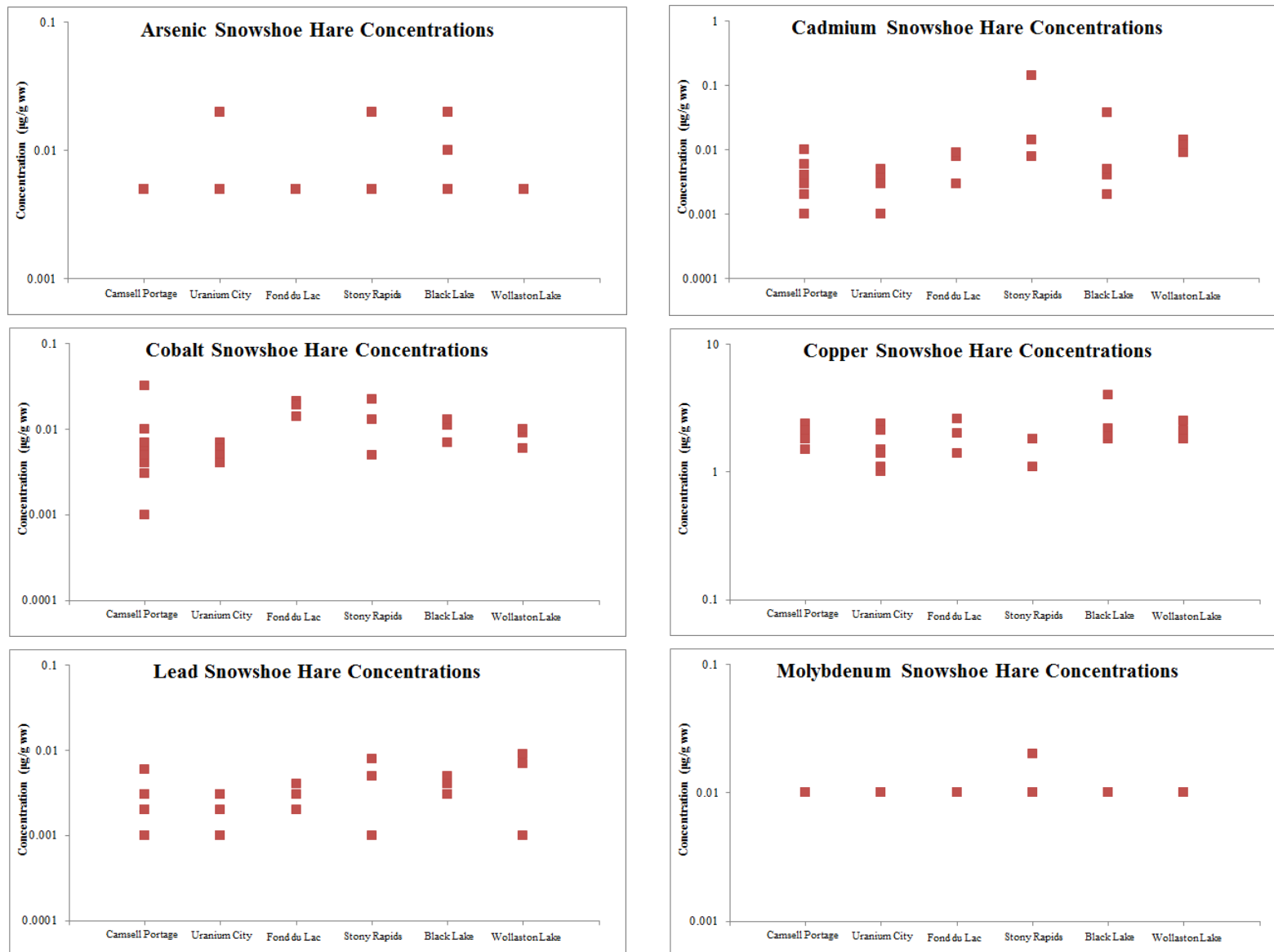


Figure 2.3 Summary of COPC concentrations in snowshoe hare flesh (Cont'd)

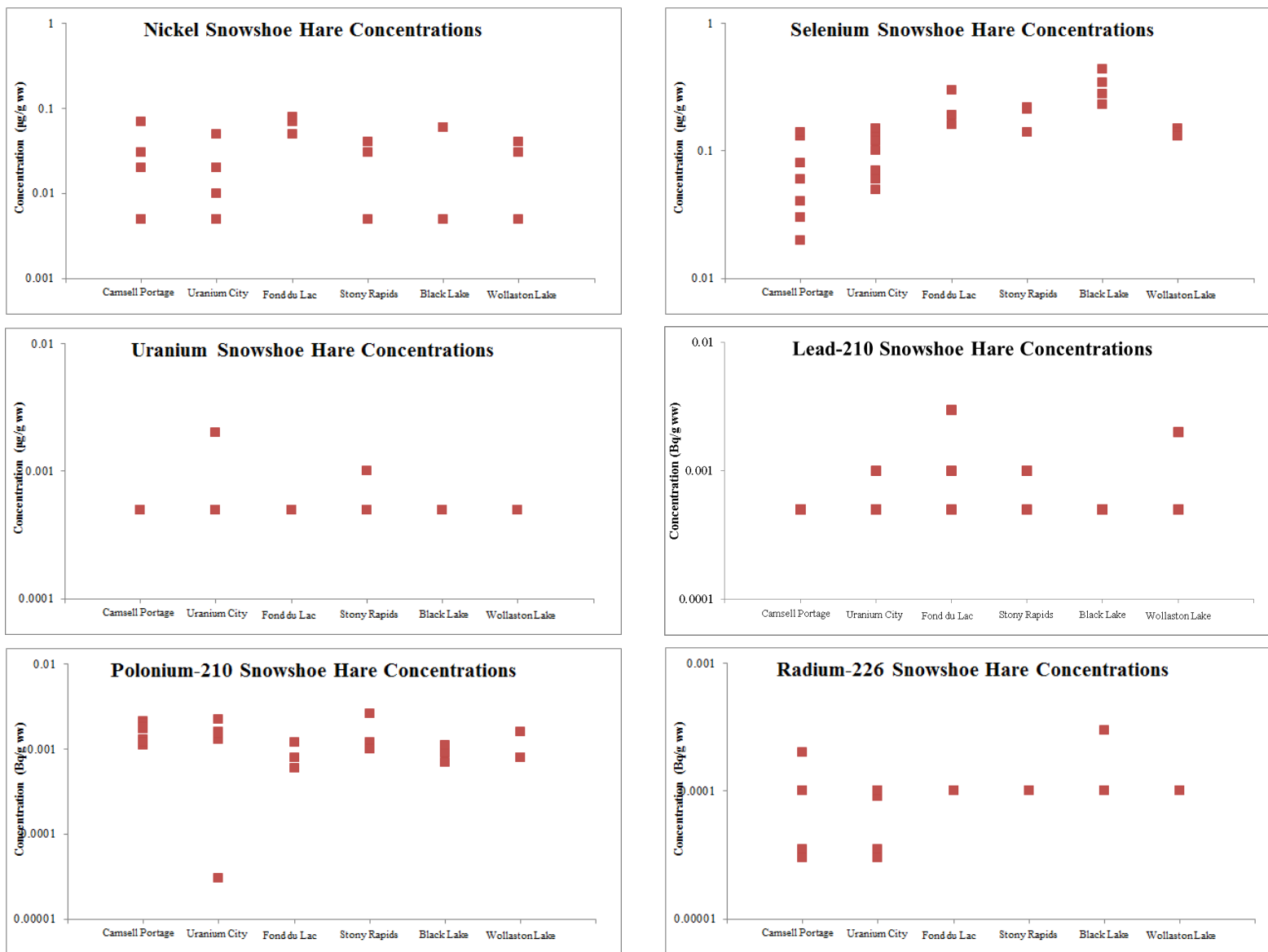
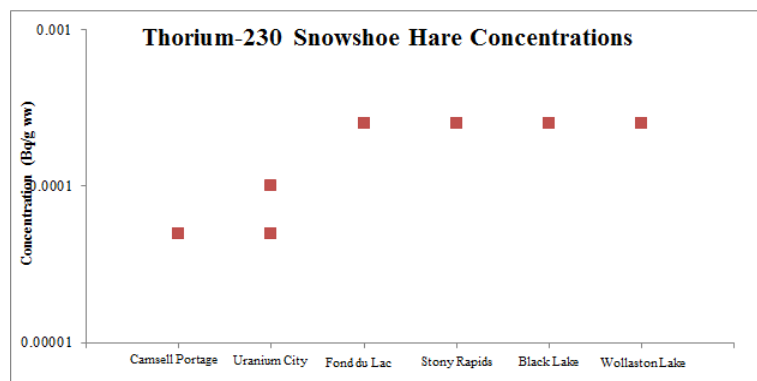


Figure 2.3 Summary of COPC concentrations in snowshoe hare flesh (Cont'd)

Note: Camsell Portage was considered a background location.

2.3.3 Spruce Grouse

Very few samples of spruce grouse were available. Generally only three to five samples were available from most locations, with the exception of Uranium City where there were nine samples. A summary of the concentrations in spruce grouse flesh samples for each COPC at each location is presented in Figure 2.4. Lead-210 was not analyzed in spruce grouse at any location.

The figure demonstrates that the COPC concentrations in spruce grouse are all generally similar to background, with the exception of cobalt concentrations which are higher in Black Lake and selenium, uranium, and radium-226 in Uranium City where in general just one of the samples were higher than background. The figure shows that there are some elevated lead concentrations in spruce grouse in Uranium City, Stony Rapids and Black Lake. These concentrations are reflective of lead shot and were not considered in the assessment.

Figure 2.4 Summary of COPC concentrations in spruce grouse

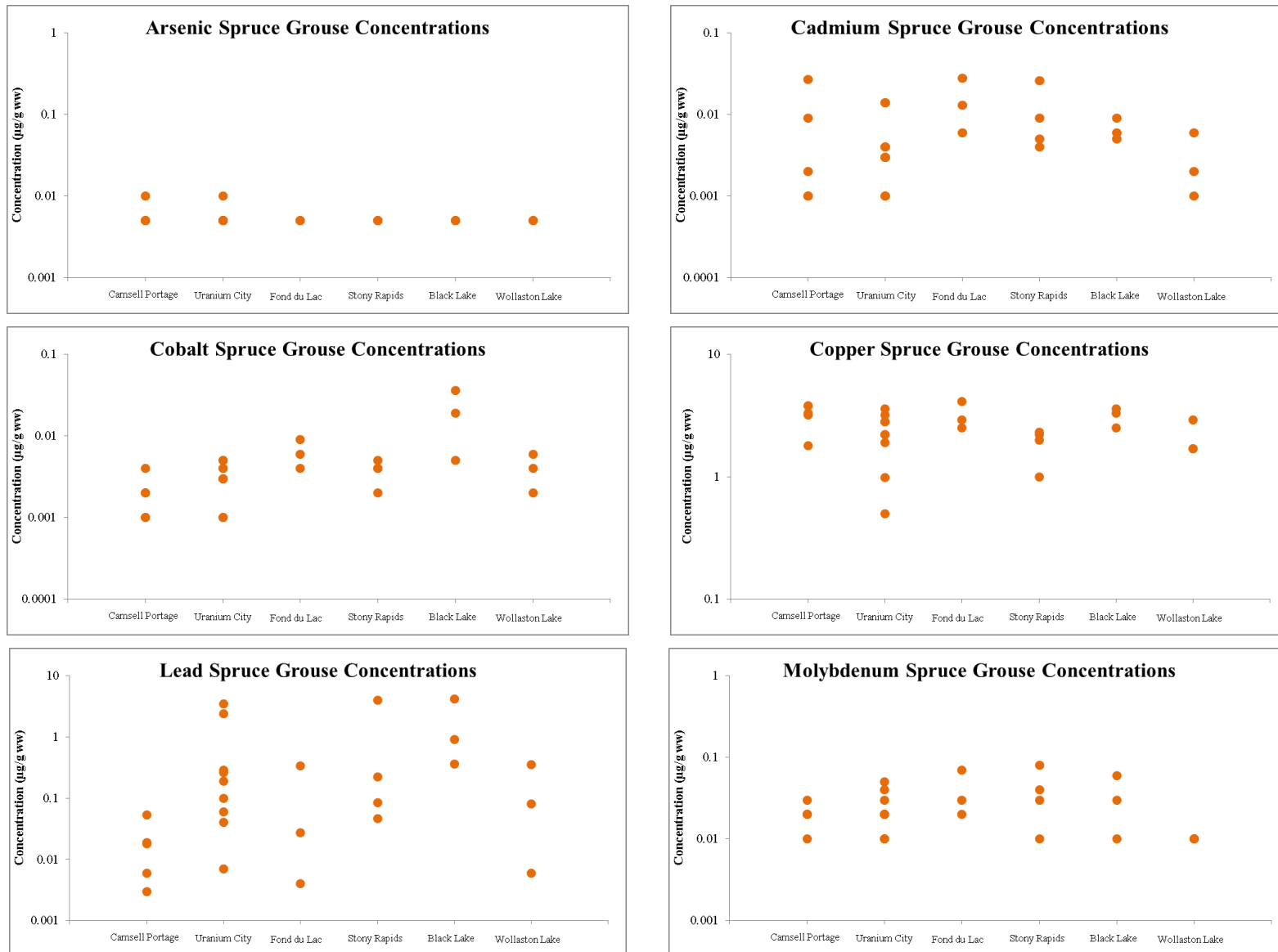
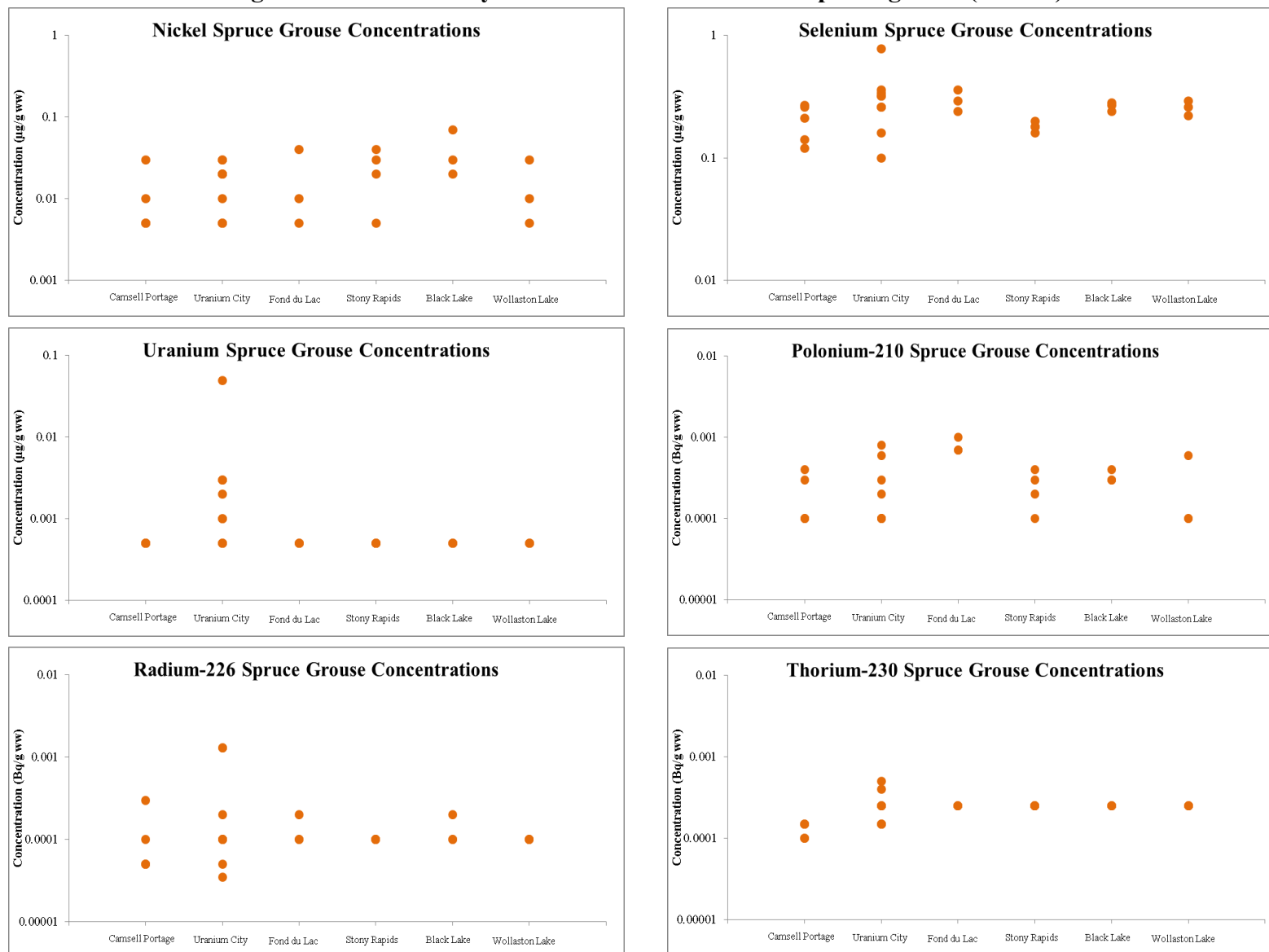


Figure 2.4 Summary of COPC concentrations in spruce grouse (Cont'd)



Note: Camsell Portage was considered a background location.

2.3.4 Berries

Blueberries, cranberries, raspberries, and strawberries were submitted for analysis as a part of the country food program. The majority of samples consisted of blueberries and cranberries. Berry samples were available from all receptor locations with more than 20 samples available from each location. A summary of the concentrations for each COPC at each location is presented in Figure 2.5.

Concentrations of each COPC in berries at exposure locations are similar to background, with the exception of Uranium City where the mean concentrations of most COPC were higher than the background mean concentration. These elevated levels are mainly associated with raspberry samples. Thorium-230 was generally measured below the MDL.

Figure 2.5 Summary of COPC concentrations in berries

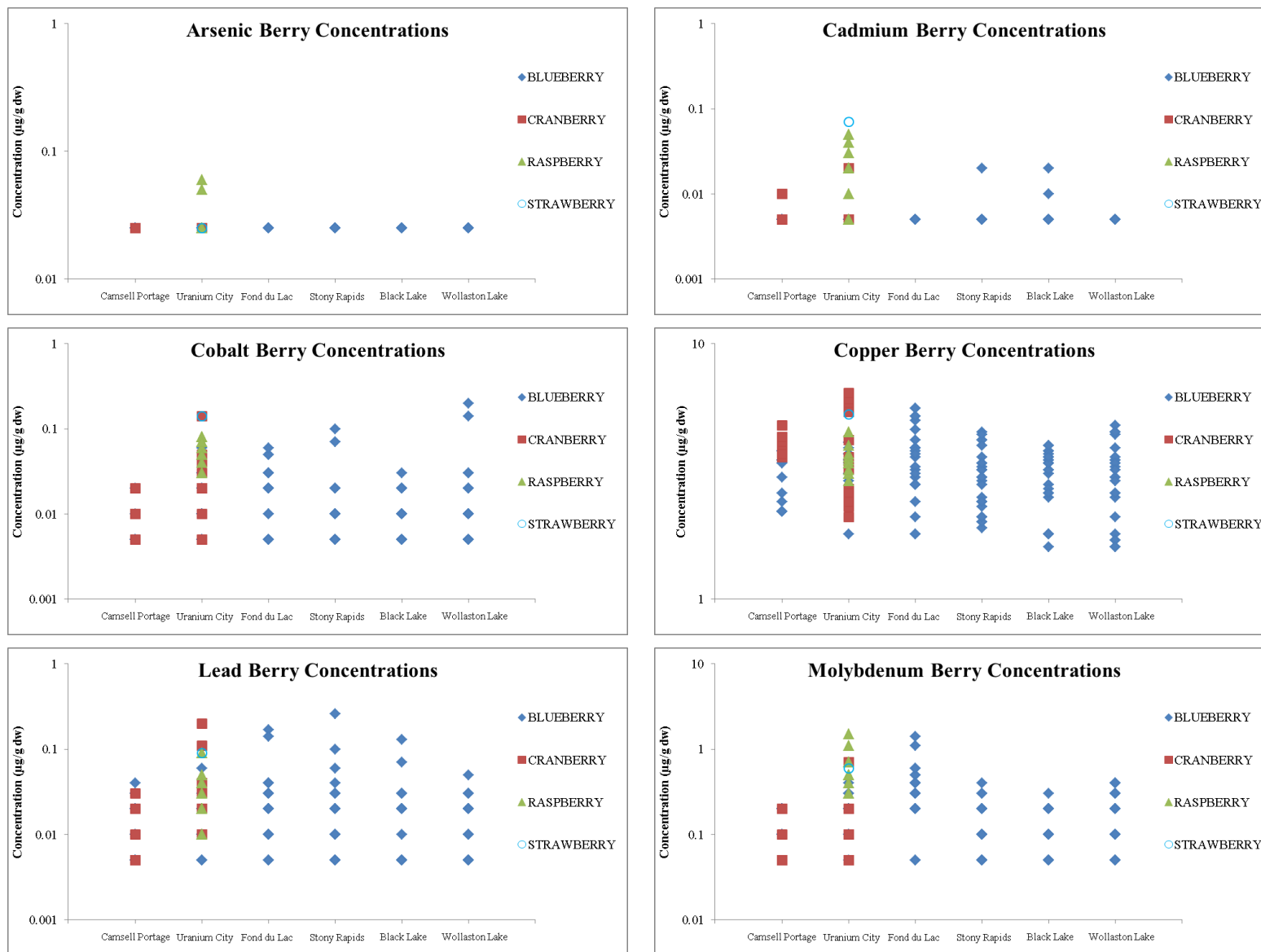


Figure 2.5 Summary of COPC concentrations in berries (Cont'd)

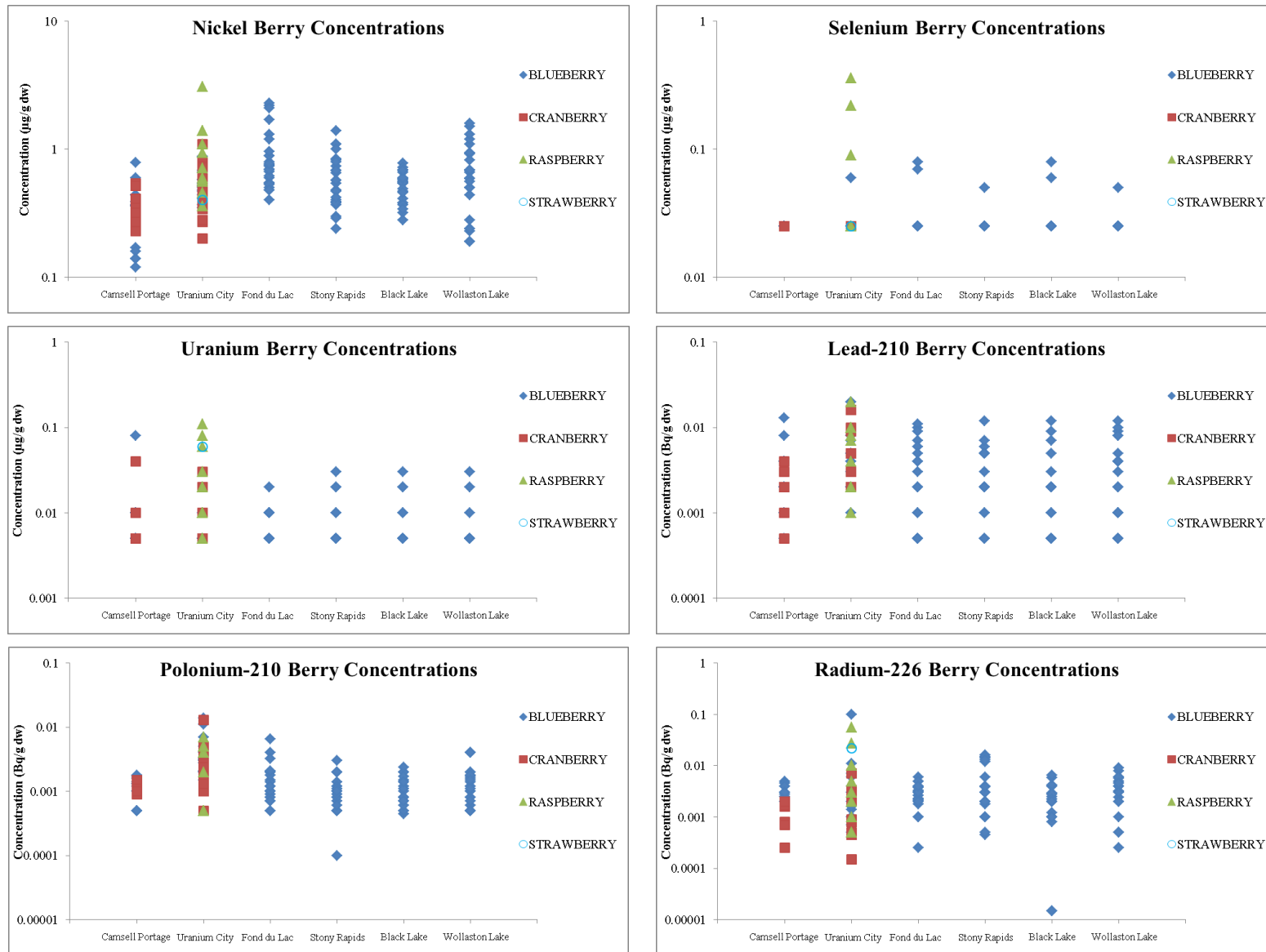
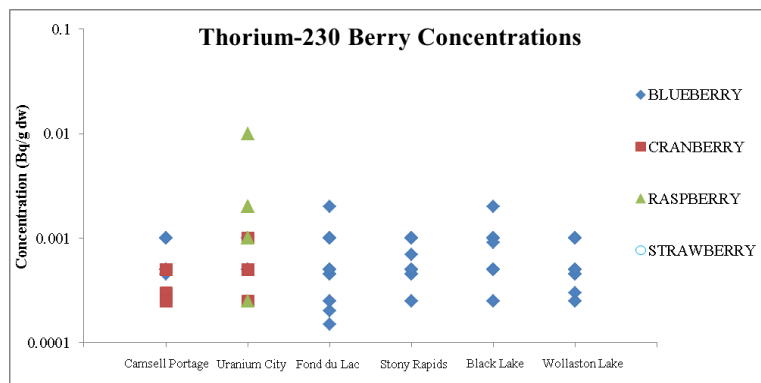


Figure 2.5 Summary of COPC concentrations in berries (Cont'd)



Note: Camsell Portage was considered a background location.

2.3.5 Fish

There are enough samples (generally 23) available from each receptor location to adequately characterize fish flesh concentrations. A summary of the fish flesh concentrations for each COPC at each location is presented in Figure 2.6. For Uranium City, fish were collected at two locations: Prospector's Bay of Lake Athabasca (called Uranium City as it is a community location) and Crackingstone River inlet to Lake Athabasca.

Fish flesh concentrations were characterized by samples of forage fish (lake whitefish) and predator fish (northern pike and lake trout). Concentrations of COPC in lake whitefish were generally higher than in lake trout and northern pike.

Concentrations of most COPC were similar among locations and to background (Camsell Portage), with the exception of mean concentrations of cadmium, selenium, uranium, and polonium-210 at Crackingstone River inlet. Mean polonium-210 fish flesh concentrations were elevated in northern pike at Crackingstone River inlet when compared to mean background concentrations. In addition, mean radium-226 concentrations were higher than mean background concentrations in lake whitefish in Fond du Lac, Black Lake, Stony Rapids, and Wollaston Lake. Thorium-230 concentrations were generally measured below the MDL.

Figure 2.6 Summary of COPC fish flesh concentrations

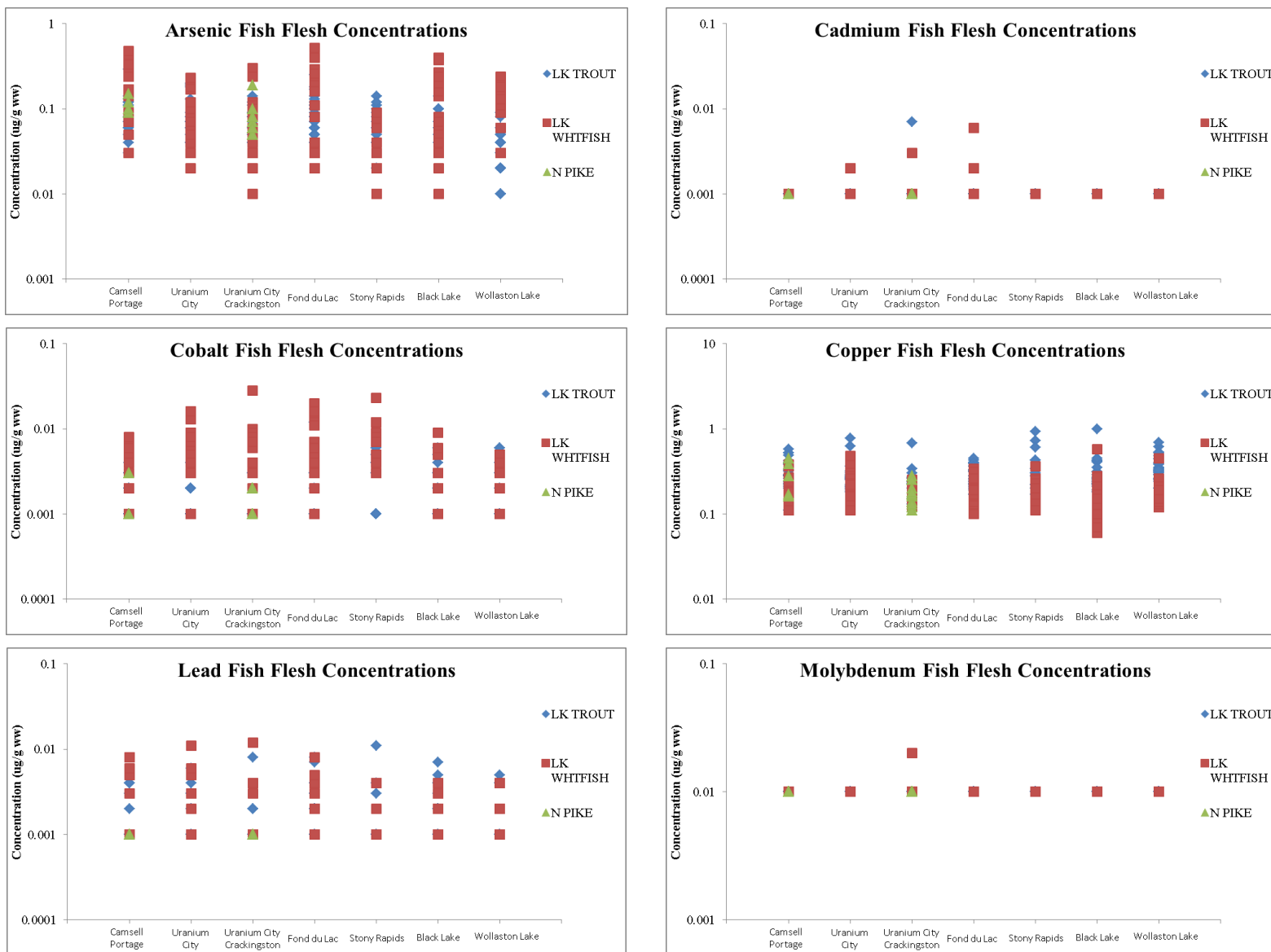


Figure 2.6 Summary of COPC fish flesh concentrations (Cont'd)

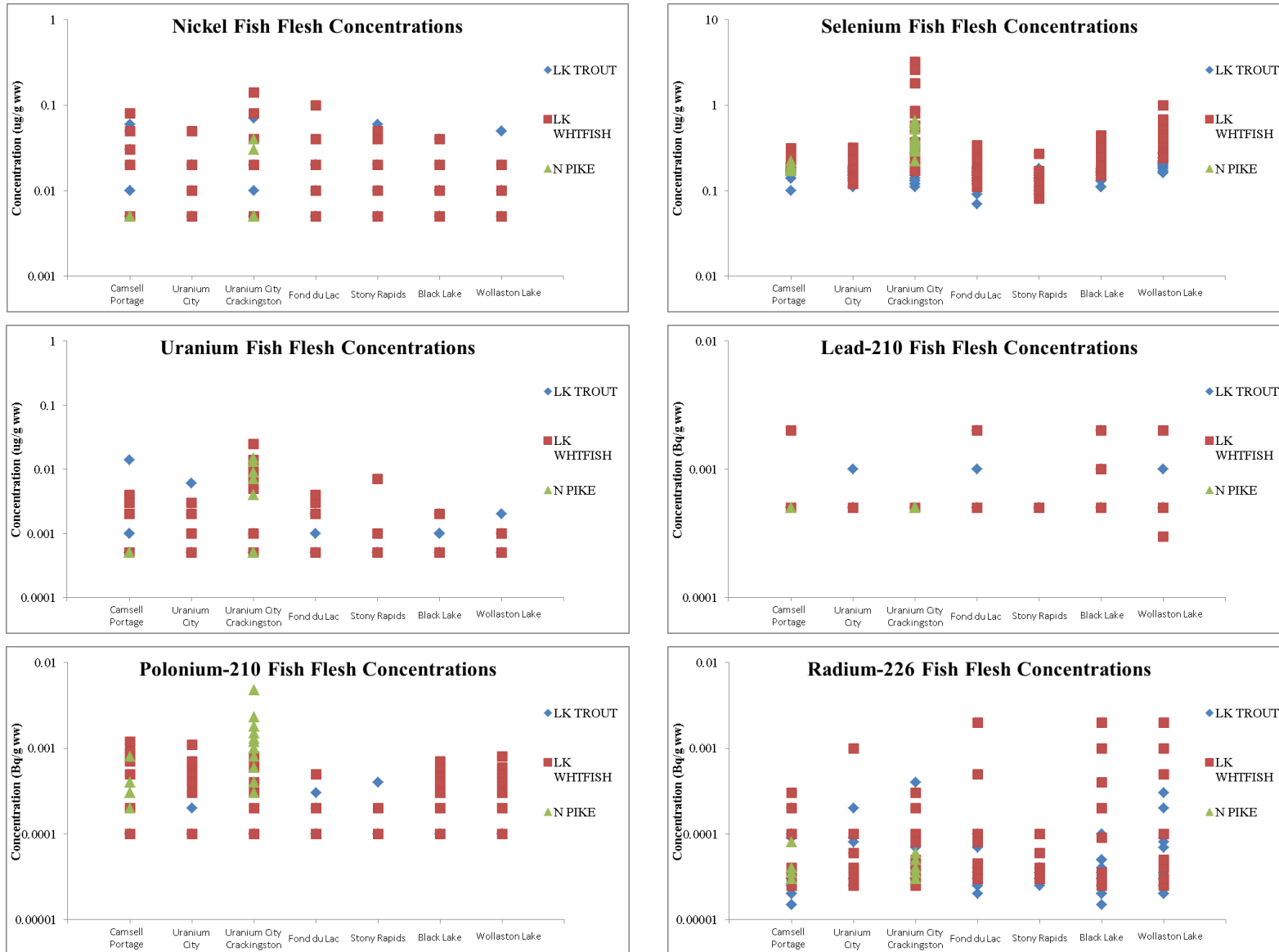
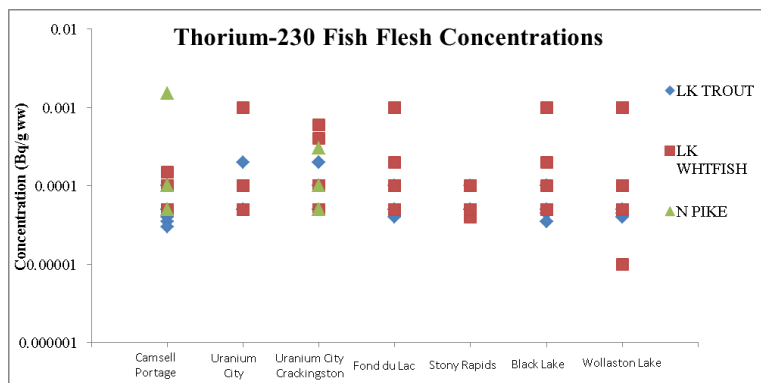


Figure 2.6 Summary of COPC fish flesh concentrations (Cont'd)



Note: Camsell Portage was considered a background location.

2.3.6 Surface Water

Five surface water samples were available from each location. A summary of the water concentrations for each COPC at each location is presented in Figure 2.7. Radionuclide concentrations were generally at or below the MDL. Molybdenum concentrations in Wollaston Lake and uranium concentrations at Uranium City at the community monitoring station are generally higher than at other locations. It should be noted that all uranium concentrations are below the Health Canada (2017) drinking water guideline of 0.02 mg/L.

Figure 2.7 Summary of COPC surface water concentrations

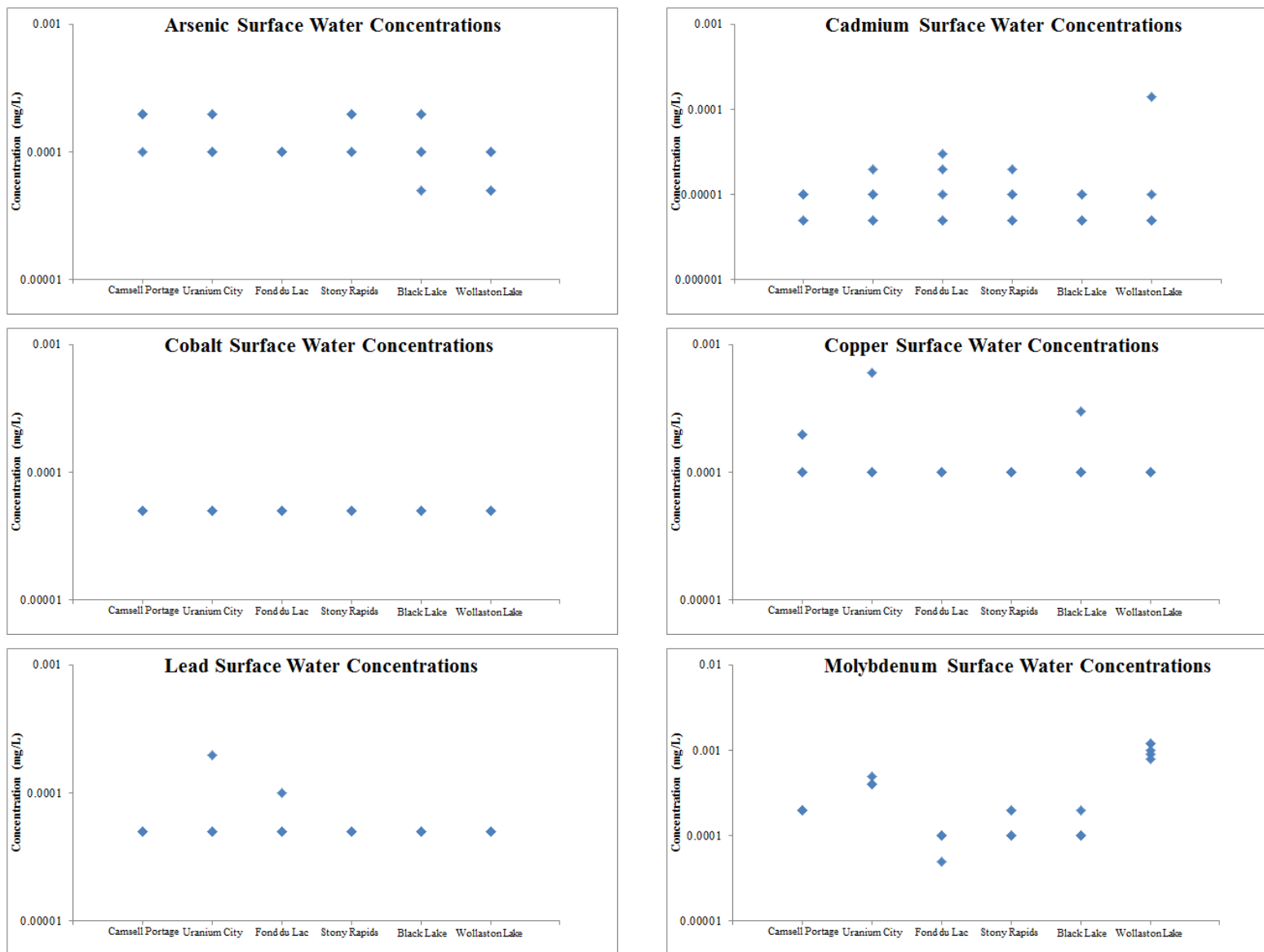


Figure 2.7 Summary of COPC surface water concentrations (Cont'd)

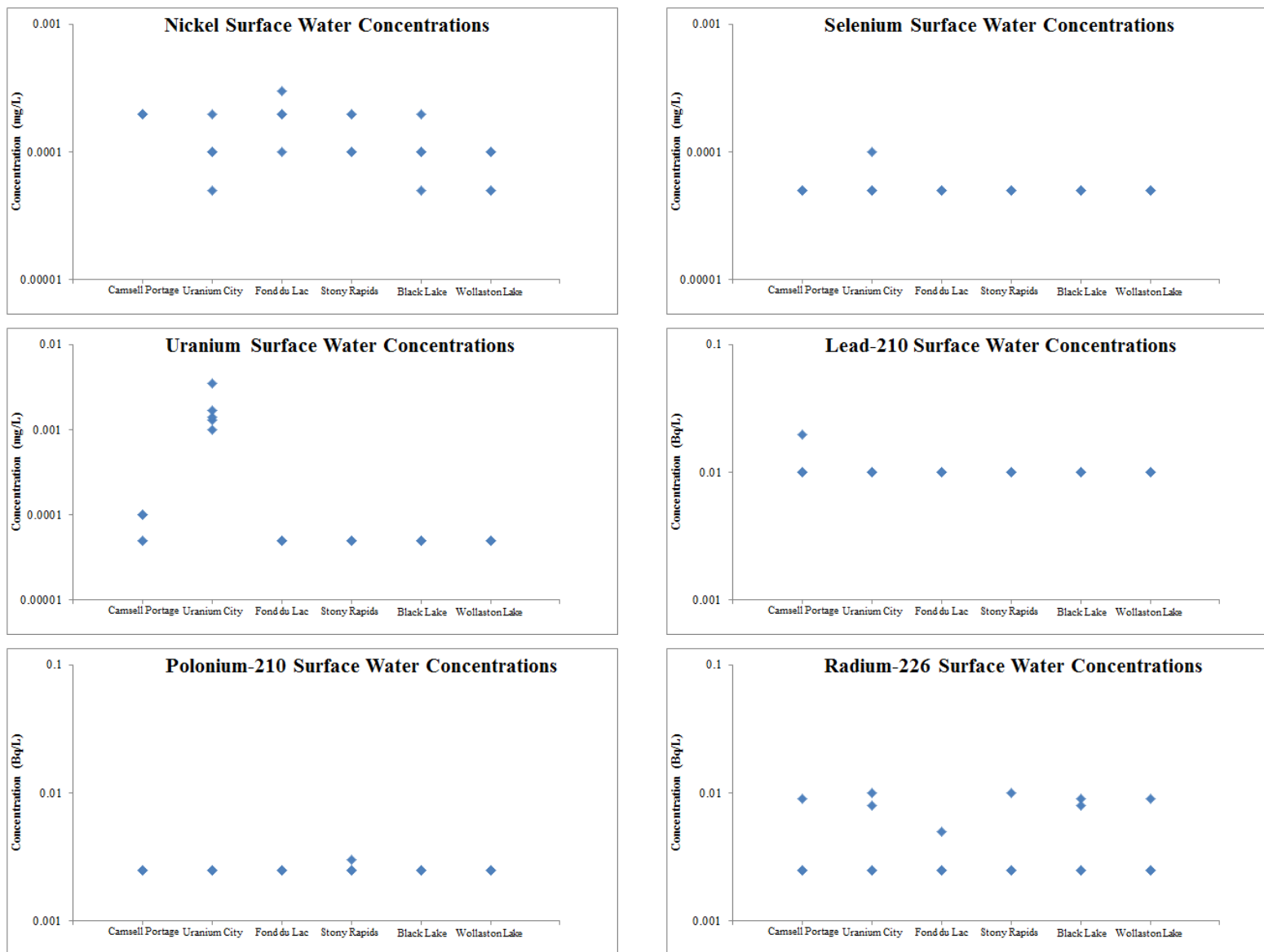
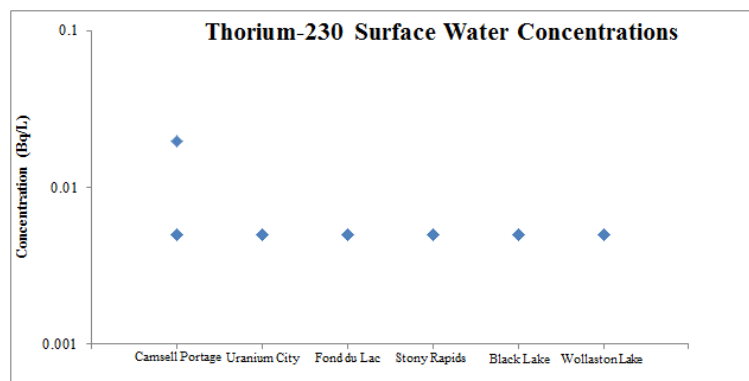


Figure 2.7 Summary of COPC surface water concentrations (Cont'd)

Note: Camsell Portage was considered a background location.

3.0 RECEPTOR CHARACTERIZATION

This section details the human life stages that were selected for the HHRA and the rationale behind their selection as well as the characteristics (food and water intake rates and body weight) used in the HHRA. It should be noted that the receptor characteristics are the same as those considered in the previous HHRA (SENES 2013).

3.1 Receptor Identification

The HHRA evaluated exposure for people living in the communities included in the EARMP community program, namely Wollaston Lake, Black Lake, Stony Rapids, Fond du Lac, Uranium City (Prospector's Bay and Crackingstone River inlet evaluated separately for fish), and Camsell Portage.

Information collected in 2010 for Uranium City indicated that the population largely comprises adults with 26% of the population being below the age of 20 (CanNorth 2011). Information collected in 1998 and 1999 for the Hatchet Lake Band indicated that just over half of the population is below the age of 20 and that 30% of the population is below the age of 10 (CanNorth 2000). As a conservative measure and following Health Canada (2012) guidance, the HHRA considered exposure to toddlers (7 months to 4 years), children (5 to 11 years), teens (12 to 19 years), and adults (20 to 80 years).

Although Health Canada also considers an infant (0 to 6 months), exposure for infants was not evaluated because it was assumed that they would be mainly consuming breast milk and not country foods and water being evaluated in this HHRA.

For comparative purposes, a typical Canadian exposed to COPC through the consumption of supermarket food was also evaluated. A typical Canadian with a higher fish consumption rate was also considered. The same age groups were considered (toddler, child, teen, adult) for both the typical Canadian receptors.

3.2 Exposure Pathways

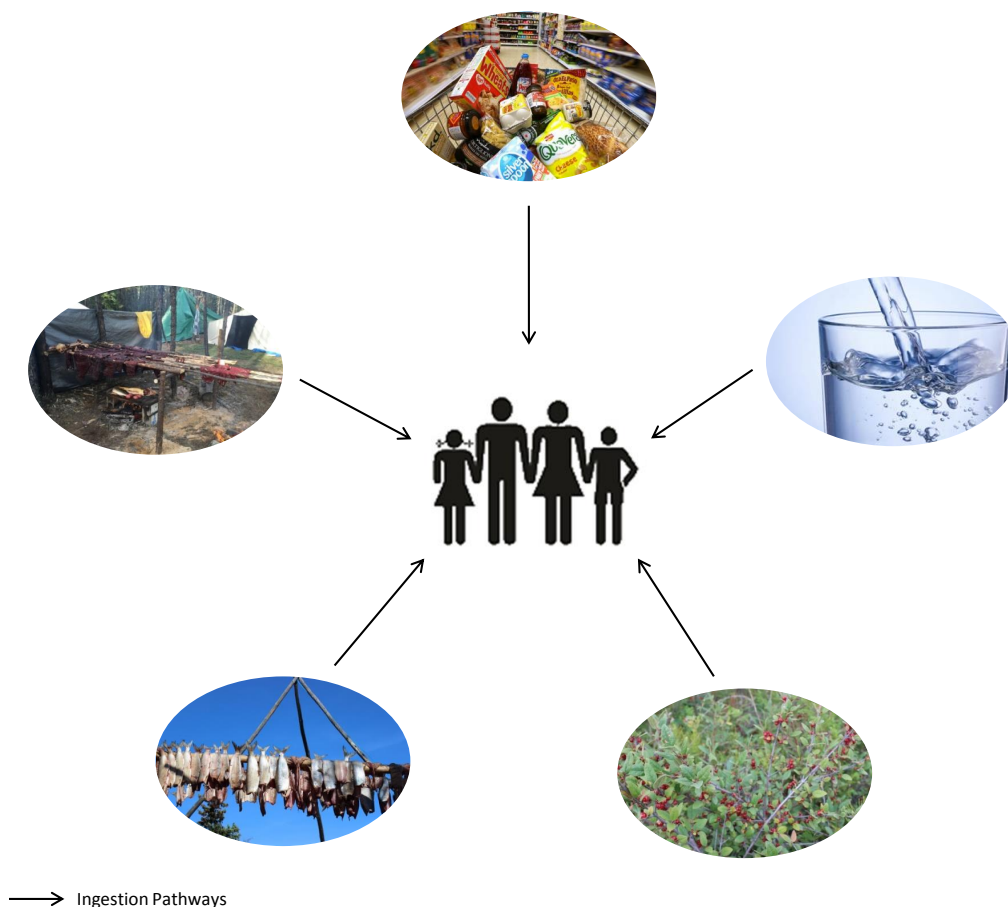
As the objective of this HHRA was to examine potential risks from the ingestion of water and country foods based on data collected as part of the EARMP community program, the only pathways evaluated were the ingestion of food and drinking water. Residents were assumed to consume primarily country foods and drinking water from the local

environment, while supplementing their diet with supermarket foods. Typical Canadians were assumed to be exposed only through the consumption of supermarket foods.

Country food data collection efforts have focused on foods known to be locally important for residents in the area, including moose (flesh and organs), barren-ground caribou (flesh and organs), small game (snowshoe hare and spruce grouse flesh), fish flesh (lake whitefish, lake trout, and northern pike), and berries (blueberry, bog cranberry, raspberry, and strawberry). Although some residents of the communities reported eating moose and/or barren-ground caribou organs, as discussed in Section 2.3, the concentrations of COPCs in organs are, for the most part similar to background with the exception of cadmium in barren-ground caribou and moose organs and lead in moose organs. Therefore exposure to cadmium and lead in organs was considered within a sensitivity analysis (see Section 6.4) as not all members of the communities eat organs.

Figure 3.1 shows a schematic of the different components that were considered in the HHRA and included drinking water, wild game (barren-ground caribou, moose, spruce grouse, and snowshoe hare), fish flesh (lake whitefish, lake trout and northern pike), berries and supermarket food. Other exposure pathways such as air and soil contribute much lower exposure in general and have not been considered in this HHRA. It should be noted that the receptor pathways are the same as those considered in the previous HHRA (SENES 2013).

Figure 3.1 Human receptor exposure pathways



3.3 Receptor Characteristics

In order to estimate intakes of COPC by people, receptor characteristics must be defined for each age group. The following section discusses the country food, supermarket food, and surface water ingestion rates that were used in the assessment for residents of the communities within the Athabasca Basin as well as typical Canadians.

3.3.1 Food Ingestion Rates

Consistent with the previous HHRA (SENES 2013), the country food ingestion rates were derived from two relevant dietary surveys that have been completed by CanNorth for communities included within this region (CanNorth 2000, 2011). Non-country food intakes were obtained using data from Health Canada (1994).

3.3.1.1 Country Foods

In 2000, CanNorth carried out a dietary survey of the Hatchet Lake Band, residing on the east side of Wollaston Lake, in order to identify the food which were consumed by different age groups over two seasons (summer and winter), its geographical source, how the food was prepared and stored, and the quantity consumed (CanNorth 2000). The survey considered adults in three different age groups: adult (21-40, 41-60, and >60 years old), teens (11 – 20 years old), and children (2 -10 years old).

In 2011, CanNorth carried out a comprehensive country food assessment which included a dietary survey for the residents of Uranium City (adults and children) to determine the country food type, amount, and location of harvest in an effort to better understand the utilization and potential implications to human health from country foods gathered in the area (CanNorth 2011). Food ingestion rates from the Hatchet Lake dietary survey were applied to the Wollaston Lake, Black Lake, Stony Rapids, and Fond du Lac communities, while those developed using the Uranium City study were applied to the Uranium City and Camsell Portage communities.

The dietary surveys revealed that barren-ground caribou is the main source of meat for the Hatchet Lake community, while moose is the primary meat consumed by Uranium City residents. Lake whitefish, northern pike and lake trout are consumed by both communities.

Details on the derivation of ingestion rates of meat (barren-ground caribou, moose, and snowshoe hare flesh), poultry (spruce grouse flesh), fish flesh (lake whitefish, other fish [northern pike, lake trout]), and berries for toddlers, children, teens, and adults are provided in Attachment B. The resulting daily mean intake rates are summarized in Table 3.1 for the Wollaston Lake, Black Lake, Stony Rapids, and Fond du Lac communities. As seen from the table, the rates for a toddler and child are the same as information was provided for the 2 to 10 year age group. This results in potentially a higher food intake rate for toddlers. Table 3.2 provides the food intake rates for Uranium City and Camsell Portage residents. The rates for the teen, child and toddler were estimated from the adult intake rates assuming that they represent 90%, 70%, and 50% of the adult intakes, based on ratios for intake rates of supermarket meat, poultry, fish, and berries for typical Canadians from Health Canada (1994).

Table 3.1 Mean country food intake rates calculated for Wollaston Lake, Black Lake, Stony Rapids, and Fond du Lac

Category	Country Food	Hatchet Lake Mean Intake (g/d)			
		Adult	Teen	Child ^a	Toddler ^a
Meat	Caribou flesh	361	285	242	242
	Snowshoe hare flesh	2.6	1.6	0.3	0.3
Poultry	Spruce grouse flesh	4.1	6.6	2.3	2.3
Fish flesh	Lake whitefish	58.1	27.0	36.3	36.3
	Northern pike, lake trout	11.9	5.5	7.4	7.4
Berries		1.8	7.2	8.5	8.5

Note: Based on data from the Hatchet Lake Band dietary survey (CanNorth 2000), as detailed in Attachment B; these intake rates were applied to residents of the Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake communities.

^a The same intake rates were used for the child and toddler since rates were provided for the 2 to 10 year age group.

Table 3.2 Mean country food intake rates calculated for Uranium City and Camsell Portage

Category	Country Food	Uranium City Mean Intake (g/d)			
		Adult	Teen ^a	Child ^a	Toddler ^a
Meat	Moose flesh	33.8	30.8	25.3	16.9
	Snowshoe hare flesh	14.0	12.7	10.5	7.0
Poultry	Spruce grouse flesh	20.1	18.3	15.1	10.0
Fish flesh	Lake whitefish flesh	23.9	21.8	17.9	12.0
	Northern pike, lake trout	82.3	74.9	61.7	41.2
Berries		18.0	16.4	13.5	9.0

Note: Based on data from the Uranium City Country Food Study (CanNorth 2011), as detailed in Attachment B; these intake rates were applied to residents of the Uranium City and Camsell Portage communities.

^a The teen, child, and toddler intakes were estimated from those for the adult assuming that they represent 90%, 70%, and 50% of the adult intakes, respectively, based on ratios for intake rates of supermarket meat, poultry, fish, and berries for typical Canadians from Health Canada (1994).

3.3.1.2 Supermarket Foods

Health Canada has been conducting Total Dietary Studies (TDS) for many years in an effort to capture this exposure, which requires not only measured concentrations in various supermarket foods but also intake rates of these foods. In the *Human Health Risk Assessment for Priority Substances*, Health Canada (1994) developed mean intake rates of 112 individual food composites for typical Canadians of different age ranges (i.e., infant, toddler, child, teen, and adult). These intake rates were used to develop supermarket food intakes for residents of the area as well as typical Canadians.

For the typical Canadian, individual supermarket food items were grouped into comparable country food categories where possible, as summarized in Table 3.3. To provide context for the residents of the Athabasca Basin that consume a large quantity of

fish (i.e., Uranium City and Camsell Portage), a typical Canadian with a higher fish consumption rate was also evaluated. It was assumed that the total intake of meat and fish would remain unchanged, and thus the meat intake rate was adjusted accordingly to account for the higher fish ingestion. The resulting mean daily food intake rates of the various age groups for the typical Canadian and high fish eater are summarized in Table 3.4.

Table 3.3 Foods consumed by Athabasca Basin residents and typical Canadians

Foods Consumed by Athabasca Basin Residents	Comparable Foods Consumed by Typical Canadians
Meat	
Moose/caribou and snowshoe hare flesh	Beef (steak, roast and stewing, hamburger), pork (fresh and cured), veal, lamb, cold cuts and luncheon meats, canned luncheon meats, canned meat soups, wieners
Poultry	
Spruce grouse flesh	Poultry, chicken, turkey
Fish Flesh	
Lake trout, lake whitefish, northern pike	Fresh or frozen marine and freshwater fish, canned fish, fresh or frozen shellfish
Berries	
Berries	Strawberries, blueberries
Other	
Supermarket/mon-country foods	Milk and dairy products, root vegetables, other vegetables, cereals and grains, eggs, other fruits and juices, fats, nuts and oils, sugar and sweets, non-alcoholic drinks, alcoholic drinks

Table 3.4 Supermarket food intake rates for typical Canadians

Food Group	Mean Intake Rate (g/d)			
	Adult	Teen	Child	Toddler
Meat	168	150	115	87
Meat – High Fish Intake ^a	71	57	33	35
Poultry	21	20	17	13
Fish	14	11	8.4	3.4
Fish – High Fish Intake ^a	111	104	90	56
Berries	9.7	6.9	8.6	3.7
Milk & Dairy	297	590	622	677
Eggs	32.3	21.5	21.1	24.2
Root Vegetables	142	167	128	81.6
Other Vegetables	161	148	117	78.6
Other Fruits & Juices ^b	166	146	185	182
Cereals & Grains	247	325	300	168
Sugar & Sweets	57.2	66.6	57.2	45.6
Fats, Nuts & Oils	14.7	18.9	14.4	6.9

Note: Values from Health Canada (1994).

^a Meat intake rates for high fish eaters decreased by fish intake rates from Richardson (1997) to maintain same total meat and fish intakes as typical Canadian.

^b Not including strawberries and blueberries (considered as ‘berries’).

The mean daily intake rates of supermarket foods used in the assessment for residents of the Athabasca Basin are provided in Table 3.5.

Table 3.5 Supermarket food intake rates for residents

Food Group	Mean Intake Rate (g/d)			
	Adult	Teen	Child	Toddler
Milk & Dairy	297	590	622	677
Eggs	32.3	21.5	21.1	24.2
Root Vegetables	142	167	128	81.6
Other Vegetables	161	148	117	78.6
Other Fruits & Juices ^a	176	153	193	186
Cereals & Grains	247	325	300	168
Sugar & Sweets	57.2	66.6	57.2	45.6
Fats, Nuts & Oils	14.7	18.9	14.4	6.9

Note: Values from Health Canada (1994).

^a Does not include intakes of berries (strawberries and blueberries) as these are evaluated as country foods.

3.3.2 Water Intake

The surface water ingestion rates were obtained from Health Canada (2012). The average daily intakes rates of water for an adult, teen, child, and toddler are 1.5 L/d, 1 L/d, 0.8 L/d, and 0.6 L/d, respectively. This is equivalent to about 6 glasses, 4 glasses, 3 glasses, and 2½ glasses of water a day.

3.3.3 Body Weight

The body weights (bw) that are needed to calculate daily intake rates (mg/(kg-d)) were obtained from Health Canada (2012). Body weights for the adult, teen, child, and toddler are 70.7 kg, 59.7 kg, 32.9 kg, and 16.5 kg, respectively.

3.4 Exposure Frequency and Duration

The exposure assessment considers how often and how long people are exposed by the different pathways identified above. Exposure frequency refers to how often a person is exposed via a particular pathway, while exposure duration refers to how long over a year that the behaviour occurs.

For this assessment, receptors were evaluated based on daily, year-round consumption of country foods collected from the study area. For the consideration of potential effects from carcinogenic COPC (i.e., arsenic), the various durations of exposure for each life stage were considered in order to estimate a composite risk to a receptor from exposure over their lifetime. A lifetime receptor was calculated assuming 4 years as a toddler, 6 years as a child, 8 years as a teen, and 62 years as an adult, for a total of 80 years of exposure.

4.0 EXPOSURE ASSESSMENT

Several different characteristics of individuals influence their exposure. For this assessment, these characteristics include how much water they drink, how much food they eat, and how much they weigh. These characteristics are different depending on the age of the individual. For example, since toddlers do not weigh very much, a toddler tends to be the most highly exposed life stage in HHRA once intakes are converted to a body weight basis.

The exposure assessment involves the estimation of the intake of COPCs for people in the different communities based on areas from which they obtain their food and water using an approach that tends to overestimate exposures. The total intake for a COPC is the sum of the intakes calculated for each of the ingestion pathways, including water, meat (caribou, moose, and snowshoe hare flesh), poultry (spruce grouse flesh), fish flesh, berries, and supermarket food. Intakes for individual pathways are calculated using the receptor characteristics discussed in Section 3.0 combined with measured concentrations in each of the individual media obtained through the various monitoring programs.

4.1 Exposure Assumptions

The assessment considered exposure to country foods from several communities in the region, using measured data from samples submitted by community members. As discussed in Section 3.3.1, country food ingestion rates developed from the Hatchet Lake study were applied to the Wollaston Lake, Black Lake, Stony Rapids, and Fond du Lac communities, while those developed from the Uranium City study were applied to the two Uranium City locations and Camsell Portage. The Hatchet Lake study found that this community consumes primarily barren-ground caribou and little to no moose, while the opposite was found for the Uranium City community. Thus, residents of Wollaston Lake, Black Lake, Stony Rapids, and Fond du Lac were considered to eat barren-ground caribou and no moose for this assessment, while residents of Uranium City and Camsell Portage were considered to eat moose and no barren-ground caribou. Camsell Portage was considered a background location not influenced by uranium mining or milling activities.

Table 4.1 summarizes how the data from EARMP community program were considered within the HHRA. The first part of the table illustrates which dietary study was used to

develop intake rates for people at each exposure location, while the second part lists the assumed locations of the different dietary components.

The same barren-ground caribou herd (Beverly) is hunted by all communities in the area and thus the data for barren-ground caribou flesh were combined and used for all locations. Although residents of Camsell Portage have a diet of predominantly moose obtained from the local area, since this is a background location a second evaluation was carried out assuming residents eat barren-ground caribou in order to provide context for the barren-ground caribou-eating communities². Data for barren-ground caribou from the Qamanirjuaq herd (AREVA Resources Canada Inc. 2014) were considered representative of background barren-ground caribou concentrations since these barren-ground caribou are considered to be unaffected by mining operations in the Athabasca Basin.

Uranium City residents were assumed to obtain drinking water from the Fredette River, moose and berries from the surrounding area. Uranium City residents were assumed to fish from either Prospector's Bay of Lake Athabasca or the Crackingstone River inlet to Lake Athabasca which is downstream of the former mining and milling operations in the area. The residents of all other communities (i.e., Wollaston Lake, Black Lake, Stony Rapids, and Fond du Lac) were assumed to obtain drinking water, fish, and berries from their respective local study areas as shown in Table 4.1.

² This hypothetical community was evaluated using the receptor characteristics developed from the Hatchet Lake dietary study.

Table 4.1 Summary of receptor locations and exposure pathways

Pathways	Country Food Intake Rates					
	Hatchet Lake Study (CanNorth 2000)				Uranium City Country Foods Study (CanNorth 2011)	
	Wollaston Lake	Stony Rapids	Black Lake	Fond du Lac	Camsell Portage	Uranium City
Drinking water	Welcome Bay of Wollaston Lake	Fond du Lac River at Stony Rapids	Black Lake	Fond du Lac River at Fond du Lac	Ellis Bay of Lake Athabasca	Uranium City
Moose (flesh) ^a	Not evaluated				Camsell Portage	Uranium City
Barren-ground caribou (flesh) ^b	Study area				Not evaluated	
Fish (flesh) ^c	Wollaston Lake	Fond du Lac River at Stony Rapids	Black Lake	Fond du Lac River at Fond du Lac	Ellis Bay of Lake Athabasca	<u>Uranium City</u> <u>Crackingstone</u> <u>Crackingstone</u> <u>River Inlet to</u> <u>Lake</u> <u>Athabasca^d</u>
Berries (blueberry & bog cranberry)	Wollaston Lake/ Hatchet Lake	Stony Rapids	Black Lake	Fond du Lac	Camsell Portage	Uranium City

Note:

^a The Hatchet Lake Dietary Study (CanNorth 2000) indicates that people essentially only eat barren-ground caribou with a very small portion of the diet (<1%) represented by moose. In addition, moose data are only available from Uranium City and Camsell Portage.

^b According to the Uranium City Country Foods Study (CanNorth 2011), barren-ground caribou is not a significant component of the diet. In addition the barren-ground caribou are mostly obtained from the Beverly Herd and captured outside of the communities. Therefore the barren-ground caribou data were pooled for the evaluation of the Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake communities.

^c Considers all species sampled in the EARMP Community Program: lake trout, lake whitefish, and northern pike. Lake whitefish had the highest reported concentrations so they were considered separately and the lake trout and northern pike data were pooled.

^d Residents of Uranium City are reported to fish in both the Crackingstone River inlet and Prospector's Bay in Lake Athabasca; therefore the assessment considered Uranium City residents getting their fish from two different locations.

4.2 Exposure Point Concentrations

Exposure Point Concentrations (EPCs) are estimations of the concentrations of COPCs in the environment and are generally a conservative estimate of the average COPC concentrations in the environment. For surface water and country foods, data collected from the region through the monitoring programs (primarily EARMP) were used to develop the EPCs, with the exception of background barren-ground caribou flesh EPCs which were based on data for the Qamanirjuaq herd. Supermarket food EPCs were developed from data collected by Health Canada from their Total Dietary Studies (TDS). Fish samples were broken down into lake whitefish and other fish (lake trout and northern pike) as the lake whitefish COPC concentrations were higher than other fish for a number of the COPC.

A summary of the number of country food samples in each of the locations used to develop the EPCs is presented in Table 4.2.

For background concentrations, the assessment followed guidance from the Federal Contaminated Sites Action Plan (FCSAP; EC 2015) in that the EPC was set equal to the 95% Upper Confidence Level of the Mean (95% UCLM³) if there were 10 or more samples. This was the case for background (Camsell Portage) EPCs for moose flesh, lake whitefish flesh, other fish, and berries. In instances where fewer than 10 samples were available, the EPC was set equal to the average value. The use of the average concentration encompasses all the data and represents a cautious assumption for incremental exposure for arsenic and the radionuclides. Average concentrations for Camsell Portage were used to define background for surface water, snowshoe hare, and spruce grouse. As previously mentioned, the Qamanirjuaq herd was used to define background concentrations for barren-ground caribou and the average was used to define background barren-ground caribou flesh concentrations.

³ 95% UCLM values were calculated using ProUCL 5.1 available from the United States Environmental Protection Agency (U.S. EPA); non-detects were flagged as such, allowing ProUCL to consider the percentage of non-detects in the data set when calculating the 95% UCLM values.

Table 4.2 Summary of number of water and country food samples used in the assessment, by location

Country Food	Camsell Portage	Uranium City	Fond Du Lac	Stony Rapids	Black Lake	Wollaston Lake
Surface water	5	5	5	5	5	5
Lake whitefish ^a	20	16 [*] 20 ^{**}	23	23	23	23
Other fish ^b	28	18 [*] 31 ^{**}	23	22	23	23
Berries ^c	26	45	26	26	26	26
Spruce grouse	5	9	3	4	3	3
Snowshoe hare	8	7	3	3	4	3
Barren-ground caribou flesh ^d	Not evaluated		81			
Barren-ground caribou organs ^{d,e}	Not evaluated		13			
Moose flesh	10	13	Not evaluated			
Moose organs ^f	7	9	Not evaluated			

Note:

^a Lake whitefish separated from other fish as measured concentrations higher for some COPC; for Uranium City, fish were evaluated at two locations *Prospector's Bay and **Crackingstone River inlet.

^b Breakdown of other fish samples - Camsell Portage: lake trout = 23, northern pike = 5; *Uranium City Prospector's Bay: lake trout = 18; **Uranium City Crackingstone River inlet: lake trout = 16, northern pike = 15; Fond du Lac: lake trout = 23; Stony Rapids - lake trout = 22; Black Lake: lake trout = 23; Wollaston Lake: lake trout = 23.

^c Breakdown of berry samples: Camsell Portage: blueberry = 13, cranberry = 13; Uranium City: blueberry = 16, cranberry = 17, raspberry = 11, strawberry = 1; Fond du Lac: blueberry = 26; Stony Rapids: blueberry = 26; Black Lake: blueberry = 26; Wollaston Lake: blueberry = 26

^d Barren-ground caribou flesh and organ samples all from the Beverly Herd and were thus combined for all locations that consume barren-ground caribou (Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake)

^e Moose organ samples - Camsell Portage: kidney = 4, liver = 3; Uranium City: heart = 1, kidney = 3, liver = 5; these were considered in the sensitivity analysis.

^f Barren-ground caribou organ samples - Fond du Lac: heart = 1, kidney = 5, liver = 1; Black Lake: heart = 1, kidney = 2; Wollaston Lake: liver = 3; these were considered in the sensitivity analysis.

For surface water and country foods, the EPCs were in general also set equal to the 95% UCLM when sufficient samples were available. This was the case for barren-ground caribou flesh, moose flesh, lake whitefish, other fish, and berries. The EPCs for surface water were set equal to the maximum value as there were 5 samples available. For snowshoe hare and spruce grouse, the average values were used as more than one animal could be eaten at a meal and the Joint FAO (Food and Agriculture Organization of the United Nations)/World Health Organization (WHO) Expert Committee on Food Additives (JECFA) (FAO and WHO 2008) indicate that the average concentration of monitoring data should be used for food exposure since the use of maximum concentrations substantially overestimates the dietary exposure. It should be noted that there were five barren-ground caribou samples and four grouse samples that had elevated

concentrations due to the presence of lead shot. These samples were removed from the data set when developing the EPCs for lead.

Concentrations of non-radionuclides in supermarket foods were developed from data from the TDS from Health Canada (2016) for over 100 different food composites. Data from 2005 to 2007 were used preferentially, although data from 1993 to 1999 were used for molybdenum for lack of other data. Average concentrations were calculated and selected as the EPCs for supermarket foods, with values below the MDL being set equal to the MDL value. There is very little information available for radionuclides in supermarket food; this does not affect the calculations as incremental dose rates above baseline are evaluated for radionuclides

The resulting EPCs are summarized in Table 4.3 for surface water and country foods, while the EPCs for supermarket foods are detailed in Attachment C. For the HHRA, berry concentrations were converted from the reported dry weight (dw) basis to a wet weight (ww) basis using an average moisture content of 85% based on reported moisture contents of berries considered in the HHRA. Uranium-238 is not analyzed in the samples and thus the EPCs for uranium-238 were derived from the chemical uranium concentrations using a conversion factor of 12.347 Bq of uranium-238 per mg of chemical uranium (values not shown in the table).

Table 4.3 Exposure point concentrations for surface water and country foods

COPC	Medium	Units	Camsell Portage		Uranium City		Fond du Lac		Stoney Rapids		Black Lake		Wollaston Lake	
			EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat
Arsenic	Surface water	mg/L	0.0002	Max	0.0002	Max	0.0001	MDL	0.0002	Max	0.0002	Max	0.0001	Max
	Lake whitefish	mg/kg ww	0.29	UCLM	0.13 ^a	UCLM	0.22	UCLM	0.05	UCLM	0.22	UCLM	0.16	UCLM
					0.14 ^b	UCLM								
	Other Fish	mg/kg ww	0.12	UCLM	0.1 ^a	UCLM	0.09	UCLM	0.12	UCLM	0.08	UCLM	0.05	UCLM
					0.08 ^b	UCLM								
	Berry ^f	mg/kg ww	0.008	MDL	0.008	UCLM	0.008	MDL	0.008	MDL	0.008	MDL	0.008	MDL
	Caribou flesh ^c	mg/kg ww	0.03	Average	-	-	0.02 (UCLM)							
	Moose flesh	mg/kg ww	0.01	MDL	0.01	Max	Not evaluated							
Spruce grouse	mg/kg ww	0.01	MDL	0.01	MDL	0.01	MDL	0.01	MDL	0.01	MDL	0.01	MDL	
Snowshoe hare	mg/kg ww	0.01	MDL	0.007	Average	0.01	MDL	0.01	Average	0.01	Average	0.01	MDL	
Cadmium	Surface water	mg/L	0.00001	Max	0.00002	Max	0.00003	Max	0.00002	Max	0.00001	Max	0.0001	Max
	Lake whitefish	mg/kg ww	0.002	MDL	0.002 ^a	Max	0.003	UCLM	0.002	MDL	0.002	MDL	0.002	MDL
					0.003 ^b	Max								
	Other Fish	mg/kg ww	0.002	MDL	0.002 ^a	MDL	0.002	MDL	0.002	MDL	0.002	MDL	0.002	MDL
					0.007 ^b	Max								
	Berry ^f	mg/kg ww	0.002	MDL	0.003	UCLM	0.002	MDL	0.003	Max*	0.002	UCLM	0.002	MDL
	Caribou flesh ^c	mg/kg ww	0.01	Average	-	-	0.005 (UCLM)							
	Moose flesh	mg/kg ww	0.03	UCLM	0.02	UCLM	Not evaluated							
Spruce grouse	mg/kg ww	0.008	Average	0.005	Average	0.02	Average	0.01	Average	0.007	Average	0.003	Average	
Snowshoe hare	mg/kg ww	0.004	Average	0.003	Average	0.007	Average	0.05	Average	0.01	Average	0.01	Average	
Cobalt	Surface water	mg/L	0.0001	MDL	0.0001	MDL	0.0001	MDL	0.0001	MDL	0.0001	MDL	0.0001	MDL
	Lake whitefish	mg/kg ww	0.005	UCLM	0.009 ^a	UCLM	0.01	UCLM	0.008	UCLM	0.004	UCLM	0.003	UCLM
					0.01 ^b	UCLM								
	Other Fish	mg/kg ww	0.003	UCLM	0.002 ^a	UCLM	0.005	UCLM	0.003	UCLM	0.003	UCLM	0.003	UCLM
					0.002 ^b	UCLM								
	Berry ^f	mg/kg ww	0.002	UCLM	0.008	UCLM	0.005	UCLM	0.005	UCLM	0.003	UCLM	0.009	UCLM
	Caribou flesh ^c	mg/kg ww	0.008	Average	-	-	0.005 (UCLM)							
	Moose flesh	mg/kg ww	0.02	UCLM	0.02	UCLM	Not evaluated							
Spruce grouse	mg/kg ww	0.002	Average	0.003	Average	0.006	Average	0.004	Average	0.02	Average	0.004	Average	
Snowshoe hare	mg/kg ww	0.009	Average	0.005	Average	0.02	Average	0.01	Average	0.01	Average	0.008	Average	

Table 4.3 Exposure point concentrations for surface water and country foods (Cont'd)

COPC	Medium	Units	Camsell Portage		Uranium City		Fond du Lac		Stoney Rapids		Black Lake		Wollaston Lake	
			EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat
Copper	Surface water	mg/L	0.0002	Max	0.0006	Max	0.0002	MDL	0.0002	MDL	0.0003	Max	0.0002	MDL
	Lake whitefish	mg/kg ww	0.23	UCLM	0.27 ^a	UCLM	0.2	UCLM	0.23	UCLM	0.22	UCLM	0.2	UCLM
					0.2 ^b	UCLM								
	Other Fish	mg/kg ww	0.36	UCLM	0.31 ^a	UCLM	0.31	UCLM	0.47	UCLM	0.38	UCLM	0.42	UCLM
					0.25 ^b	UCLM								
	Berry ^f	mg/kg ww	0.57	UCLM	0.59	UCLM	0.60	UCLM	0.50	UCLM	0.50	UCLM	0.51	UCLM
	Caribou flesh ^c	mg/kg ww	2.4	Average	-	-	3.5 (UCLM)							
	Moose flesh	mg/kg ww	1.7	UCLM	2.2	UCLM	Not evaluated							
Spruce grouse	mg/kg ww	3.2	Average	2.2	Average	3.2	Average	1.9	Average	3.1	Average	2.1	Average	
Snowshoe hare	mg/kg ww	1.9	Average	1.6	Average	2	Average	1.6	Average	2.5	Average	2.1	Average	
Lead	Surface water	mg/L	0.0001	MDL	0.0002	Max	0.0001	Max	0.0001	MDL	0.0001	MDL	0.0001	MDL
	Lake whitefish	mg/kg ww	0.004	UCLM	0.004 ^a	UCLM	0.003	UCLM	0.003	UCLM	0.002	UCLM	0.002	UCLM
					0.004 ^b	UCLM								
	Other Fish	mg/kg ww	0.002	UCLM	0.003 ^a	UCLM	0.004	UCLM	0.003	UCLM	0.003	UCLM	0.003	UCLM
					0.003 ^b	UCLM								
	Berry ^f	mg/kg ww	0.003	UCLM	0.008	UCLM	0.006	UCLM	0.006	UCLM	0.008	UCLM	0.003	UCLM
	Caribou flesh ^c	mg/kg ww	0.02	Average	-	-	0.01 (UCLM)							
	Moose flesh	mg/kg ww	0.02	UCLM	0.02	UCLM	Not evaluated							
Spruce grouse	mg/kg ww	0.02	Average	0.09	Max ^d	0.12	Average	0.22	Max ^d	0.36	Max ^d	0.15	Average	
Snowshoe hare	mg/kg ww	0.002	Average	0.002	Average	0.003	Average	0.005	Average	0.004	Average	0.006	Average	
Molybdenum	Surface water	mg/L	0.0002	Max	0.0005	Max	0.0001	Max	0.0002	Max	0.0002	Max	0.001	Max
	Lake whitefish	mg/kg ww	0.02	MDL	0.02 ^a	MDL	0.02	MDL	0.02	MDL	0.02	MDL	0.02	MDL
					0.02 ^b	MDL								
	Other Fish	mg/kg ww	0.02	MDL	0.02 ^a	MDL	0.02	MDL	0.02	MDL	0.02	MDL	0.02	MDL
					0.02 ^b	MDL								
	Berry ^f	mg/kg ww	0.03	UCLM	0.08	UCLM	0.08	UCLM	0.03	UCLM	0.03	UCLM	0.04	UCLM
	Caribou flesh ^c	mg/kg ww	0.05	Average	-	-	0.02 (MDL)							
	Moose flesh	mg/kg ww	0.02	MDL	0.02	MDL	Not evaluated							
Spruce grouse	mg/kg ww	0.02	MDL	0.02	MDL	0.04	Average	0.04	Average	0.03	Average	0.02	MDL	
Snowshoe hare	mg/kg ww	0.02	MDL	0.02	MDL	0.01	MDL	0.01	Average	0.01	MDL	0.01	MDL	

Table 4.3 Exposure point concentrations for surface water and country foods (Cont'd)

COPC	Medium	Units	Camsell Portage		Uranium City		Fond du Lac		Stoney Rapids		Black Lake		Wollaston Lake	
			EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat
Nickel	Surface water	mg/L	0.0002	Max	0.0002	Max	0.0003	Max	0.0002	Max	0.0002	Max	0.0001	Max
	Lake whitefish	mg/kg ww	0.03	UCLM	0.02 ^a	UCLM	0.04	UCLM	0.02	UCLM	0.02	UCLM	0.01	UCLM
					0.04 ^b	UCLM								
	Other Fish	mg/kg ww	0.02	UCLM	0.01 ^a	UCLM	0.02	Max ^{**}	0.02	UCLM	0.01	UCLM	0.02	UCLM
					0.02 ^b	UCLM								
	Berry ^f	mg/kg ww	0.07	UCLM	0.11	UCLM	0.17	UCLM	0.11	UCLM	0.09	UCLM	0.13	UCLM
	Caribou flesh ^c	mg/kg ww	0.03	Average	-	-	0.03 (UCLM)							
	Moose flesh	mg/kg ww	0.02	Max ^{**}	0.02	Max	Not evaluated							
Spruce grouse	mg/kg ww	0.01	Average	0.02	Average	0.02	Average	0.02	Average	0.04	Average	0.02	Average	
Snowshoe hare	mg/kg ww	0.02	Average	0.02	Average	0.07	Average	0.03	Average	0.05	Average	0.03	Average	
Selenium	Surface water	mg/L	0.0001	MDL	0.0001	Max	0.0001	MDL	0.0001	MDL	0.0001	MDL	0.0001	MDL
	Lake whitefish	mg/kg ww	0.27	UCLM	0.27 ^a	UCLM	0.23	UCLM	0.15	UCLM	0.31	UCLM	0.49	UCLM
					1.5 ^b	UCLM								
	Other Fish	mg/kg ww	0.18	UCLM	0.16 ^a	UCLM	0.16	UCLM	0.16	UCLM	0.16	UCLM	0.22	UCLM
					0.4 ^b	UCLM								
	Berry ^f	mg/kg ww	0.008	MDL	0.01		0.009	UCLM	0.008	Max [*]	0.008	UCLM	0.008	Max [*]
	Caribou flesh ^c	mg/kg ww	0.17	Average	-	-	0.19 (UCLM)							
	Moose flesh	mg/kg ww	0.13	UCLM	0.16	UCLM	Not evaluated							
Spruce grouse	mg/kg ww	0.2	Average	0.32	Average	0.3	Average	0.18	Average	0.26	Average	0.26	Average	
Snowshoe hare	mg/kg ww	0.07	Average	0.1	Average	0.22	Average	0.19	Average	0.32	Average	0.14	Average	
Uranium ^e	Surface water	mg/L	0.0001	Max	0.004	Max	0.0001	MDL	0.0001	MDL	0.0001	MDL	0.0001	MDL
	Lake whitefish	mg/kg ww	0.002	UCLM	0.0008 ^a	UCLM	0.002	UCLM	0.002	UCLM	0.002	Max ^{**}	0.001	Max ^{**}
					0.008 ^b	UCLM								
	Other Fish	mg/kg ww	0.002	UCLM	0.0008 ^a	Average	0.001	UCLM	0.002	Max [*]	0.001	UCLM	0.001	UCLM
					0.004 ^b	UCLM								
	Berry ^f	mg/kg ww	0.005	UCLM	0.005	UCLM	0.002	UCLM	0.002	UCLM	0.002	UCLM	0.002	UCLM
	Caribou flesh ^c	mg/kg ww	0.006	Average	-	-	0.001 (UCLM)							
	Moose flesh	mg/kg ww	0.002	Max ^{**}	0.004	UCLM	Not evaluated							
Spruce grouse	mg/kg ww	0.001	MDL	0.007	Average	0.001	MDL	0.001	MDL	0.001	MDL	0.001	MDL	
Snowshoe hare	mg/kg ww	0.001	MDL	0.0007	Average	0.001	MDL	0.001	MDL	0.001	MDL	0.001	MDL	

Table 4.3 Exposure point concentrations for surface water and country foods (Cont'd)

COPC	Medium	Units	Camsell Portage		Uranium City		Fond du Lac		Stoney Rapids		Black Lake		Wollaston Lake			
			EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat		
Lead-210	Surface water	Bq/L	0.02	Max	0.02	MDL	0.02	MDL	0.02	MDL	0.02	MDL	0.02	MDL		
	Lake whitefish	Bq/g ww	0.002	Max	0.001 ^a	MDL	0.001	MDL	0.001	MDL	0.001	MDL	0.001	Max ^{**}	0.0003	Max [*]
					0.001 ^b	MDL										
	Other Fish	Bq/g ww	0.001	MDL	0.001 ^a	MDL	0.002	Max ^{**}	0.001	Max ^{**}	0.001	UCLM	0.001	UCLM	0.001	Max [*]
					0.001 ^b	MDL										
	Berry ^f	Bq/g ww	0.001	UCLM	0.002	UCLM	0.0006	UCLM	0.0005	UCLM	0.0008	UCLM	0.0008	UCLM	0.0008	UCLM
	Caribou flesh ^c	Bq/g ww	0.001	Average	-		0.001 (UCLM)									
	Moose flesh	Bq/g ww	0.001	MDL	0.001	Max	Not evaluated									
Spruce grouse	Bq/g ww	No Data														
Snowshoe hare	Bq/g ww	0.001	MDL	0.001	MDL	0.002	Average	0.0008	Average	0.001	MDL	0.001	MDL	0.001	Average	
Polonium-210	Surface water	Bq/L	0.005	MDL	0.005	MDL	0.005	MDL	0.005	MDL	0.005	MDL	0.005	MDL		
	Lake whitefish	Bq/g ww	0.0004	UCLM	0.0005 ^a	UCLM	0.0002	Max ^{**}	0.0002	Max ^{**}	0.0004	UCLM	0.0004	UCLM		
					0.0005 ^b	UCLM										
	Other Fish	Bq/g ww	0.0003	UCLM	0.0002 ^a	Max	0.0002	MDL	0.0002	UCLM	0.0002	UCLM	0.0002	Max	0.0002	MDL
					0.001 ^b	UCLM										
	Berry ^f	Bq/g ww	0.0003	UCLM	0.0005	Average	0.0003	UCLM	0.0002	UCLM	0.0003	UCLM	0.0003	UCLM	0.0003	UCLM
	Caribou flesh ^c	Bq/g ww	0.03	Average	-		0.01 (UCLM)									
	Moose flesh	Bq/g ww	0.001	UCLM	0.001	UCLM	Not evaluated									
Spruce grouse	Bq/g ww	0.0002	Average	0.0003	Average	0.0008	Average	0.0003	Average	0.0003	Average	0.0003	Average	0.0003	Average	
Snowshoe hare	Bq/g ww	0.002	Average	0.001	Average	0.0009	Average	0.002	Average	0.0009	Average	0.0009	Average	0.001	Average	
Radium-226	Surface water	Bq/L	0.009	Max	0.01	Max	0.005	Max	0.01	Max	0.009	Max	0.009	Max		
	Lake whitefish	Bq/g ww	0.0001	UCLM	0.00007 ^a	UCLM	0.0003	UCLM	0.0003	UCLM	0.0004	UCLM	0.0008	UCLM		
					0.0001 ^b	UCLM										
	Other Fish	Bq/g ww	0.00006	UCLM	0.00008 ^a	UCLM	0.00007	Max [*]	0.0001	Max ^{**}	0.0004	UCLM	0.00009	UCLM		
					0.00009 ^b	UCLM										
	Berry ^f	Bq/g ww	0.0005	UCLM	0.001	Average	0.0005	UCLM	0.001	UCLM	0.0006	UCLM	0.0008	UCLM		
	Caribou flesh ^c	Bq/g ww	0.0001	Average	-		0.0007 (UCLM)									
	Moose flesh	Bq/g ww	0.0001	UCLM	0.00007	UCLM	Not evaluated									
Spruce grouse	Bq/g ww	0.0001	Average	0.0004	Average	0.0001	Average	0.0002	MDL	0.0001	Average	0.0002	MDL			
Snowshoe hare	Bq/g ww	0.0001	Average	0.00008	Average	0.0002	MDL	0.0001	MDL	0.0002	Average	0.0001	MDL			

Table 4.3 Exposure point concentrations for surface water and country foods (Cont'd)

COPC	Medium	Units	Camsell Portage		Uranium City		Fond du Lac		Stoney Rapids		Black Lake		Wollaston Lake	
			EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat	EPC	Stat
Thorium-230	Surface water	Bq/L	0.01	Max	0.01	MDL	0.01	MDL	0.01	MDL	0.01	MDL	0.01	MDL
	Lake whitefish	Bq/g ww	0.0003	MDL	0.0002 ^a	MDL	0.0002	Max [*]	0.0001	Max [*]	0.0001	UCLM	0.0001	MDL
					0.0002 ^b	UCLM								
	Other Fish	Bq/g ww	0.0002	MDL	0.0002 ^a	MDL	0.0002	MDL	0.0002	MDL	0.0001	Max [*]	0.0001	MDL
					0.0001 ^b	UCLM								
	Berry ^f	Bq/g ww	0.0003	MDL	0.0003	MDL	0.0003	Max [*]	0.0001	Max [*]	0.0002	UCLM	0.0003	MDL
	Caribou flesh ^c	Bq/g ww	0.0002	Average	-	-	0.0001 (MDL)							
	Moose flesh	Bq/g ww	0.0002	MDL	0.0001	UCLM	Not evaluated							
Spruce grouse	Bq/g ww	0.0003	MDL	0.0003	MDL	0.0003	MDL	0.0003	MDL	0.0003	MDL	0.0003	MDL	
Snowshoe hare	Bq/g ww	0.0001	MDL	0.0001	MDL	0.0001	MDL	0.0001	MDL	0.0001	MDL	0.0001	MDL	

Note: MDL – method detection limit; Max – maximum concentration; UCLM – 95th upper confidence limit of the mean.

^a For Uranium City residents eating fish from Prospector's Bay.

^b For Uranium City residents eating fish from Crackingstone River inlet.

^c Background barren-ground caribou (for Camsell Portage) assumed to be represented by the Qamanirjuaq Herd. Barren-ground caribou in the study area were from the Beverly Herd and were pooled together.

^d Maximum detected concentration after removal of sample contaminated with lead shot.

^e The EPCs for uranium-238 were derived from the chemical uranium concentrations using a conversion factor of 12.347 Bq of uranium-238 per mg of chemical uranium.

^f Berry EPCs were converted from dry weight (dw) to wet weight (ww) using an average moisture content of 85%.

* Only one measured value, all rest of samples below the MDL.

** Two or three measured samples, all the rest of the samples below the MDL.

4.3 Exposure Estimation

The exposure assessment uses all of the available information collected about people and the measured concentrations of COPCs in various media to estimate long-term total exposures to residents of all ages (adults, teens, children, toddlers) from each COPC. For non-carcinogenic, non-radiological COPC (cadmium, cobalt, copper, lead, molybdenum, nickel, selenium, uranium), total exposures were estimated from surface water, country foods, and supermarket foods. For carcinogens (arsenic) and radionuclides (lead-210, polonium-210, radium-226, thorium-230), incremental (above background) exposures are evaluated and therefore supermarket foods do not contribute to the incremental exposure as they are considered to be at background.

Exposures from ingestion of surface water and country foods were calculated using equations provided by Health Canada (Health Canada 2012). These equations are provided in Attachment D, along with the resulting exposures. Estimated daily intakes of COPC in supermarket foods were derived from data gathered by Health Canada (2016), as described in Attachment C.

5.0 TOXICITY ASSESSMENT

Toxicity refers to the ability of a COPC to cause temporary or permanent adverse effects in the body. Toxicity depends on several factors such as the form of the chemical, the amount of exposure, and the duration of the exposure.

5.1 Non-Radionuclides

For COPC that do not cause cancer (i.e., cadmium, cobalt, copper, lead, molybdenum, nickel, selenium, uranium), there is a permissible (safe) level or threshold dose below which adverse health effects are not expected to occur. These permissible levels are set by regulatory agencies such as Health Canada and the United States Environmental Protection Agency (U.S. EPA) based on scientific studies from laboratory animal tests or on human epidemiological studies or workplace exposure investigations. These studies are reviewed by a number of experienced scientists in a wide range of scientific disciplines in order to determine the maximum dose that a human can be exposed to without having an adverse health effect. Permissible doses are usually reported as the amount of COPC per unit body weight per unit time that a person may be exposed to every day of their entire life that will not cause adverse health effects. It should be noted that exposure above a permissible level does not mean that an effect will occur, but instead means that there is an increased risk of an adverse effect occurring. It is also noted that some of the COPC (copper, molybdenum and selenium) are essential micronutrients for all living organisms.

Arsenic is known to cause cancer. For COPC that cause cancer, the total exposure over an entire lifespan (from birth to death) is calculated using a lifetime receptor, which represents a combination of all life stages (toddler, child, teen, and adult). This is because before a cancer occurs, a person needs to be exposed for a very long time to arsenic before an adverse effect is observed. The exposure calculated for the lifetime receptor is known as the lifetime average daily dose. The cancer-causing power of a carcinogen is represented by its cancer slope factor. These are values set by regulatory agencies such as Health Canada and the U.S. EPA based on specially designed cancer studies in humans or laboratory animals. Cancer slope factors are used in combination with the average lifetime exposure estimates for carcinogens to estimate cancer risks.

Toxicity Reference Values (TRVs) are intended to protect the most sensitive individuals (e.g., the elderly, pregnant women, children, etc.) as well as people with compromised

health such as asthmatics. Table 5.1 provides a summary of the TRVs selected for use in the assessment for oral exposure. The TRVs are primarily obtained from Health Canada (2010b), as well as JECFA. The TRVs, health effects (toxicological endpoints), and reference sources for each TRV are provided in the table.

Table 5.1 Summary of non-radiological toxicity reference values

COPC	Classification ^a	Toxicity Reference Value (mg/kg-d) ^b	Endpoint	Reference
Arsenic	C	1.8	Internal cancers	Health Canada (2010b)
	NC	0.003 ^c	Lung cancer	JECFA (FAO and WHO 2011a)
Cadmium	NC	0.0008	Renal effects	JECFA (FAO and WHO 2011b)
Cobalt	NC	0.04	Fatal cardiomyopathy	Environment Canada/Health Canada (EC/HC 2011)
Copper	NC	0.14 (adult) 0.13 (teen) 0.11 (child) 0.09 (toddler)	Gastrointestinal effects	Health Canada (2010b)
Lead	NC	0.0015	Decrease in IQ of 1 point	JECFA (FAO and WHO 2011b); Wilson and Richardson (2012)
Molybdenum	NC	0.028 (adult) 0.027 (teen) 0.023 (child) 0.023 (toddler)	Reproductive effects	Health Canada (2010b)
Nickel	NC	0.011	Perinatal lethality	Health Canada (2010b)
Selenium	NC	0.0057 (adult) 0.0062 (teen) 0.0063 (child) 0.0063 (toddler)	Selenosis	Health Canada (2010b)
Uranium	NC	0.0006	Nephrotoxicity, hepatotoxicity	Health Canada (2010b)

Note: Values are consistent with those specified for use in risk assessments at Cameco facilities in Northern Saskatchewan (CanNorth 2018).

^a C – carcinogenic; NC – Non-carcinogenic.

^b Values are for all age groups in mg/kg-d, unless otherwise noted.

^c In (mg/kg-d)⁻¹.

5.1.1 Arsenic

Arsenic has four oxidation states, (-3, arsine), (0, metal), (+3, arsenite), and (+5, arsenate), although it is usually found as inorganic arsenic sulphide or as metal arsenates and arsenides. Organic arsenic compounds such as arsenobetaine are found in fish and shellfish but are considered not to be toxic. All other organic arsenic species have no

definitive dose response curves and are assumed to have the same toxicity as inorganic arsenic.

The Agency for Toxic Substances and Disease Registry (ATSDR 2016) provides a detailed discussion of the various toxicity endpoints for arsenic. Both the U.S. EPA and Health Canada are in the process of evaluating arsenic toxicity studies with the goal of updating the TRVs for arsenic. These evaluations are just starting and thus the existing TRVs provided by Health Canada and the U.S. EPA are considered valid for use in HHRAs.

A low-end Benchmark Dose Level (BMDL_{0.5}) for a 0.5% increased incidence of lung cancer was derived by JECFA (FAO and WHO 2011a) for arsenic, using a range of assumptions to estimate exposure from drinking water and food with differing concentrations of arsenic. The BMDL_{0.5} was determined to be 0.003 mg/kg-d (range of 0.002 to 0.007 mg/kg-d based on the range of estimated dietary exposure); this value was selected as the oral non carcinogenic TRV for this assessment as no TRVs for non-carcinogenic endpoints are provided in Health Canada (2010b).

Arsenic can cause cancer in the lung, bladder, skin and other organs. An oral slope factor of 1.8 (mg/kg-d)⁻¹ derived by Health Canada (2010b) was used in this assessment. The Health Canada TRV is the most recently derived TRV and is reflective of formation of internal cancers and not skin cancer.

5.1.2 Cadmium

Oral exposures to cadmium in both humans and animals can result in death through the destruction of cell membranes at the point of entry. Chronic oral exposures to cadmium can result in kidney effects.

In 2010, JECFA (FAO and WHO 2011b) determined that renal dysfunction is the most sensitive toxicological end-point. Based on this information, JECFA found that the existing health-based guidance value for cadmium was expressed on a weekly basis, but, given the long half-life of 15 years in human kidneys, a monthly value was more appropriate. Based on a meta-analysis of several epidemiology studies and using a one-compartment toxicokinetic model, a lower bound of the 5th population percentile dietary cadmium exposure of 0.025 mg/kg per month (or 0.0008 mg/kg-d) would result in a urinary cadmium concentration of 5.24 microgram cadmium per gram creatinine. JECFA (FAO and WHO 2011b) considered this to be a No Observable Adverse Effects Level

(NOAEL) and the point of departure. Thus, the oral TRV selected for this assessment was 0.0008 mg/kg-d as it based on the lower bound of the 5th population percentile dietary cadmium exposure.

5.1.3 Cobalt

Naturally occurring, cobalt has 2 valent states (+2 and +3) and is usually found in the environment combined with other elements such as oxygen, sulphur, and arsenic.

Health Canada and the U.S. EPA do not provide exposure limits for cobalt; however Environment Canada/Health Canada (EC/HC 2011) completed a screening assessment for cobalt and selected a Lowest Observable Adverse Effects Level (LOAEL) of 0.04 mg/kg-d as the critical effect level exposure for the oral route, even though evidence exists of therapeutic use of cobalt at higher doses. This value was selected as the TRV for the assessment.

5.1.4 Copper

At low levels, copper is an essential micronutrient for all living organisms, while at higher levels it can result in toxicity. Copper is essential for human metabolism, and copper deficiencies such as nutritional anaemia, neutropenia and bone formation disturbances in children, and cardiovascular dysfunctions in adults, may result when insufficient levels of copper are ingested.

Upper Limits (ULs) for copper intake of 0.13 mg/kg-d based on liver function and a NOAEL of 10 mg/d for an 80 kg adult have been established by the Food and Nutrition Board of the Institute of Medicine (IOM 2001). Age-specific ULs for the Health Canada age ranges (infant, toddler, child, teen) were extrapolated by Health Canada (2010b) from the adult UL of 10 mg/d by adjusting for age-specific body weights and growth factors according to the method described by the IOM (2001). The age-specific ULs were then converted to the TRV units of mg/kg-d directly by dividing by the Health Canada (2012) age-specific body weights to obtain the weight normalized values shown in Table 5.1.

5.1.5 Lead

The most sensitive target organs for lead are thought to be the nervous system, the hematopoietic system, and the cardiovascular system. Toxic effects of lead are also

manifested through the kidneys, immunological and reproductive systems (ATSDR 2007).

There is currently no available guidance on how to evaluate the potential health effects associated with exposure to lead given that current literature studies indicate that adverse effects occur at very low blood lead levels. In addition, the majority of human effects data are expressed as a blood lead concentration rather than a dose or concentration in environmental media.

JECFA (FAO and WHO 2011b) carried out dose-response modeling of blood lead levels and children's IQ based on estimates from Lanphear et al. (2005). Using a slope factor of 0.16 $\mu\text{g}/\text{dL}$ per $\mu\text{g}/\text{d}$ relating BLL to ingested lead and a combination of bilinear and Hill models, the chronic dietary exposure associated with a decrease in IQ of 1 point was equivalent to 1.5 $\mu\text{g}/\text{kg-d}$ for a 20 kg child. JECFA (FAO and WHO 2011b) indicated that this result provides a more complete accounting of uncertainties associated with the dose-response relationship of lead and IQ. For adults, systolic blood pressure was selected as the most sensitive end point. Dietary exposure of approximately 1.3 $\mu\text{g}/\text{kg-d}$ was found to correspond to an increase in blood pressure of about 1 mmHg. Wilson and Richardson (2012) determined a risk specific dose of 1.5 $\mu\text{g}/\text{kg-d}$ for pregnant women associated with a decrease in IQ of 1 point. Thus, a TRV of 0.0015 mg/kg-d was used in the assessment.

5.1.6 Molybdenum

Molybdenum is naturally found in all plants and animals. It is an essential nutrient for good health in humans and animals. A dose of 45 $\mu\text{g}/\text{d}$ is recommended for adults. In the general population, exposure to molybdenum comes mainly from food. Milk is a major source of dietary molybdenum in children (ATSDR 2017). Toxic effects of molybdenum are generally reported in the liver, kidney and reproductive system.

Health Canada (2010b) recommends age-specific TRVs for molybdenum. The age-specific ULs for molybdenum are based on a NOAEL value derived for adults (IOM 2001) from sub-chronic developmental and reproductive effects on rats consuming molybdate in drinking water. An uncertainty factor of 30 was applied (10 for interspecies variability and 3 for intraspecies variability) to the NOAEL value of 0.9 mg/kg-d. The adult UL was weight adjusted to derive the age-based TRVs shown in Table 5.1.

5.1.7 Nickel

The major pathway of human exposure to nickel is from food intake.

The nickel TRV recommended by Health Canada (2010b) is for soluble nickel (nickel chloride and nickel sulphate) of 0.011 mg/kg-d based on a NOAEL value of 1.1 mg/kg-d for reproductive effects over two generations in rats (SLI 2000). Based on the 2-generation study it was demonstrated that nickel can cause post-implantation loss in rats at a sufficiently high dose; however, it is less clear whether the high-dose was an adverse effect level in light of the inconsistency between the F0 and F1 generations. Nevertheless, the high dose of 2.2 mg/kg-d was judged to be an equivocal LOAEL and the second highest dose of 1.1 mg/kg-d was a clear NOAEL which seems consistent with Health Canada (2010b). The WHO (2007) also came up with the same TRV based on the same study. Thus the Health Canada (2010b) TRV of 0.011 mg/kg-d was used in the assessment.

5.1.8 Selenium

Selenium is an essential trace nutrient important in many biochemical and physiological process including the biosynthesis of coenzyme Q, regulation of ion fluxes across membranes, maintenance of keratins, stimulation of antibody synthesis, and activation of glutathione peroxidase (Hammond and Beliles 1980). Health Canada adopted the recommended daily intake for selenium established by the IOM (2000) which varies between 15 and 55 µg/d as a minimum selenium dose, depending on the age group.

Health Canada (2010b) provides age-specific ULs for selenium. The ULs are derived from a NOAEL value of 0.8 mg/d for symptoms of selenosis in adults based on a human epidemiological study by Yang and Zhou (1994) with an uncertainty factor of 2 resulting in a UL for adults of 0.4 mg/d. A NOAEL of 0.007 mg/kg-d based on infants and children based on an epidemiological study by Shearer and Hadjimarkos (1975) was also considered in the derivation of the age-adjusted TRVs. The IOM (2000) recommends adult and infant ULs. The UL of 0.4 mg/d for adults is based on a NOAEL for symptoms of selenosis with an uncertainty factor of 2 to protect sensitive individuals, and the UL of 0.007 mg/kg-d for infants is based on the same study cited by Health Canada (2010b). The IOM used the infant UL to derive ULs for older infants, children, and adolescents.

5.1.9 Uranium

Uranium is typically evaluated for chemical toxicity rather than radiation toxicity as the critical endpoint because of the very long half-lives associated with natural uranium isotopes. Most people are exposed to uranium through food and drinking water. Root vegetables have the highest amount of uranium due to concentrations in the soil in which they are grown. People living near to uranium mining, processing and manufacturing facilities may be exposed to more uranium than the general population (ATSDR 2013). Uranium toxicity targets the kidneys. Kidney damage has been observed in humans and animals after ingesting or inhaling uranium but it is a reversible effect (ATSDR 2013).

Health Canada (2010b) provides a TRV of 0.0006 mg/kg-d based on a subchronic study on rats that were administered uranyl nitrate hexahydrate in drinking water for 91 days (Gilman et al. 1998). The study's endpoint was renal effects, with a LOAEL of 0.96 mg/L (0.06 mg/kg-d) for degenerative lesions in the kidney in male rats. This study provides the basis for the Health Canada uranium drinking water guideline.

5.2 Radionuclides

Assessment of radiation exposures to members of the public is commonly based on estimation of the incremental effects of the site. The radionuclide intake by human receptors from various pathways is converted into a dose that is presented in millisieverts per year (mSv/y).

The Canadian Nuclear Safety Commission (CNSC) recommends an incremental dose limit of 1000 μ Sv/y (1 mSv/y) for the protection of members of the public. In addition, Health Canada has a dose constraint of 300 μ Sv/y (0.3 mSv/y) in the Canadian NORM Guidelines (Health Canada 2000). Doses below this level are considered as “unrestricted” and no further action is needed to control doses or materials. The International Commission on Radiation Protection (ICRP) has also recommended adopting a dose constraint of 300 μ Sv/y (ICRP 2007). For radiological risk assessments, it is always good to consider the ALARA (As Low As Reasonably Achievable) principle, thus, the dose constraint can be used for ALARA considerations.

6.0 RISK CHARACTERIZATION

The results of the risk characterization for the HHRA are provided in the following sections; more detailed results are provided in Attachment D. Attachment E provides the sample calculations.

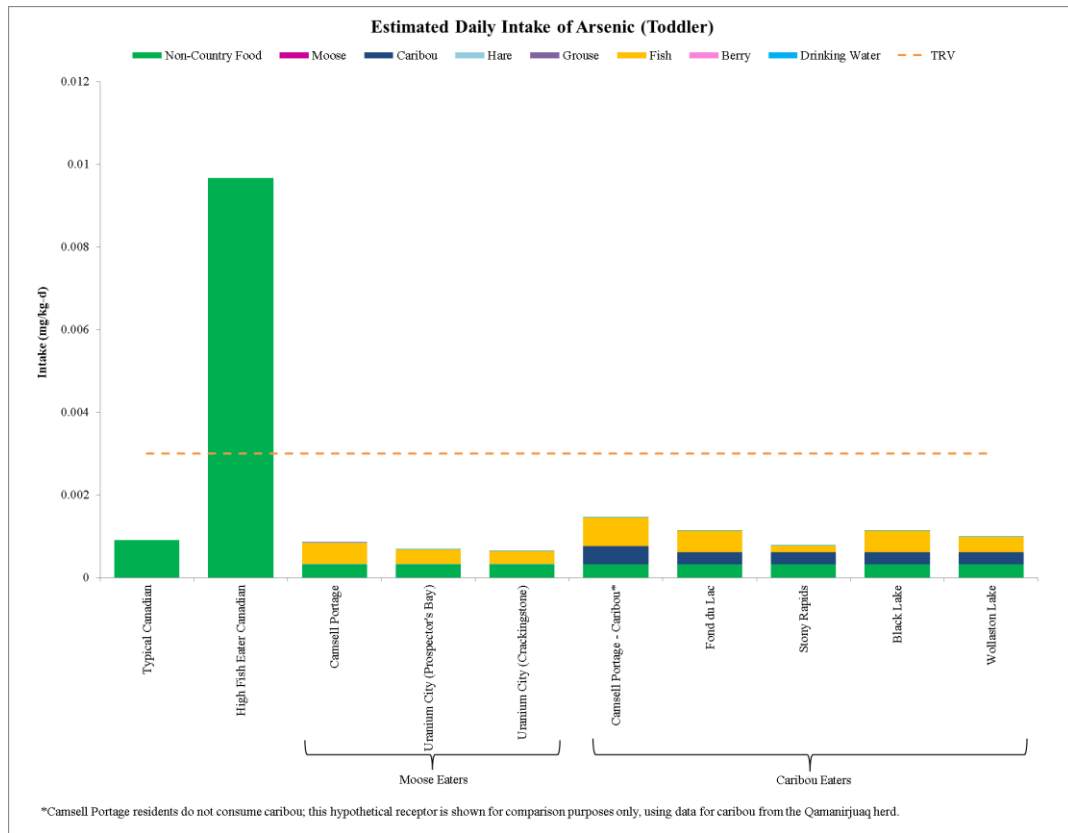
6.1 Non-Radionuclides

This section discusses the results for exposures to the non-radionuclides. The risk for non-carcinogenic COPC is determined by comparing the calculated exposure estimates to the TRV or safe level. When the calculated exposure is below the TRV (safe level), adverse health effects are not expected. In this case, risks may be considered to be insignificant or negligible. If the calculated exposure estimate exceeds the TRV (safe level), then the risk of an adverse health effect cannot be ruled out and further analysis may be required; however safety factors are sometimes used in the development of a safe level and these need to be considered when looking at the results.

The toddler is typically the most exposed receptor due to lower body weight and thus the results provided in the figures below are for toddlers. Attachment D provides the results for all the other life stages including child, teen and adult. It should be noted that the figures below show the intakes associated with eating country foods, supermarket foods, and drinking water. The inhalation pathway is considered to be negligible and the soil pathway, while representing some exposure, is much smaller than the exposure from eating food.

6.1.1 Arsenic

Figure 6.1 shows the results for arsenic exposure and demonstrates that the intake of arsenic from eating country foods, supermarket foods and drinking water are all below the TRV (safe level) indicating that arsenic is not a cause for concern in the Athabasca Basin communities. Supermarket foods and eating fish from the local area contribute the most to the total intake. Barren-ground caribou flesh also adds some arsenic exposure in communities that consume barren-ground caribou. Ingestion of surface water and consumption of other country foods such as moose, snowshoe hare, spruce grouse, and berries contribute negligibly to the total arsenic intake for the toddler. It is noted that a typical Canadian with a high fish diet has much higher arsenic exposure than that calculated for the Athabasca Basin communities. This exposure is most likely due to the arsenobetaine present in the fish.

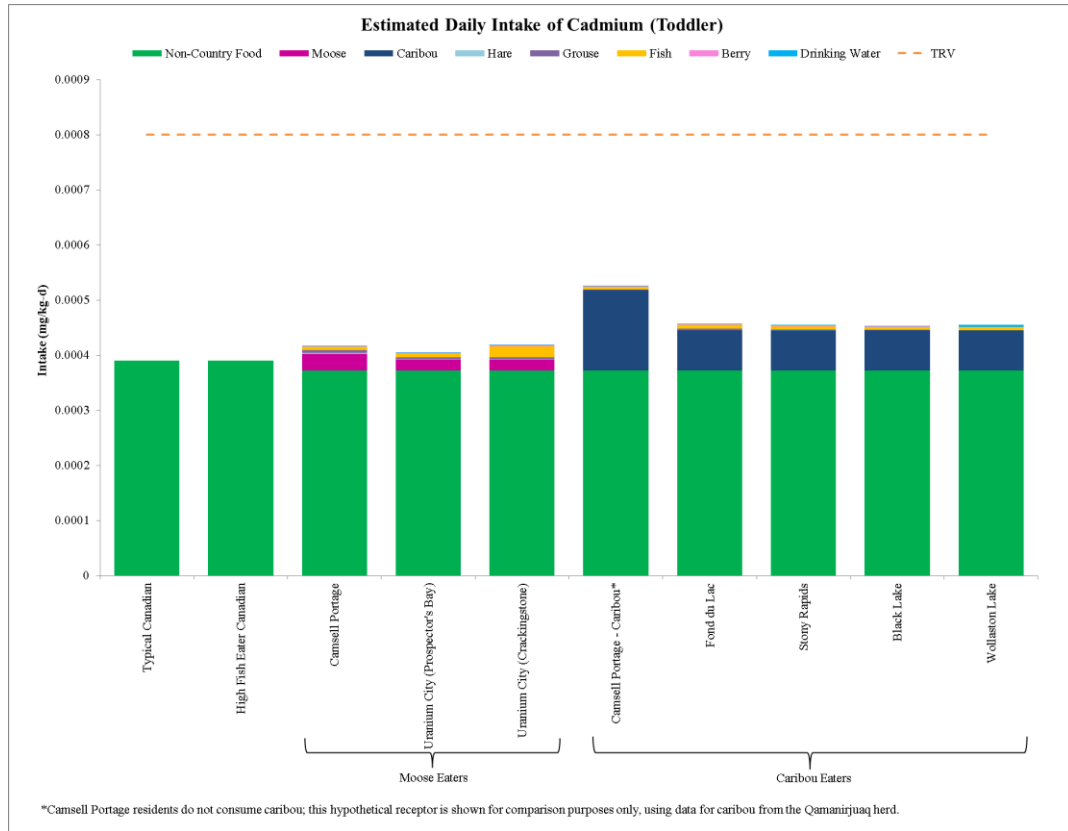
Figure 6.1 Estimated total arsenic intakes for toddler

Arsenic is also known to cause cancer. The evaluation of potential risks from exposure to arsenic is completed on an incremental basis (i.e. incremental risk = total risk – background risk). In many cases, it is difficult to separate incremental risk from total risk. The surface water and country food arsenic EPCs are similar to background concentrations and thus there are no incremental arsenic intakes or resulting risks.

6.1.2 Cadmium

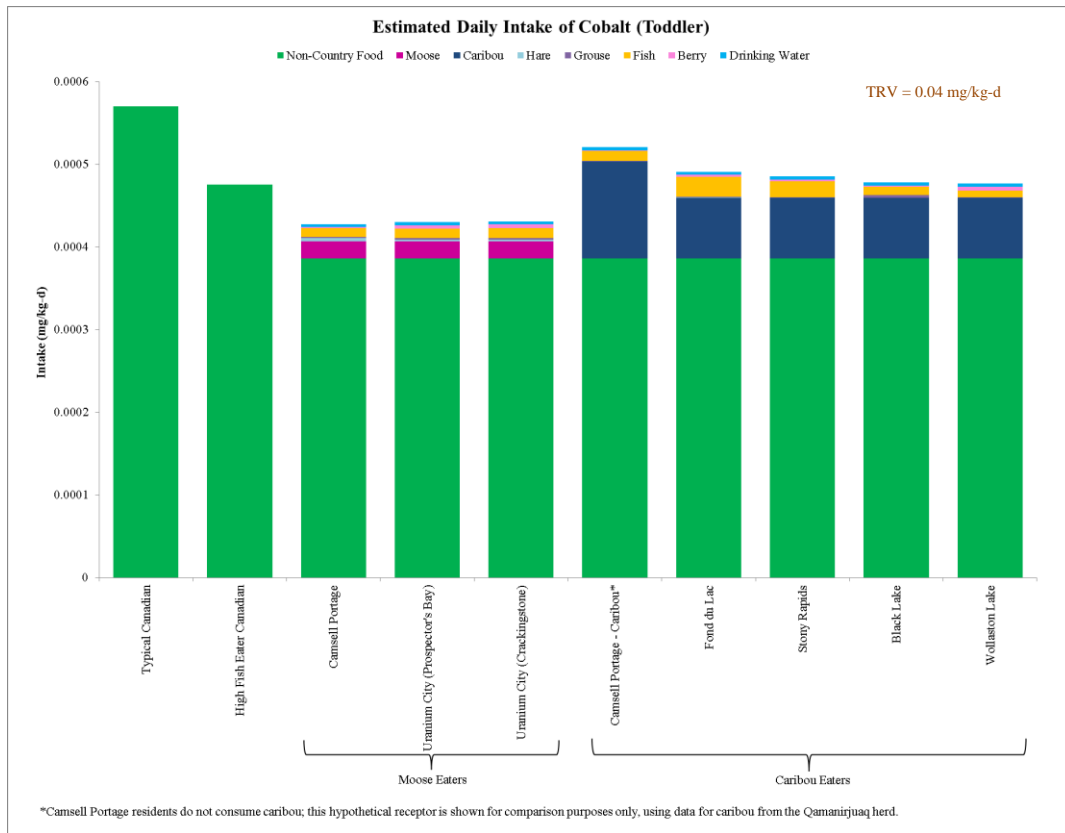
Figure 6.2 shows the results for cadmium exposure and demonstrates that the intake of cadmium from eating country foods, supermarket foods and drinking water are all below the TRV (safe level) indicating that cadmium is not a cause for concern in the Athabasca Basin communities. Supermarket foods represent the majority of the cadmium exposure. Eating moose and barren-ground caribou contributes some cadmium exposure. However, the concentrations of cadmium in barren-ground caribou flesh from the area are in fact lower than those from background, as evidenced by the higher contribution of barren-ground caribou to the total intake for the Camsell Portage toddler.

Figure 6.2 Estimated total cadmium intakes for toddler



6.1.3 Cobalt

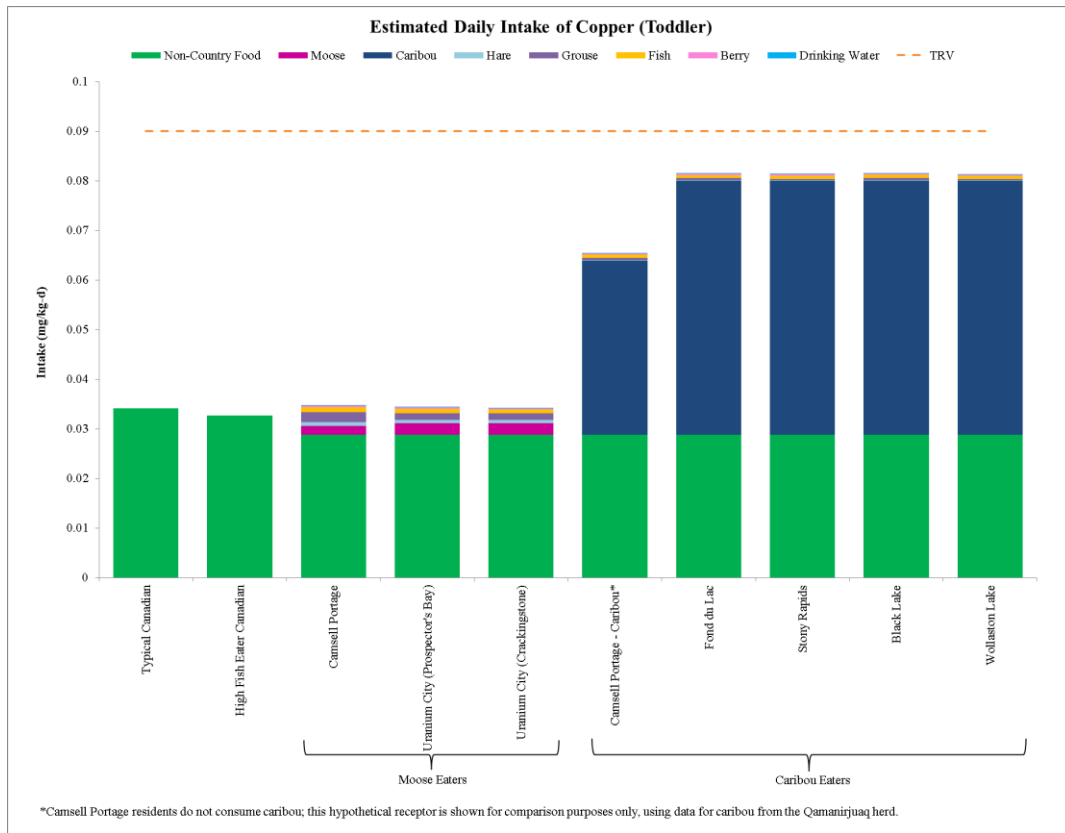
The total intakes of cobalt from supermarket foods, country foods, and surface water are well below the level considered to be safe (i.e., the TRV of 0.04 mg/kg-d), as shown in Figure 6.3 indicating that cobalt is not a cause for concern in the Athabasca Basin communities. The intakes of cobalt from country foods are less than intakes of comparable foods from the supermarket for typical Canadians. Similar to cadmium, supermarket food represents the majority of the cobalt exposure. Although eating barren-ground caribou flesh is the primary country food exposure pathway, the exposure to cobalt is higher in background barren-ground caribou.

Figure 6.3 Estimated total cobalt intakes for toddler

6.1.4 Copper

Figure 6.4 shows the results for copper exposure and demonstrates that the intake of copper from eating country foods, supermarket foods and drinking water are all below the TRV (safe level) indicating that copper is not a cause for concern in the Athabasca Basin communities. Supermarket foods account for the majority of the copper exposure in Camsell Portage and Uranium City. For communities that eat barren-ground caribou such as Fond du Lac, Stony Rapids, Black Lake and Wollaston Lake, copper in barren-ground caribou flesh represents the largest contributor to the total intake of all foods. It should be noted that the copper intakes are higher than the intakes for people eating barren-ground caribou from background, which is reflective of the higher copper concentration in barren-ground caribou from the local area (3.5 mg/kg ww) as compared to background (2.4 mg/kg ww).

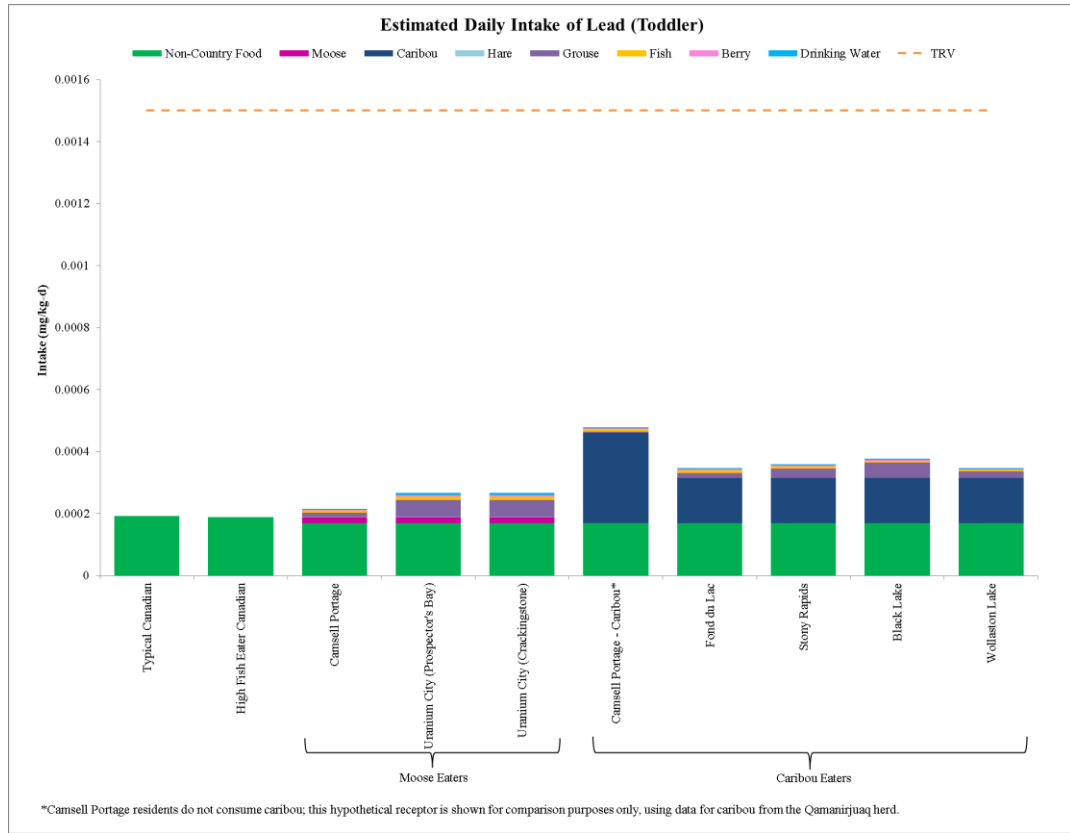
Figure 6.4 Estimated total copper intakes for toddler



6.1.5 Lead

Figure 6.5 shows the results for lead exposure and demonstrates that the intake of lead from eating country foods, supermarket foods and drinking water are all well below the TRV (safe level) indicating that lead is not a cause for concern in the Athabasca Basin communities. As discussed previously, some barren-ground caribou and spruce grouse flesh collected through the community monitoring program demonstrated high lead from lead shot used to kill the animal and these were removed from the data set. Although barren-ground caribou is the largest country food contributor to lead intake, the concentrations in barren-ground caribou flesh in the region are lower than those in background barren-ground caribou, as evidenced by the higher contribution of barren-ground caribou to the total intake for the Camsell Portage toddler consuming barren-ground caribou from background.

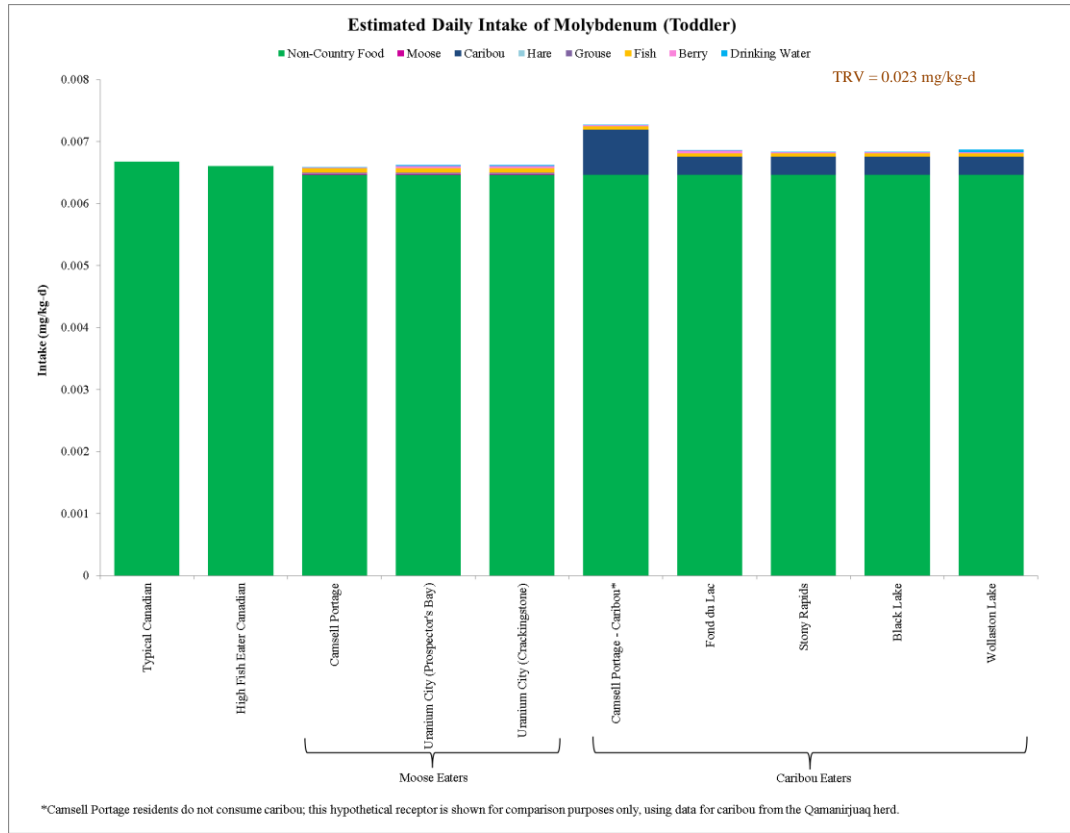
Figure 6.5 Estimated total lead intakes for toddler



6.1.6 Molybdenum

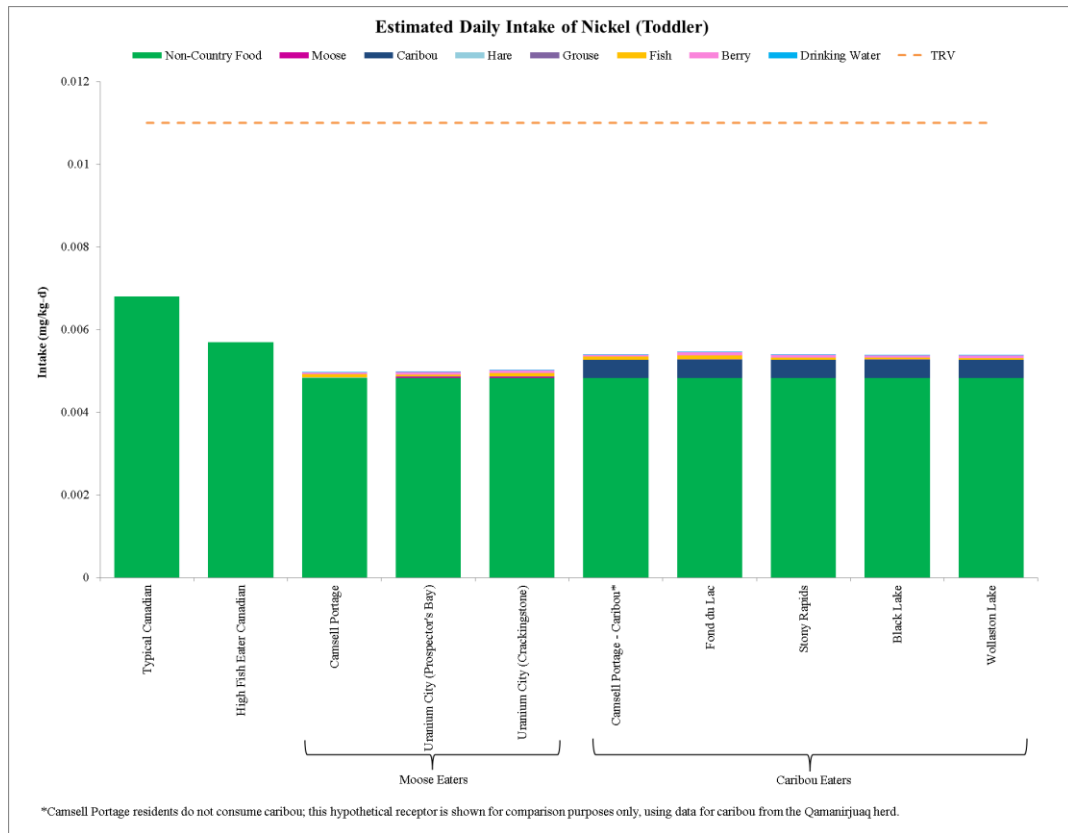
Surface water and country foods contribute negligibly to the intake of molybdenum, as shown in Figure 6.6. In addition, total molybdenum intakes from supermarket foods, country foods, and surface water are all well below the level considered to be safe and therefore molybdenum is not a cause of concern for Athabasca Basin residents.

Figure 6.6 Estimated total molybdenum intakes for toddler



6.1.7 Nickel

Figure 6.7 shows the results for nickel exposure and demonstrates that the intake of nickel from eating country foods, supermarket foods and drinking water are all below the TRV (safe level) indicating that nickel is not a cause for concern in the Athabasca Basin communities. Supermarket foods are the main contributor to nickel exposure. Berries and barren-ground caribou add small amounts to nickel exposure.

Figure 6.7 Estimated total nickel intakes for toddler

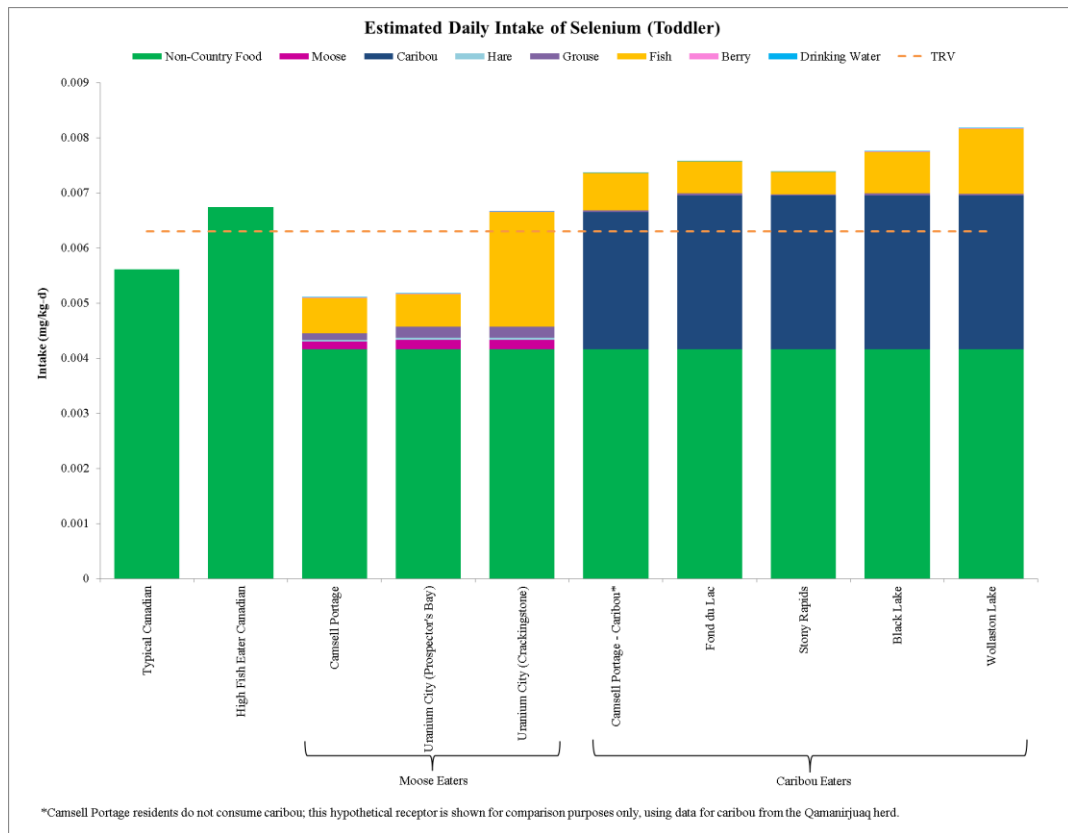
6.1.8 Selenium

The total intakes of selenium are shown in Figure 6.8 and demonstrate that supermarket foods represent the largest contributor to selenium exposure with intakes that are close to the TRV. Cereals and eggs are major contributors to selenium in supermarket foods. Selenium is an essential element for humans and the upper limit of the recommended daily intake rate for toddlers from the IOM (2000) is approximately 100 µg selenium a day and is approximately equivalent to the TRV for toddlers provided by Health Canada. It should be noted that for barren-ground caribou eaters, the toddler intake was assumed to be equal to the child intake and therefore may result in an overestimate of the exposure due to the consumption of barren-ground caribou and fish. For example, it has been assumed that the amount of barren-ground caribou consumed by a toddler is 242 g/d, which is approximately 3 servings that are the size of the palm of your hand. Section 6.4.2 provides a sensitivity analysis related to changing the diet to the First Nations diet from Richardson (1997). As seen in Section 6.4.2, if the dietary intakes of barren-ground caribou for a toddler are based on a typical First Nations diet, intakes are essentially at or

below the TRV. Based on the potential overestimate for the toddler and the results for all other life stages which demonstrate that selenium intakes are below the TRV, it is concluded that selenium exposure is not a cause for concern for Athabasca Basin communities.

After supermarket foods, ingestion of barren-ground caribou and fish represent the largest exposure pathways. As seen from Figure 6.8, selenium intakes associated with eating barren-ground caribou are similar to background. Concentrations of selenium in fish in Crackingstone River inlet have the highest reported concentrations. However, the total selenium exposure for the toddler at this location is similar to the exposure for a typical Canadian toddler with a high fish diet. Thus, selenium in fish is not a cause for concern for Uranium City residents who fish in the Crackingstone River.

Figure 6.8 Estimated total selenium intakes for toddler

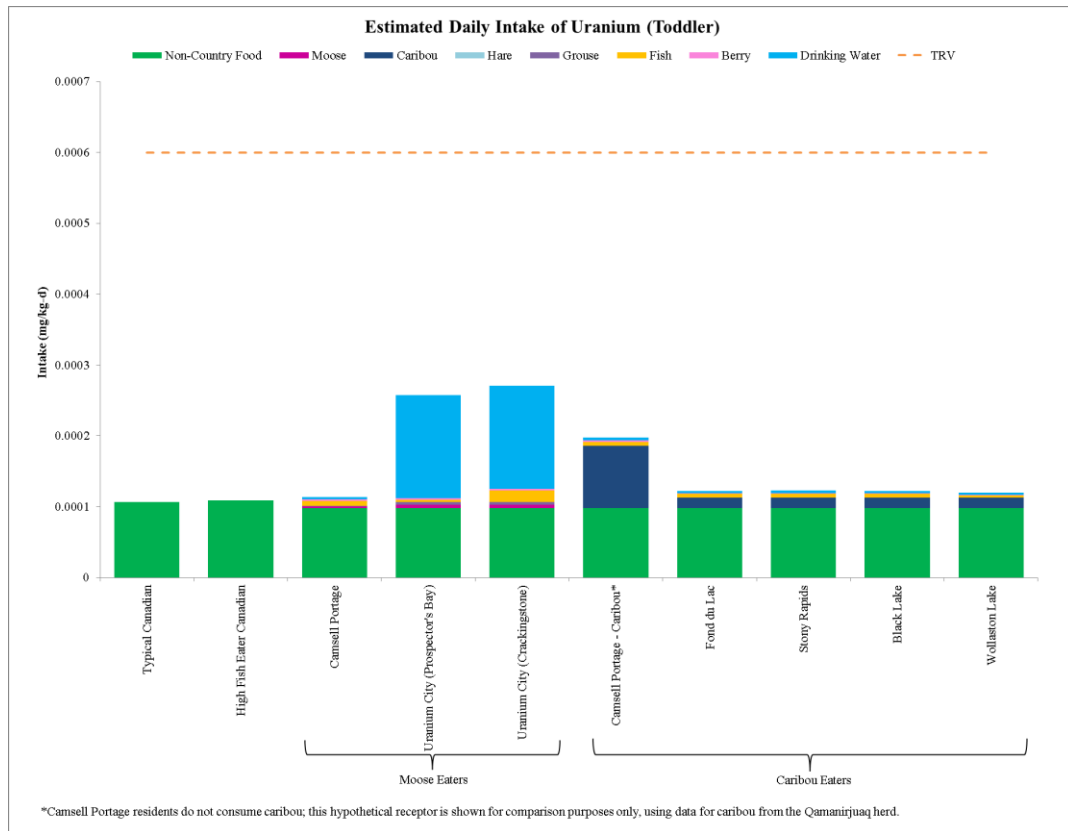


6.1.9 Uranium

For uranium, the intakes from supermarket food, country foods and water are well below the safe level (TRV) as shown in Figure 6.9 indicating that uranium exposure is not a

concern for Athabasca Basin communities. Supermarket foods represent the majority of uranium exposure; however drinking water at Uranium City, from the Fredette River, at a maximum uranium concentration of 4 µg/L results in additional uranium exposure. It must be noted that the Fredette River has not been affected by any industrial activity in the area and this concentration is well below the drinking water guideline of 20 µg/L and was measured in 2011. Subsequent concentrations ranged from 1 to 1.7 µg/L with a concentration of 1 µg/L being measured in 2017.

Figure 6.9 Estimated total uranium intakes for toddler



6.2 Radionuclides

The incremental doses from all radionuclides in surface water and country foods are shown for the toddler in Figure 6.10 by exposure pathway and in Figure 6.11 by radionuclide. From Figure 6.10, it can be seen that ingestion of moose and spruce grouse contribute to the dose for people in Uranium City who eat fish from Prospector’s Bay; fish from Crackingstone River inlet increase the exposure to radionuclides by about 250 µSv/y mainly due to polonium-210 and uranium-238. The incremental doses to residents of Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake are much lower

and are predominantly from exposure to radium-226 (Figure 6.11) from ingestion of barren-ground caribou (Figure 6.10). Since Camsell Portage is considered the background location there is no incremental dose for this location.

However, all incremental doses are below the CNSC incremental dose limit of 1000 $\mu\text{Sv/y}$ for the protection of members of the public and therefore exposure to radionuclides in the environment in these locations is not a cause for concern to Athabasca communities and country food are safe to harvest and eat.

Figure 6.10 Estimated incremental dose for toddler by pathway

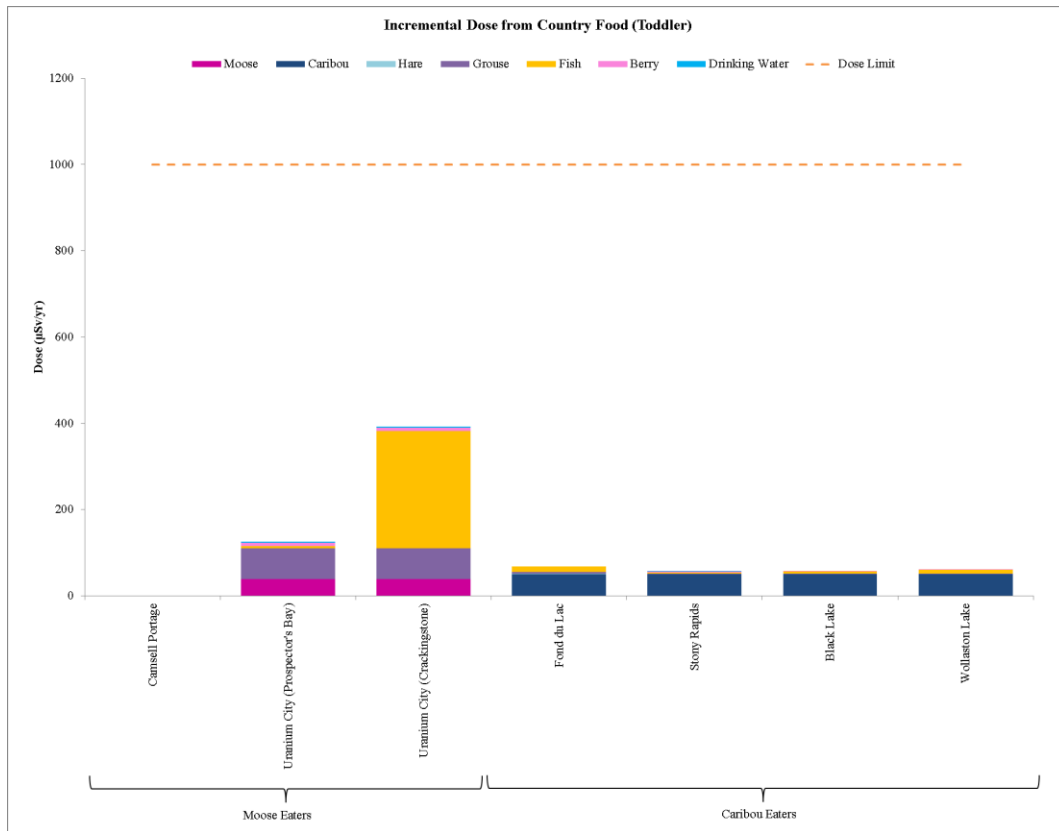
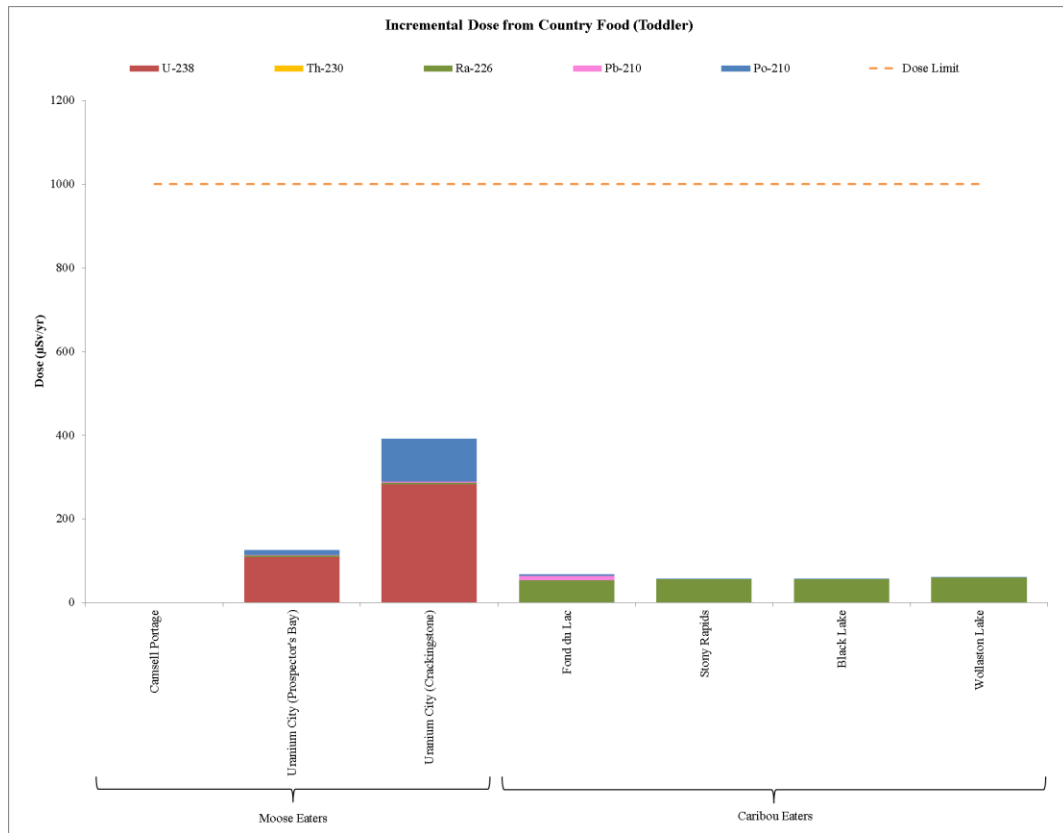


Figure 6.11 Estimated incremental dose for toddler by radionuclide

6.3 Interpretation of Risk Estimates

The results of the risk assessment for consuming country foods, supermarket foods and drinking water from various locations indicates that the risks from exposure to non-radionuclides and radionuclides are determined to be in the negligible.

6.4 Sensitivity Analysis

6.4.1 Consumption of Organs

A sensitivity analysis was conducted to consider cadmium exposure from eating moose and barren-ground caribou organs since the concentrations were higher than background. Generally speaking, metals follow a predictable pattern in mammals with the highest concentrations in kidney, less in the liver, and lowest in muscle tissue, and levels increase with the age of the animal (Gamberg et al. 2005). In addition, lead concentrations in moose organs were higher than background so were also considered in the organ exposure.

Adults and teens in the communities of the Athabasca Basin consume relatively small amounts of moose and/or barren-ground caribou organs (e.g., heart, liver, kidney, etc.). As discussed in Section 2.3, concentrations of COPC in organs from moose from exposure areas were the same as in moose from background, with the exception that cadmium and lead were slightly elevated. Similarly, with the exception of cadmium, concentrations of COPC in organs from barren-ground caribou from the area (the Beverly herd) were similar to those in organs from barren-ground caribou from background (the Qamanirjuaq herd).

Caribou, moose, and supermarket organ ingestion rates were obtained from the Hatchet Lake dietary survey (CanNorth 2000) or Health Canada (1994) and are provided in Attachment B. As was done for the assessment of moose flesh, cadmium and lead EPCs for moose organ meats were developed for individual community locations (i.e., Uranium City, Camsell Portage). It is noted that in Uranium City it was assumed that people also eat fish from Crackingstone River inlet. For barren-ground caribou, cadmium EPCs for organ meats were developed from all available data assuming all barren-ground caribou were from the Beverly herd. Thus, the same EPC was applied at all exposure locations (Fond du Lac, Stony Rapids, Black Lake, Wollaston Lake). Data from the Qamanirjuaq herd were again used as the background EPCs for evaluation of the hypothetical Camsell Portage resident consuming barren-ground caribou organs. The EPCs are summarized in Table 6.1 for cadmium and lead, while data for all COPC are provided in Attachment A. The EPCs are represented by the mean concentration in liver, kidney, and heart where available since the JECFA (FAO and WHO 2008) indicate that the average concentration of monitoring data should be used for food exposure since the use of maximum concentrations substantially overestimates the dietary exposure.

Table 6.1 Moose and barren-ground caribou organ exposure point concentrations

Country Food	Location	Exposure Point Concentration (mg/kg ww)	
		Cadmium	Lead
Moose Organ	Uranium City	6.3	0.007
	Camsell Portage	4.0	0.002
Barren-ground caribou Organ	Fond du Lac, Stony Rapids, Black Lake, Wollaston Lake	4.2	Not evaluated
	Background	1.9	Not evaluated

The resulting total cadmium intakes for an adult including eating organs are presented in Figure 6.12 for all communities. As can be seen from this figure, eating organ meats more than doubles the resulting total intakes, but the total intakes are still well below the level considered to be safe and therefore cadmium present in organs of barren-ground caribou and moose do not represent a cause for concern. The intakes for lead resulting from eating moose organs are shown in Figure 6.13 for communities that eat moose and demonstrates that exposure to lead in moose organs is negligible. Detailed intakes and results for the teen are provided in Attachment D.

Figure 6.12 Estimated total cadmium intakes for adult – organ consumption

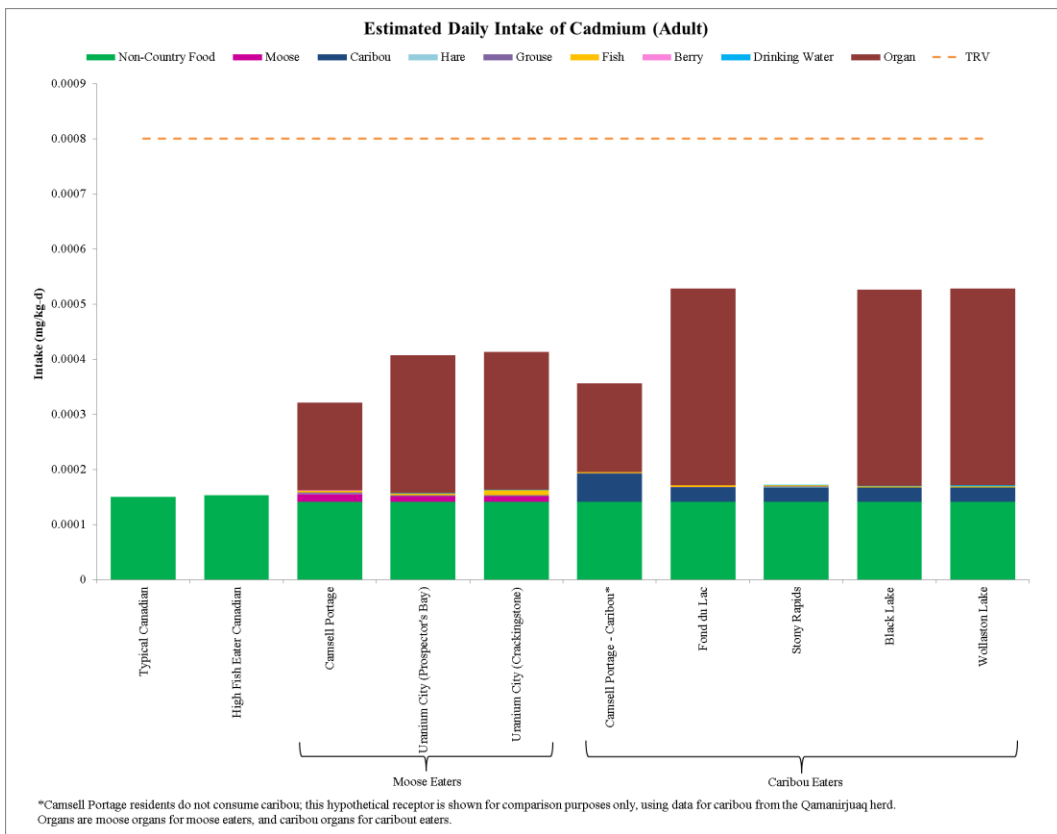
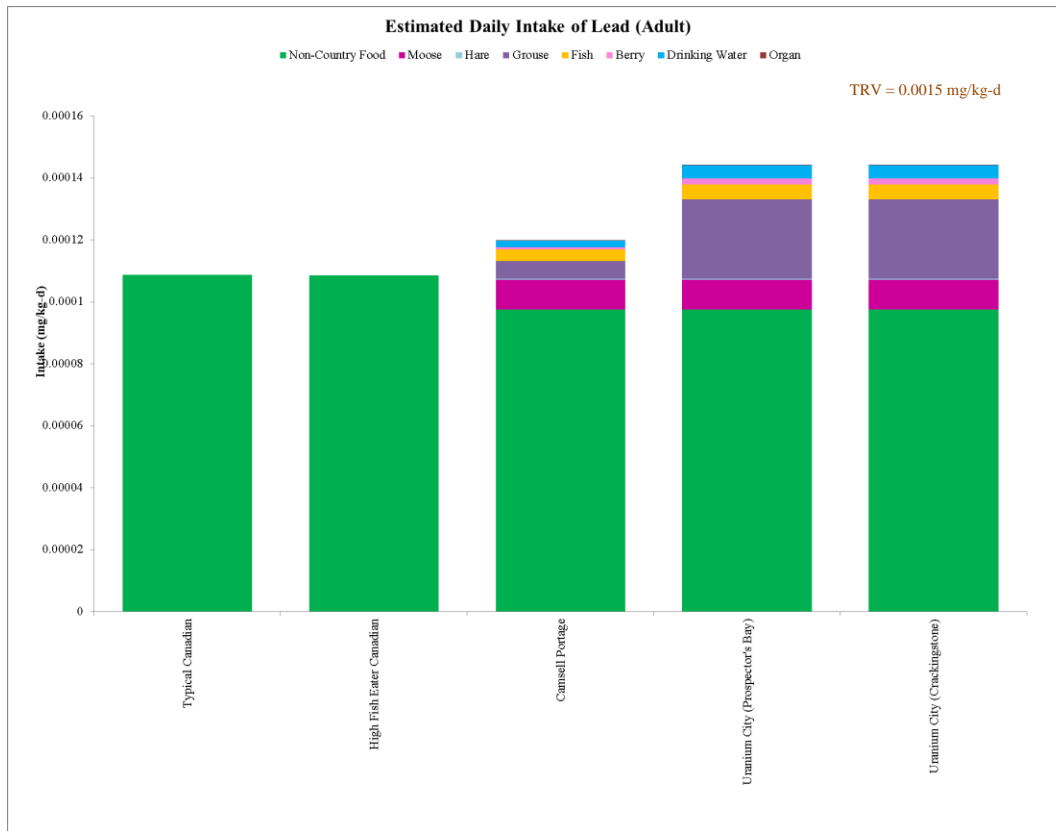


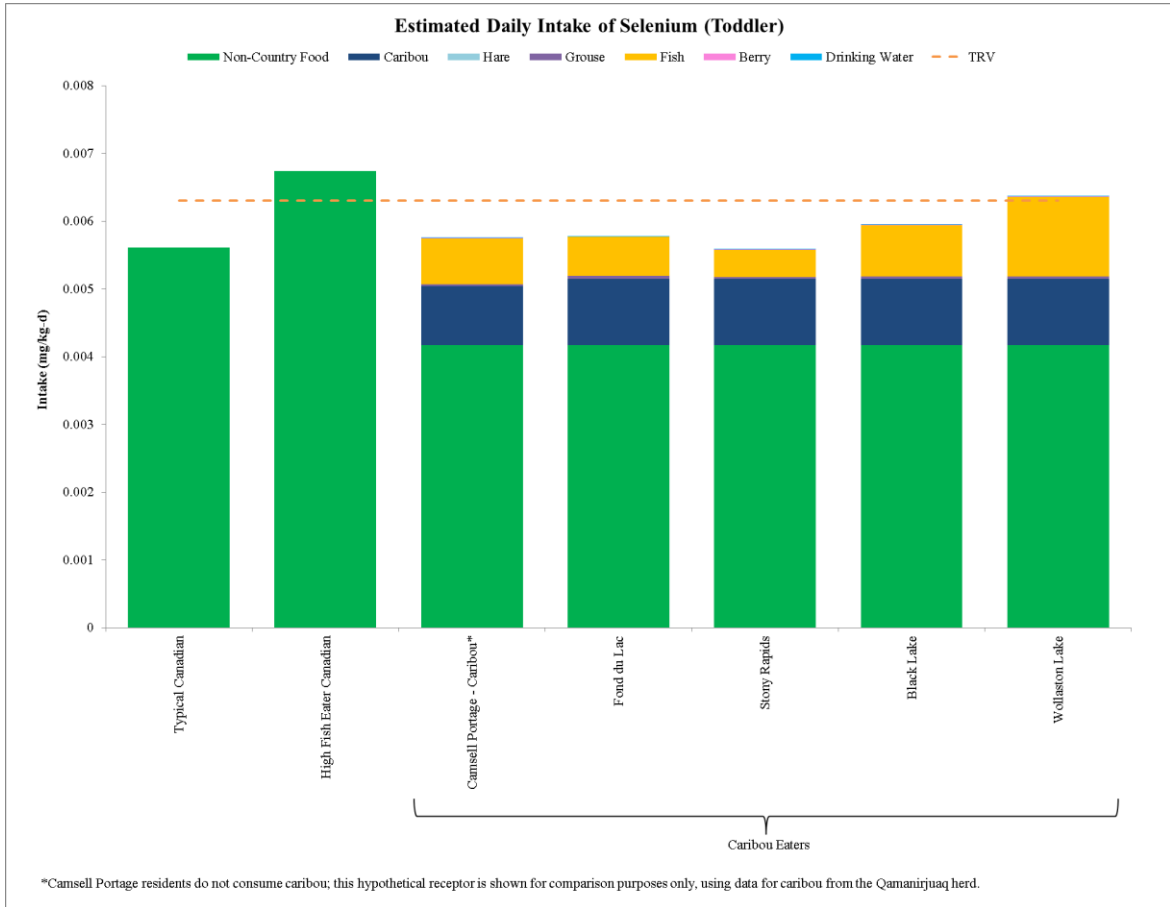
Figure 6.13 Estimated total lead intakes for adult – moose organ consumption

6.4.2 Caribou Intakes

The intakes of barren-ground caribou were obtained from the Hatchet Lake survey and used for the Wollaston Lake, Black Lake, Stony Rapids, and Fond du Lac communities. In this survey, results for the 2 to 10 year old age group were reported. For this assessment, the rates for a toddler and child were assumed to be the same and were based on the information provided for the 2 to 10 year age group. This results in potentially a higher food intake rate for toddlers as it was assumed that they ate 242 g of barren-ground caribou meat a day. Richardson (1997) provides intake rates for wild game eaters in Indigenous communities. The intakes provided are 85 g/day for a toddler which is about three times lower than the value used in the assessment. The intakes for a child, teen and adult are 125 g/day, 175 g/d and 235 g/d, respectively. This sensitivity assessment uses these intake rates and uses selenium exposure as the example. The toddler results are provided in Figure 6.14 and the intakes for other life stages are presented in Attachment D.

Figure 6.14 shows that the total intakes for selenium by the toddler, using intake rates from Richardson (1997) as a sensitivity scenario, are at or below the TRV and therefore selenium is not a cause for concern.

Figure 6.14 Estimated total selenium intakes for toddler – caribou intakes



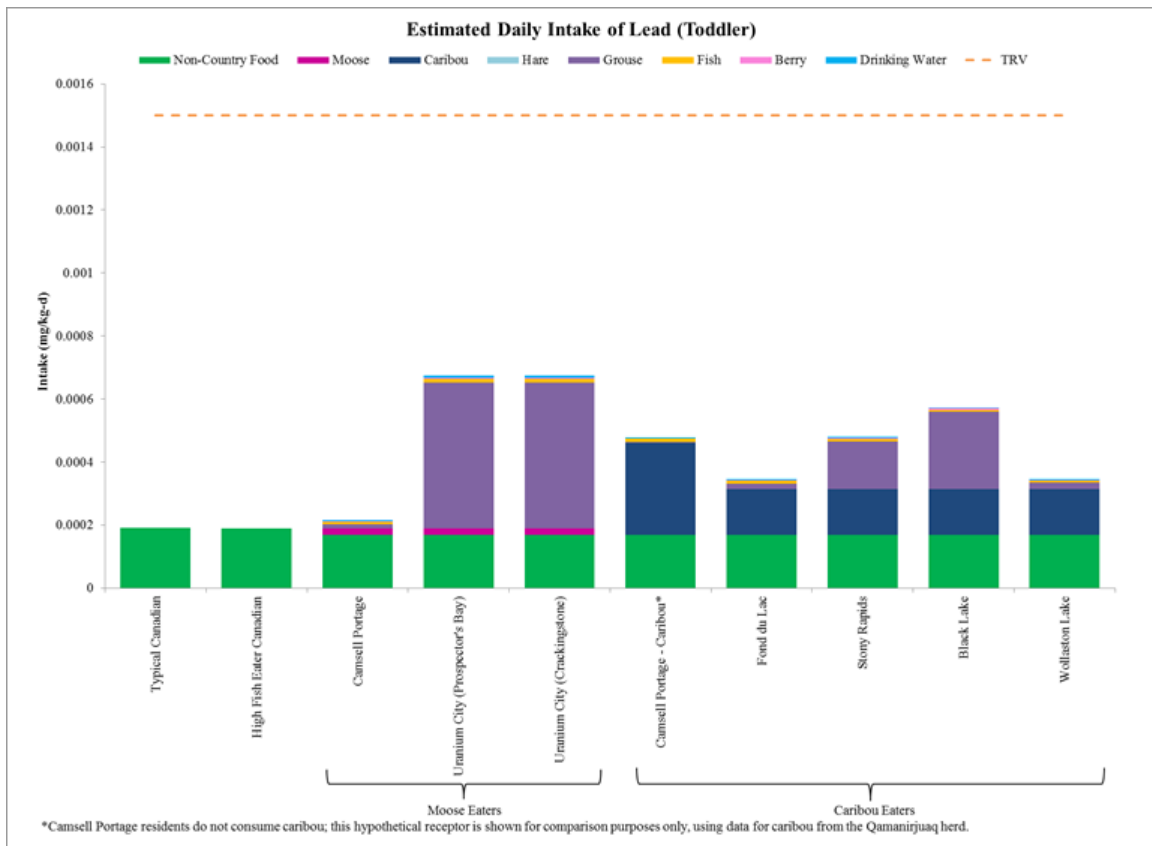
6.5 Uncertainties

There are several areas of uncertainty in conducting a risk assessment due to the fact that assumptions have to be made throughout the assessment either due to data gaps, generalizations of characteristics related to diet, and other human characteristics. An accounting of the uncertainty is provided to be able to place a level of confidence in the results. The magnitude and type of uncertainty are important in determining the significance of results. In recognition of these uncertainties, conservative assumptions were used throughout the assessment to ensure that the potential for exposure and risks would not be underestimated. The major assumptions are outlined below.

The COPC concentrations used in the assessment were based on measured data. The use of reasonable maximum exposure concentrations, which were generally an upper estimate (95% UCLM) of the mean values of measured data, and maximum measured concentrations for surface water, spruce grouse, and snowshoe hare, result in conservative estimates of exposure. Given that supermarket foods dominated the exposure, the use of different statistical values will not result in any changes to the conclusions.

Four grouse samples had high lead concentrations due to the presence of lead shot and were removed from the data set when deriving the EPCs for Uranium City, Stony Rapids, and Black Lake. In these cases the next highest concentration was selected as the EPC, rather than the average. Figure 6.15 shows the results if all the lead data were included in the data set to derive an average concentration for grouse. As seen from the figure, the intakes of lead from grouse increase; however they are still below the TRV and the conclusion that lead is not a concern for Athabasca Basin communities is still valid.

Figure 6.15 Estimated total lead intakes for toddler including all lead concentrations in grouse



The human receptor characteristics are also a source of uncertainty. The use of single values for various characteristics to evaluate exposure may overestimate exposure. For example, it has been assumed that an adult weighs 70.7 kg based on data from Health Canada, when in reality an adult is likely to weigh more, thereby reducing the daily intake on a body weight basis. In addition it was assumed that an adult also drinks 2 L of water a day and based on anecdotal evidence this may be an overestimate of water consumption.

The TRVs are obtained from authoritative sources such as Health Canada; nonetheless, they are always associated with uncertainty due to the extrapolation of testing on lab species (e.g., rats, mice, etc.) to field conditions as well as a range of receptors. Additionally, toxicity information was used regardless of its form in the test procedure, even though this may not be the same form in the environment (i.e., an oxide form compared to a more soluble form). For example, in the derivation of oral cancer TRV for arsenic, the linear extrapolation of data in the low-dose region of the dose-response curve is assumed to be sufficiently conservative to account for uncertainties related to the TRV. The use of an upper bound for the toxicity values ensures that the risk to humans is not underestimated. Currently, it is not possible or practical to develop approaches to evaluate the validity of the TRV assumptions on the overall assessment. As improvements occur in toxicological/human health research and assessments, the uncertainties may be reduced.

The cumulative effect of multiple COPC on risk was not evaluated in this assessment. When dealing with toxic chemicals, there is potential interaction with other chemicals that may be found at the same location. From a human health perspective, it has been established that synergism, potentiation, antagonism or additivity of toxic effects may occur in the environment. A quantitative assessment of these interactions is outside the scope of this study and would be constrained, as there is not an adequate base of toxicological evidence to quantify these interactions. A simple qualitative assessment involving an examination of the non-carcinogenic endpoints for humans indicates that the only similar endpoints possibly occur for cadmium and uranium. Adding these results and including supermarket foods does not exceed a risk threshold. Therefore, the effects of multiple COPC on the assessment are anticipated to be negligible.

Based on the above, the conclusions of the assessment are considered valid and reliable for the intended purpose.

7.0 SUMMARY AND CONCLUSIONS

The following section provides a summary of the results for the country foods and supermarket foods collected as part of EARMP from 2011 to 2017. A substantial data base exists for the country food samples especially for barren-ground caribou, moose, fish and berries. Only a few samples (<10) are currently available for spruce grouse and snowshoe hare.

The results of the risk assessment for consuming country foods associated with EARMP, supermarket foods and drinking water from various locations in the Athabasca Basin indicates that the risks from exposure to non-radionuclides and radionuclides are determined to be in the negligible. Consumption of moose and barren-ground caribou organs containing cadmium and other COPC was also determined to represent a negligible risk. The overall conclusion is that traditionally harvested country foods in the Athabasca basin are safe to eat.

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ATTACHMENT A

SUMMARY OF MONITORING DATA

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ATTACHMENT A: SUMMARY OF MONITORING DATA

A.1 EARMP Data

This section provides summary statistics for the measured data for surface water and country food (caribou, moose, berries, snowshoe hare, spruce grouse, berries, and fish) collected from the EARMP community monitoring program between 2011 and 2017. All berry samples (blueberry, bog cranberry, raspberry, and strawberry) were pooled together into a berry category. Some measured concentrations of constituents of potential concern (COPC) in lake whitefish were higher than those measured in lake trout and northern pike; thus, the fish data were separated into lake whitefish and other (lake trout and northern pike). Caribou and moose flesh data were summarized separately from the organ data. Caribou in the study area are assumed to be from the Beverly herd and caribou from the Qamanirjuaq herd were considered to represent background.

Table A.1 Summary statistics for COPC in caribou meat

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Arsenic	81	21	<0.01	0.02	0.04	0.009	0.02
Cadmium	81	16	<0.002	0.004	0.03	0.003	0.005
Cobalt	81	6	<0.002	0.005	0.02	0.003	0.005
Copper	81	0	1.5	3.3	4.9	0.79	3.5
Lead ^a	76	26	<0.002	0.008	0.07	0.01	0.01
Molybdenum	81	81	<0.02	0.01	<0.02	-	-
Nickel	81	64	<0.01	0.01	0.18	0.02	0.03
Selenium	81	0	0.08	0.18	0.27	0.03	0.19
Uranium	81	76	<0.001	0.0006	0.002	0.0003	0.001
Lead-210	81	71	<0.001	0.0007	0.003	0.0005	0.001
Polonium-210	81	1	<0.0003	0.01	0.03	0.006	0.01
Radium-226	81	56	<0.00004	0.0003	0.008	0.001	0.0007
Thorium-230	81	79	<0.00008	0.0001	0.0003	0.0002	0.00009

Note: Concentrations are caribou meat from the Beverly herd in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

^a Data for lead from five samples contaminated with lead shot were excluded from the data set.

Table A.2 Summary statistics for COPC in moose meat

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Camsell Portage							
Arsenic	10	10	<0.01	0.005	<0.01	-	-
Cadmium	10	2	<0.002	0.008	0.05	0.01	0.03
Cobalt	10	0	0.006	0.01	0.02	0.005	0.02
Copper	10	0	0.56	1.4	2.0	0.43	1.7
Lead	10	3	<0.002	0.009	0.03	0.010	0.02
Molybdenum	10	10	<0.02	0.010	<0.02	-	-
Nickel	10	7	<0.01	0.010	0.02	0.007	-
Selenium	10	0	0.06	0.11	0.20	0.05	0.13
Uranium	10	8	<0.001	0.0008	0.002	0.0006	-
Lead-210	10	10	<0.0003	0.0005	<0.001	-	-
Polonium-210	9	2	<0.0002	0.0006	0.002	0.0006	0.001
Radium-226	10	5	<0.00005	0.00006	0.0002	0.00005	0.0001
Thorium-230	9	9	<0.00009	0.00006	<0.0002	-	-

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.2 Summary statistics for COPC in moose meat (Cont'd)

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Uranium City							
Arsenic	13	12	<0.01	0.006	0.01	0.002	-
Cadmium	13	0	0.002	0.01	0.06	0.01	0.02
Cobalt	13	0	0.003	0.01	0.04	0.01	0.02
Copper	13	0	1.2	1.8	3.8	0.66	2.2
Lead	13	3	<0.002	0.007	0.03	0.01	0.01
Molybdenum	13	13	<0.02	0.01	<0.05	-	-
Nickel	13	10	<0.01	0.009	0.02	0.007	-
Selenium	13	0	0.08	0.13	0.23	0.04	0.16
Uranium	13	11	<0.001	0.0010	0.004	0.001	0.002
Lead-210	13	13	<0.00001	0.0004	<0.001	-	-
Polonium-210	12	2	<0.0002	0.0007	0.002	0.0007	0.001
Radium-226	13	10	<0.00005	0.00005	0.0001	0.00002	0.00007
Thorium-230	12	11	<0.0001	0.00008	0.0001	0.00003	-
Fond du Lac							
Arsenic	1	1	<0.01	0.005	<0.01	-	-
Cadmium	1	0	0.002	0.002	0.002	-	-
Cobalt	1	0	0.01	0.01	0.01	-	-
Copper	1	0	1.5	1.5	1.5	-	-
Lead	1	0	0.01	0.01	0.01	-	-
Molybdenum	1	1	<0.02	0.01	<0.02	-	-
Nickel	1	1	<0.01	0.005	<0.01	-	-
Selenium	1	0	0.10	0.10	0.10	-	-
Uranium	1	1	<0.001	0.0005	<0.001	-	-
Lead-210	1	1	<0.001	0.0005	<0.001	-	-
Polonium-210	1	0	0.0003	0.0003	0.0003	-	-
Radium-226	1	1	<0.00005	0.00003	<0.00005	-	-
Thorium-230	1	1	<0.0001	0.00005	<0.0001	-	-
Stony Rapids							
Arsenic	1	0	0.01	0.01	0.01	-	-
Cadmium	1	0	0.002	0.002	0.002	-	-
Cobalt	1	0	0.02	0.02	0.02	-	-
Copper	1	0	1.7	1.7	1.7	-	-
Lead	1	0	0.01	0.01	0.01	-	-
Molybdenum	1	1	<0.02	0.01	<0.02	-	-
Nickel	1	0	0.02	0.02	0.02	-	-
Selenium	1	0	0.09	0.09	0.09	-	-
Uranium	1	1	<0.001	0.0005	<0.001	-	-
Lead-210	1	1	<0.001	0.0005	<0.001	-	-
Polonium-210	1	0	0.0006	0.0006	0.0006	-	-
Radium-226	1	1	<0.00007	0.00004	<0.00007	-	-
Thorium-230	1	1	<0.0001	0.00005	<0.0001	-	-

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.3 Summary statistics for COPC in moose and caribou organs

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Camsell Portage							
Arsenic	7	7	<0.01	0.005	<0.01	-	-
Cadmium	7	0	0.66	4.3	8.6	3.2	-
Cobalt	7	0	0.06	0.17	0.25	0.06	-
Copper	7	0	2.1	16	47	19	-
Lead	7	3	<0.002	0.002	0.004	0.001	-
Molybdenum	7	0	0.21	0.62	1.1	0.37	-
Nickel	7	3	<0.01	0.03	0.06	0.02	-
Selenium	7	0	0.21	0.69	1.2	0.36	-
Uranium	7	7	<0.001	0.002	<0.01	-	-
Lead-210	7	4	<0.001	0.001	0.002	0.0007	-
Polonium-210	7	0	0.002	0.01	0.03	0.01	-
Radium-226	7	2	<0.00006	0.0002	0.0005	0.0002	-
Thorium-230	7	7	<0.0001	0.00009	<0.0004	-	-
Uranium City							
Arsenic	9	7	<0.01	0.006	0.01	0.002	-
Cadmium	9	0	0.006	4.4	20	6.8	-
Cobalt	9	0	0.05	0.11	0.25	0.06	-
Copper	9	0	0.55	15	50	17	-
Lead	9	4	<0.002	0.006	0.02	0.007	-
Molybdenum	9	1	<0.02	0.45	1.2	0.42	-
Nickel	9	6	<0.01	0.02	0.08	0.03	-
Selenium	9	0	0.18	0.79	3.2	0.94	-
Uranium	9	8	<0.001	0.001	0.001	0.001	-
Lead-210	9	4	<0.001	0.001	0.002	0.0007	-
Polonium-210	9	0	0.0007	0.003	0.006	0.002	-
Radium-226	9	4	<0.00006	0.0001	0.0003	0.0001	-
Thorium-230	9	9	<0.0001	0.00006	<0.0003	-	-
Fond du Lac							
Arsenic	7	3	<0.01	0.008	0.01	0.003	-
Cadmium	7	0	0.002	5.7	10	4.1	-
Cobalt	7	0	0.01	0.03	0.05	0.01	-
Copper	7	0	3.3	4.1	4.9	0.59	-
Lead	7	0	0.003	0.06	0.12	0.04	-
Molybdenum	7	2	<0.02	0.10	0.16	0.06	-
Nickel	7	3	<0.01	0.009	0.02	0.005	-
Selenium	7	0	0.18	1.0	1.6	0.56	-
Uranium	7	7	<0.001	0.0005	<0.001	-	-
Lead-210	7	2	<0.001	0.05	0.08	0.03	-
Polonium-210	7	0	0.009	0.06	0.09	0.04	-
Radium-226	7	2	<0.00006	0.0003	0.0009	0.0003	-
Thorium-230	7	6	<0.0001	0.0002	0.0005	0.0002	-

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.3 Summary statistics for COPC in moose and caribou organs (Cont'd)

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Stony Rapids							
Arsenic	1	0	0.01	0.01	0.01	-	-
Cadmium	1	0	0.73	0.73	0.73	-	-
Cobalt	1	0	0.29	0.29	0.29	-	-
Copper	1	0	13	13	13	-	-
Lead	1	0	0.004	0.004	0.004	-	-
Molybdenum	1	0	1.1	1.1	1.1	-	-
Nickel	1	0	0.02	0.02	0.02	-	-
Selenium	1	0	0.24	0.24	0.24	-	-
Uranium	1	1	<0.001	0.0005	<0.001	-	-
Lead-210	1	0	0.001	0.001	0.001	-	-
Polonium-210	1	0	0.004	0.004	0.004	-	-
Radium-226	1	1	<0.00008	0.00004	<0.00008	-	-
Thorium-230	1	1	<0.0002	0.0001	<0.0002	-	-
Black Lake							
Arsenic	3	0	0.01	0.01	0.02	0.006	-
Cadmium	3	0	0.004	3.9	6.9	3.5	-
Cobalt	3	0	0.01	0.04	0.06	0.02	-
Copper	3	0	3.5	4.3	5.0	0.76	-
Lead	3	0	0.005	0.04	0.07	0.03	-
Molybdenum	3	1	<0.02	0.12	0.21	0.10	-
Nickel	3	2	<0.01	0.01	0.03	0.01	-
Selenium	3	0	0.27	0.74	1.0	0.41	-
Uranium	3	3	<0.001	0.0005	<0.001	-	-
Lead-210	3	1	<0.001	0.02	0.05	0.02	-
Polonium-210	3	0	0.01	0.05	0.08	0.03	-
Radium-226	3	2	<0.00006	0.0002	0.0005	0.0003	-
Thorium-230	3	3	<0.0001	0.0001	<0.0003	-	-
Wollaston Lake							
Arsenic	3	0	0.01	0.02	0.02	0.006	-
Cadmium	3	0	0.65	1.4	1.8	0.61	-
Cobalt	3	0	0.07	0.08	0.10	0.02	-
Copper	3	0	26	37	55	15	-
Lead	3	0	0.06	0.08	0.10	0.02	-
Molybdenum	3	0	0.57	0.77	1.0	0.22	-
Nickel	3	2	<0.01	0.01	0.02	0.009	-
Selenium	3	0	0.40	0.40	0.40	0.0	-
Uranium	3	3	<0.001	0.002	<0.01	-	-
Lead-210	3	1	<0.001	0.03	0.06	0.03	-
Polonium-210	3	0	0.009	0.14	0.24	0.12	-
Radium-226	3	2	<0.00007	0.00009	0.0002	0.00010	-
Thorium-230	3	3	<0.0001	0.0001	<0.0005	-	-

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.4 Summary statistics for COPC in snowshoe hare flesh

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Camsell Portage							
Arsenic	8	8	<0.01	0.005	<0.01	-	-
Cadmium	8	2	<0.002	0.004	0.01	0.003	-
Cobalt	8	1	<0.002	0.009	0.03	0.010	-
Copper	8	0	1.5	1.9	2.4	0.30	-
Lead	8	3	<0.002	0.002	0.006	0.002	-
Molybdenum	8	8	<0.02	0.01	<0.02	-	-
Nickel	8	5	<0.01	0.02	0.07	0.02	-
Selenium	8	0	0.02	0.07	0.14	0.05	-
Uranium	8	8	<0.001	0.0005	<0.001	-	-
Lead-210	8	8	<0.001	0.0005	<0.001	-	-
Polonium-210	8	0	0.001	0.002	0.002	0.0004	-
Radium-226	8	2	<0.00006	0.00010	0.0002	0.00005	-
Thorium-230	8	8	<0.0001	0.00005	<0.0001	-	-
Uranium City							
Arsenic	7	6	<0.01	0.007	0.02	0.006	-
Cadmium	7	3	<0.002	0.003	0.005	0.002	-
Cobalt	7	0	0.004	0.005	0.007	0.001	-
Copper	7	0	1.0	1.6	2.4	0.51	-
Lead	7	4	<0.002	0.002	0.003	0.0010	-
Molybdenum	7	7	<0.02	0.01	<0.02	-	-
Nickel	7	3	<0.01	0.02	0.05	0.02	-
Selenium	7	0	0.05	0.10	0.15	0.04	-
Uranium	7	6	<0.001	0.0007	0.002	0.0006	-
Lead-210	7	7	<0.001	0.0006	<0.002	-	-
Polonium-210	7	0	0.00003	0.001	0.002	0.0007	-
Radium-226	7	2	<0.00006	0.00008	0.0001	0.00003	-
Thorium-230	7	7	<0.0001	0.00006	<0.0002	-	-
Fond du Lac							
Arsenic	3	3	<0.01	0.005	<0.01	-	-
Cadmium	3	0	0.003	0.007	0.009	0.003	-
Cobalt	3	0	0.01	0.02	0.02	0.004	-
Copper	3	0	1.4	2.0	2.6	0.60	-
Lead	3	0	0.002	0.003	0.004	0.0010	-
Molybdenum	3	3	<0.02	0.01	<0.02	-	-
Nickel	3	0	0.05	0.07	0.08	0.02	-
Selenium	3	0	0.16	0.22	0.30	0.07	-
Uranium	3	3	<0.001	0.0005	<0.001	-	-
Lead-210	3	1	<0.001	0.002	0.003	0.001	-
Polonium-210	3	0	0.0006	0.0009	0.001	0.0003	-
Radium-226	3	3	<0.0002	0.0001	<0.0002	-	-
Thorium-230	3	3	<0.0005	0.0003	<0.0005	-	-

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.4 Summary statistics for COPC in snowshoe hare flesh (Cont'd)

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Stony Rapids							
Arsenic	3	2	<0.01	0.01	0.02	0.009	-
Cadmium	3	0	0.008	0.05	0.14	0.07	-
Cobalt	3	0	0.005	0.01	0.02	0.009	-
Copper	3	0	1.1	1.6	1.8	0.40	-
Lead	3	1	<0.002	0.005	0.008	0.004	-
Molybdenum	3	2	<0.02	0.01	0.02	0.006	-
Nickel	3	1	<0.01	0.03	0.04	0.02	-
Selenium	3	0	0.14	0.19	0.22	0.04	-
Uranium	3	2	<0.001	0.0007	0.001	0.0003	-
Lead-210	3	1	<0.001	0.0008	0.001	0.0003	-
Polonium-210	3	0	0.001	0.002	0.003	0.0009	-
Radium-226	3	3	<0.0002	0.0001	<0.0002	-	-
Thorium-230	3	3	<0.0005	0.0003	<0.0005	-	-
Black Lake							
Arsenic	4	2	<0.01	0.01	0.02	0.007	-
Cadmium	4	0	0.002	0.01	0.04	0.02	-
Cobalt	4	0	0.007	0.01	0.01	0.003	-
Copper	4	0	1.8	2.5	4.0	1.0	-
Lead	4	0	0.003	0.004	0.005	0.0010	-
Molybdenum	4	4	<0.02	0.01	<0.02	-	-
Nickel	4	1	<0.01	0.05	0.06	0.03	-
Selenium	4	0	0.23	0.32	0.44	0.09	-
Uranium	4	4	<0.001	0.0005	<0.001	-	-
Lead-210	4	4	<0.001	0.0005	<0.001	-	-
Polonium-210	4	0	0.0007	0.0009	0.001	0.0002	-
Radium-226	4	3	<0.0002	0.0002	0.0003	0.00010	-
Thorium-230	4	4	<0.0005	0.0003	<0.0005	-	-
Wollaston Lake							
Arsenic	3	3	<0.01	0.005	<0.01	-	-
Cadmium	3	0	0.009	0.01	0.01	0.003	-
Cobalt	3	0	0.006	0.008	0.01	0.002	-
Copper	3	0	1.8	2.1	2.5	0.35	-
Lead	3	1	<0.002	0.006	0.009	0.004	-
Molybdenum	3	3	<0.02	0.01	<0.02	-	-
Nickel	3	1	<0.01	0.03	0.04	0.02	-
Selenium	3	0	0.13	0.14	0.15	0.010	-
Uranium	3	3	<0.001	0.0005	<0.001	-	-
Lead-210	3	2	<0.001	0.001	0.002	0.0009	-
Polonium-210	3	0	0.0008	0.001	0.002	0.0005	-
Radium-226	3	3	<0.0002	0.0001	<0.0002	-	-
Thorium-230	3	3	<0.0005	0.0003	<0.0005	-	-

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.5 Summary statistics for COPC in spruce grouse flesh

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Camsell Portage							
Arsenic	5	4	<0.01	0.006	0.01	0.002	-
Cadmium	5	2	<0.002	0.008	0.03	0.01	-
Cobalt	5	2	<0.002	0.002	0.004	0.001	-
Copper	5	0	1.8	3.2	3.8	0.82	-
Lead	5	0	0.003	0.02	0.05	0.02	-
Molybdenum	5	1	<0.02	0.02	0.03	0.007	-
Nickel	5	3	<0.01	0.01	0.03	0.01	-
Selenium	5	0	0.12	0.20	0.27	0.07	-
Uranium	5	5	<0.001	0.0005	<0.001	-	-
Lead-210 ^a	-	-	-	-	-	-	-
Polonium-210	5	3	<0.0002	0.0002	0.0004	0.0001	-
Radium-226	5	4	<0.0001	0.0001	0.0003	0.0001	-
Thorium-230	5	5	<0.0002	0.0001	<0.0003	-	-
Uranium City							
Arsenic	9	8	<0.01	0.006	0.01	0.002	-
Cadmium	9	2	<0.002	0.005	0.01	0.005	-
Cobalt	9	2	<0.002	0.003	0.005	0.001	-
Copper	9	0	0.50	2.2	3.6	1.0	-
Lead	9	0	0.007	0.76	3.5	1.3	-
Molybdenum	9	2	<0.02	0.02	0.05	0.01	-
Nickel	9	3	<0.01	0.02	0.03	0.01	-
Selenium	9	0	0.10	0.32	0.78	0.19	-
Uranium	9	3	<0.001	0.007	0.05	0.02	-
Lead-210 ^a	-	-	-	-	-	-	-
Polonium-210	8	4	<0.0002	0.0003	0.0008	0.0003	-
Radium-226	9	6	<0.00007	0.0004	0.001	0.0005	-
Thorium-230	8	6	<0.0003	0.0003	0.0005	0.0001	-
Fond du Lac							
Arsenic	3	3	<0.01	0.005	<0.01	-	-
Cadmium	3	0	0.006	0.02	0.03	0.01	-
Cobalt	3	0	0.004	0.006	0.009	0.003	-
Copper	3	0	2.5	3.2	4.1	0.83	-
Lead	3	0	0.004	0.12	0.34	0.19	-
Molybdenum	3	0	0.02	0.04	0.07	0.03	-
Nickel	3	1	<0.01	0.02	0.04	0.02	-
Selenium	3	0	0.24	0.30	0.36	0.06	-
Uranium	3	3	<0.001	0.0005	<0.001	-	-
Lead-210 ^a	-	-	-	-	-	-	-
Polonium-210	3	0	0.0007	0.0008	0.001	0.0002	-
Radium-226	3	2	<0.0002	0.0001	0.0002	0.00006	-
Thorium-230	3	3	<0.0005	0.0003	<0.0005	-	-

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

^a Lead-210 not analysed in grouse.

Table A.5 Summary statistics for COPC in spruce grouse flesh (Cont'd)

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Stony Rapids							
Arsenic	4	4	<0.01	0.005	<0.01	-	-
Cadmium	4	0	0.004	0.01	0.03	0.01	-
Cobalt	4	0	0.002	0.004	0.005	0.001	-
Copper	4	0	1.0	1.9	2.3	0.60	-
Lead	4	0	0.05	1.1	4.0	1.9	-
Molybdenum	4	1	<0.02	0.04	0.08	0.03	-
Nickel	4	1	<0.01	0.02	0.04	0.01	-
Selenium	4	0	0.16	0.18	0.20	0.02	-
Uranium	4	4	<0.001	0.0005	<0.001	-	-
Lead-210 ^a	-	-	-	-	-	-	-
Polonium-210	4	1	<0.0002	0.0003	0.0004	0.0001	-
Radium-226	4	4	<0.0002	0.0001	<0.0002	-	-
Thorium-230	4	4	<0.0005	0.0003	<0.0005	-	-
Black Lake							
Arsenic	3	3	<0.01	0.005	<0.01	-	-
Cadmium	3	0	0.005	0.007	0.009	0.002	-
Cobalt	3	0	0.005	0.02	0.04	0.02	-
Copper	3	0	2.5	3.1	3.6	0.57	-
Lead	3	0	0.36	1.8	4.2	2.1	-
Molybdenum	3	1	<0.02	0.03	0.06	0.03	-
Nickel	3	0	0.02	0.04	0.07	0.03	-
Selenium	3	0	0.24	0.26	0.28	0.02	-
Uranium	3	3	<0.001	0.0005	<0.001	-	-
Lead-210 ^a	-	-	-	-	-	-	-
Polonium-210	3	0	0.0003	0.0003	0.0004	0.00006	-
Radium-226	3	2	<0.0002	0.0001	0.0002	0.00006	-
Thorium-230	3	3	<0.0005	0.0003	<0.0005	-	-
Wollaston Lake							
Arsenic	3	3	<0.01	0.005	<0.01	-	-
Cadmium	3	1	<0.002	0.003	0.006	0.003	-
Cobalt	3	0	0.002	0.004	0.006	0.002	-
Copper	3	0	1.7	2.1	2.9	0.69	-
Lead	3	0	0.006	0.15	0.35	0.18	-
Molybdenum	3	3	<0.02	0.01	<0.02	-	-
Nickel	3	1	<0.01	0.02	0.03	0.01	-
Selenium	3	0	0.22	0.26	0.29	0.04	-
Uranium	3	3	<0.001	0.0005	<0.001	-	-
Lead-210 ^a	-	-	-	-	-	-	-
Polonium-210	3	2	<0.0002	0.0003	0.0006	0.0003	-
Radium-226	3	3	<0.0002	0.0001	<0.0002	-	-
Thorium-230	3	3	<0.0005	0.0003	<0.0005	-	-

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

^a Lead-210 not analysed in grouse.

Table A.6 Summary statistics for COPC in berries

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Camsell Portage							
Arsenic	26	26	<0.05	0.03	<0.05	-	-
Cadmium	26	23	<0.01	0.006	0.01	0.002	-
Cobalt	26	13	<0.01	0.009	0.02	0.005	0.01
Copper	26	0	2.2	3.6	4.9	0.84	3.8
Lead	26	12	<0.01	0.01	0.04	0.01	0.02
Molybdenum	26	6	<0.1	0.14	0.20	0.07	0.17
Nickel	26	0	0.12	0.38	0.79	0.17	0.44
Selenium	26	26	<0.05	0.03	<0.05	-	-
Uranium	26	16	<0.01	0.01	0.08	0.02	0.03
Lead-210	26	4	<0.001	0.005	0.02	0.005	0.009
Polonium-210	26	4	<0.0009	0.001	0.003	0.0006	0.002
Radium-226	26	1	<0.0005	0.003	0.006	0.001	0.003
Thorium-230	26	26	<0.0005	0.0007	<0.002	-	-
Uranium City							
Arsenic	45	43	<0.05	0.03	0.06	0.006	0.05
Cadmium	45	32	<0.01	0.01	0.07	0.01	0.02
Cobalt	45	8	<0.01	0.03	0.14	0.03	0.05
Copper	45	0	1.8	3.6	6.4	0.96	3.9
Lead	45	3	<0.01	0.03	0.20	0.03	0.05
Molybdenum	45	7	<0.1	0.30	1.5	0.30	0.50
Nickel	45	0	0.20	0.64	3.1	0.46	0.76
Selenium	45	41	<0.05	0.04	0.36	0.06	0.08
Uranium	45	29	<0.01	0.01	0.11	0.02	0.03
Lead-210	42	9	<0.001	0.006	0.02	0.005	0.010
Polonium-210	43	5	<0.0005	0.003	0.01	0.003	0.005
Radium-226	45	9	<0.0003	0.007	0.10	0.02	0.02
Thorium-230	43	43	<0.0005	0.001	<0.02	-	-
Fond du Lac							
Arsenic	26	26	<0.05	0.03	<0.05	-	-
Cadmium	26	26	<0.01	0.005	<0.01	-	-
Cobalt	26	8	<0.01	0.02	0.06	0.02	0.03
Copper	26	0	1.8	3.6	5.6	1.1	4.0
Lead	26	4	<0.01	0.03	0.17	0.04	0.04
Molybdenum	26	2	<0.1	0.39	1.4	0.29	0.50
Nickel	26	0	0.40	0.94	2.3	0.55	1.1
Selenium	26	24	<0.05	0.03	0.08	0.01	0.06
Uranium	26	20	<0.01	0.007	0.02	0.003	0.01
Lead-210	26	13	<0.001	0.003	0.01	0.003	0.004
Polonium-210	26	1	<0.0005	0.002	0.007	0.001	0.002
Radium-226	26	1	<0.0005	0.003	0.006	0.001	0.003
Thorium-230	26	25	<0.0003	0.0007	0.002	0.0004	-

Note: Concentrations are for blueberries, bog cranberries, raspberries, and strawberries in µg/g dw (non-radionuclides) or Bq/g dw (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.6 Summary statistics for COPC in berries (Cont'd)

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Stony Rapids							
Arsenic	26	26	<0.05	0.03	<0.05	-	-
Cadmium	26	25	<0.01	0.006	0.02	0.003	-
Cobalt	26	11	<0.01	0.01	0.10	0.02	0.03
Copper	26	0	1.9	3.0	4.5	0.79	3.3
Lead	26	9	<0.01	0.03	0.26	0.05	0.04
Molybdenum	26	8	<0.1	0.14	0.40	0.09	0.18
Nickel	26	0	0.24	0.64	1.4	0.29	0.74
Selenium	26	25	<0.05	0.03	0.05	0.005	-
Uranium	26	21	<0.01	0.008	0.03	0.006	0.01
Lead-210	26	15	<0.001	0.003	0.01	0.003	0.010
Polonium-210	26	6	<0.0002	0.001	0.003	0.0006	0.001
Radium-226	26	2	<0.0009	0.005	0.02	0.005	0.008
Thorium-230	26	25	<0.0005	0.0007	0.0007	0.0003	-
Black Lake							
Arsenic	26	26	<0.05	0.03	<0.05	-	-
Cadmium	26	24	<0.01	0.006	0.02	0.003	0.01
Cobalt	26	12	<0.01	0.01	0.05	0.01	0.02
Copper	26	0	1.6	3.1	4.0	0.72	3.3
Lead	26	9	<0.01	0.02	0.13	0.03	0.05
Molybdenum	26	7	<0.1	0.13	0.30	0.07	0.17
Nickel	26	0	0.28	0.53	0.78	0.14	0.58
Selenium	26	24	<0.05	0.03	0.08	0.01	0.05
Uranium	26	21	<0.01	0.008	0.03	0.006	0.01
Lead-210	26	10	<0.001	0.003	0.01	0.003	0.005
Polonium-210	26	1	<0.0005	0.001	0.002	0.0005	0.002
Radium-226	26	2	<0.00003	0.002	0.007	0.002	0.004
Thorium-230	26	24	<0.0005	0.0007	0.002	0.0004	0.001
Wollaston Lake							
Arsenic	26	26	<0.05	0.03	<0.05	-	-
Cadmium	26	26	<0.01	0.005	<0.01	-	-
Cobalt	26	9	<0.01	0.02	0.20	0.04	0.06
Copper	26	0	1.6	3.1	4.8	0.98	3.4
Lead	26	9	<0.01	0.02	0.05	0.01	0.02
Molybdenum	26	6	<0.1	0.18	0.40	0.12	0.28
Nickel	26	0	0.19	0.69	1.6	0.39	0.86
Selenium	26	25	<0.05	0.03	0.05	0.005	-
Uranium	26	23	<0.01	0.007	0.03	0.006	0.01
Lead-210	26	10	<0.001	0.003	0.01	0.003	0.005
Polonium-210	26	5	<0.0005	0.001	0.004	0.001	0.002
Radium-226	26	4	<0.0005	0.004	0.009	0.002	0.005
Thorium-230	26	26	<0.0005	0.0007	<0.002	-	-

Note: Concentrations are for blueberries, bog cranberries, raspberries, and strawberries in µg/g dw (non-radionuclides) or Bq/g dw (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.7 Summary statistics for COPC in lake whitefish

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Camsell Portage							
Arsenic	20	0	0.03	0.24	0.48	0.12	0.29
Cadmium	20	20	<0.002	0.001	<0.002	-	-
Cobalt	20	5	<0.002	0.004	0.008	0.002	0.005
Copper	20	0	0.11	0.20	0.38	0.08	0.23
Lead	20	15	<0.002	0.002	0.008	0.002	0.004
Molybdenum	20	20	<0.02	0.01	<0.02	-	-
Nickel	20	15	<0.01	0.01	0.08	0.02	0.03
Selenium	20	0	0.20	0.26	0.31	0.03	0.27
Uranium	20	12	<0.001	0.001	0.004	0.001	0.002
Lead-210	20	19	<0.001	0.0006	0.002	0.0003	-
Polonium-210	20	12	<0.0002	0.0003	0.001	0.0003	0.0004
Radium-226	20	17	<0.00005	0.00006	0.0003	0.00007	0.0001
Thorium-230	20	20	<0.0001	0.00006	<0.0003	-	-
Uranium City							
Arsenic	16	0	0.03	0.10	0.23	0.06	0.13
Cadmium	16	14	<0.002	0.001	0.002	0.0003	-
Cobalt	16	2	<0.002	0.007	0.02	0.005	0.009
Copper	16	0	0.12	0.22	0.48	0.10	0.27
Lead	16	10	<0.002	0.003	0.01	0.003	0.004
Molybdenum	16	16	<0.02	0.01	<0.02	-	-
Nickel	16	10	<0.01	0.01	0.05	0.01	0.02
Selenium	16	0	0.19	0.25	0.32	0.03	0.27
Uranium	16	13	<0.001	0.0008	0.003	0.0007	0.001
Lead-210	16	16	<0.001	0.0005	<0.001	-	-
Polonium-210	16	8	<0.0002	0.0003	0.001	0.0003	0.0005
Radium-226	16	13	<0.00005	0.00004	0.0001	0.00002	0.00007
Thorium-230	16	16	<0.0001	0.00006	<0.0002	-	-
Uranium City Crackingstone							
Arsenic	20	0	0.01	0.10	0.30	0.09	0.14
Cadmium	20	19	<0.002	0.001	0.003	0.0004	-
Cobalt	20	5	<0.002	0.006	0.03	0.006	0.01
Copper	20	0	0.12	0.19	0.25	0.04	0.20
Lead	20	16	<0.002	0.002	0.01	0.003	0.004
Molybdenum	20	19	<0.02	0.01	0.02	0.002	-
Nickel	20	16	<0.01	0.02	0.14	0.03	0.04
Selenium	20	0	0.17	0.72	3.2	0.84	1.5
Uranium	20	9	<0.001	0.005	0.03	0.006	0.008
Lead-210	20	20	<0.001	0.0005	<0.001	-	-
Polonium-210	20	4	<0.0002	0.0004	0.0008	0.0002	0.0005
Radium-226	20	14	<0.00005	0.00007	0.0003	0.00007	0.0001
Thorium-230	20	18	<0.0001	0.0001	0.0006	0.0001	0.0002

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.7 Summary statistics for COPC in lake whitefish (Cont'd)

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Fond du Lac							
Arsenic	23	0	0.02	0.17	0.52	0.13	0.22
Cadmium	23	20	<0.002	0.001	0.006	0.001	0.003
Cobalt	23	2	<0.002	0.006	0.02	0.005	0.01
Copper	23	0	0.10	0.18	0.34	0.06	0.20
Lead	23	14	<0.002	0.002	0.008	0.002	0.003
Molybdenum	23	23	<0.02	0.01	<0.02	-	-
Nickel	23	15	<0.01	0.01	0.10	0.02	0.04
Selenium	23	0	0.11	0.20	0.34	0.06	0.23
Uranium	23	19	<0.001	0.0009	0.004	0.0009	0.002
Lead-210	23	23	<0.001	0.0006	<0.004	-	-
Polonium-210	23	21	<0.0002	0.0001	0.0002	0.0001	-
Radium-226	23	20	<0.00006	0.0001	0.002	0.0004	0.0003
Thorium-230	23	22	<0.0001	0.0001	0.0002	0.0003	-
Stony Rapids							
Arsenic	23	0	0.01	0.04	0.09	0.02	0.05
Cadmium	23	23	<0.002	0.001	<0.002	-	-
Cobalt	23	1	<0.002	0.007	0.02	0.005	0.008
Copper	23	0	0.11	0.20	0.36	0.07	0.23
Lead	23	19	<0.002	0.001	0.004	0.001	0.003
Molybdenum	23	23	<0.02	0.01	<0.02	-	-
Nickel	23	18	<0.01	0.01	0.05	0.01	0.02
Selenium	23	0	0.08	0.14	0.27	0.04	0.15
Uranium	23	20	<0.001	0.0008	0.007	0.001	0.002
Lead-210	23	23	<0.001	0.0005	<0.001	-	-
Polonium-210	23	21	<0.0002	0.0001	0.0002	0.00009	-
Radium-226	23	17	<0.00005	0.00009	0.001	0.0002	0.0003
Thorium-230	23	22	<0.00008	0.00010	0.0001	0.0002	-
Black Lake							
Arsenic	23	0	0.01	0.15	0.40	0.12	0.22
Cadmium	23	23	<0.002	0.001	<0.002	-	-
Cobalt	23	8	<0.002	0.003	0.009	0.002	0.004
Copper	23	0	0.06	0.18	0.58	0.11	0.22
Lead	23	15	<0.002	0.002	0.004	0.0009	0.002
Molybdenum	23	23	<0.02	0.01	<0.02	-	-
Nickel	23	18	<0.01	0.009	0.04	0.009	0.02
Selenium	23	0	0.15	0.28	0.44	0.08	0.31
Uranium	23	22	<0.001	0.0006	0.002	0.0003	-
Lead-210	23	21	<0.001	0.0007	0.001	0.0004	-
Polonium-210	23	9	<0.0002	0.0003	0.0007	0.0002	0.0004
Radium-226	23	17	<0.00005	0.0002	0.002	0.0004	0.0004
Thorium-230	23	21	<0.0001	0.0001	0.0002	0.0003	0.0001

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.7 Summary statistics for COPC in lake whitefish (Cont'd)

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Wollaston Lake							
Arsenic	23	0	0.03	0.14	0.24	0.05	0.16
Cadmium	23	23	<0.002	0.001	<0.002	-	-
Cobalt	23	12	<0.002	0.002	0.005	0.001	0.003
Copper	23	0	0.12	0.17	0.45	0.07	0.20
Lead	23	18	<0.002	0.001	0.004	0.0009	0.002
Molybdenum	23	23	<0.02	0.01	<0.02	-	-
Nickel	23	16	<0.01	0.007	0.02	0.004	0.01
Selenium	23	0	0.24	0.43	1.0	0.15	0.49
Uranium	23	22	<0.001	0.0005	0.001	0.0001	-
Lead-210	23	22	<0.0003	0.0007	0.0003	0.0005	-
Polonium-210	23	11	<0.0002	0.0003	0.0008	0.0002	0.0004
Radium-226	23	16	<0.00005	0.0003	0.002	0.0006	0.0008
Thorium-230	23	23	<0.00002	0.0002	<0.002	-	-

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.8 Summary statistics for COPC in other fish

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Camsell Portage							
Arsenic	28	0	0.03	0.10	0.29	0.05	0.12
Cadmium	28	28	<0.002	0.001	<0.002	-	-
Cobalt	28	15	<0.002	0.002	0.004	0.0010	0.003
Copper	28	0	0.11	0.32	0.58	0.12	0.36
Lead	28	24	<0.002	0.001	0.004	0.0009	0.002
Molybdenum	28	28	<0.02	0.01	<0.02	-	-
Nickel	28	21	<0.01	0.01	0.06	0.01	0.02
Selenium	28	0	0.10	0.17	0.22	0.03	0.18
Uranium	28	25	<0.001	0.001	0.01	0.003	0.002
Lead-210	28	28	<0.001	0.0005	<0.001	-	-
Polonium-210	28	22	<0.0002	0.0002	0.0008	0.0002	0.0003
Radium-226	28	22	<0.00003	0.00005	0.0002	0.00004	0.00006
Thorium-230	28	28	<0.00006	0.0001	<0.003	-	-

Note: Concentrations are for northern pike and lake trout in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.8 Summary statistics for COPC in other fish (Cont'd)

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Uranium City							
Arsenic	18	0	0.04	0.08	0.20	0.05	0.10
Cadmium	18	18	<0.002	0.001	<0.002	-	-
Cobalt	18	14	<0.002	0.001	0.004	0.0008	0.002
Copper	18	0	0.18	0.27	0.63	0.10	0.31
Lead	18	11	<0.002	0.002	0.006	0.001	0.003
Molybdenum	18	18	<0.02	0.01	<0.02	-	-
Nickel	18	15	<0.01	0.007	0.02	0.005	0.01
Selenium	18	0	0.11	0.16	0.18	0.02	0.16
Uranium	18	17	<0.001	0.0008	0.006	0.001	-
Lead-210	18	18	<0.001	0.0005	<0.001	-	-
Polonium-210	18	17	<0.0002	0.0001	0.0002	0.00002	-
Radium-226	18	14	<0.00005	0.00005	0.0002	0.00004	0.00008
Thorium-230	18	17	<0.0001	0.00006	0.0002	0.00004	-
Uranium City Cracklingstone							
Arsenic	31	0	0.04	0.07	0.19	0.03	0.08
Cadmium	31	30	<0.002	0.001	0.007	0.001	-
Cobalt	31	22	<0.002	0.001	0.003	0.0006	0.002
Copper	31	0	0.11	0.22	0.68	0.10	0.25
Lead	31	28	<0.002	0.001	0.008	0.001	0.003
Molybdenum	31	31	<0.02	0.01	<0.02	-	-
Nickel	31	26	<0.01	0.010	0.07	0.01	0.02
Selenium	31	0	0.11	0.27	0.66	0.16	0.40
Uranium	31	25	<0.001	0.002	0.02	0.004	0.004
Lead-210	31	31	<0.001	0.0005	<0.001	-	-
Polonium-210	31	16	<0.0002	0.0007	0.005	0.0010	0.001
Radium-226	31	28	<0.00006	0.00005	0.0004	0.00007	0.00009
Thorium-230	31	27	<0.0001	0.00007	0.0003	0.00006	0.0001
Fond du Lac							
Arsenic	23	0	0.04	0.08	0.17	0.04	0.09
Cadmium	23	23	<0.002	0.001	<0.002	-	-
Cobalt	23	17	<0.002	0.002	0.01	0.002	0.005
Copper	23	0	0.17	0.28	0.43	0.08	0.31
Lead	23	13	<0.002	0.002	0.008	0.002	0.004
Molybdenum	23	23	<0.02	0.01	<0.02	-	-
Nickel	23	16	<0.01	0.010	0.02	0.007	-
Selenium	23	0	0.07	0.15	0.18	0.03	0.16
Uranium	23	20	<0.001	0.0007	0.002	0.0004	0.001
Lead-210	23	21	<0.001	0.0006	0.002	0.0004	-
Polonium-210	23	23	<0.0002	0.0001	<0.0002	-	-
Radium-226	23	22	<0.00004	0.00003	0.00007	0.000009	-
Thorium-230	23	23	<0.00008	0.00005	<0.0001	-	-

Note: Concentrations are for northern pike and lake trout in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.8 Summary statistics for COPC in other fish (Cont'd)

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Stony Rapids							
Arsenic	22	0	0.02	0.09	0.25	0.05	0.12
Cadmium	22	22	<0.002	0.001	<0.002	-	-
Cobalt	22	14	<0.002	0.002	0.006	0.002	0.003
Copper	22	0	0.17	0.39	0.93	0.20	0.47
Lead	22	19	<0.002	0.002	0.01	0.002	0.003
Molybdenum	22	22	<0.02	0.01	<0.02	-	-
Nickel	22	17	<0.01	0.009	0.06	0.01	0.02
Selenium	22	0	0.09	0.15	0.19	0.03	0.16
Uranium	22	21	<0.001	0.0006	0.002	0.0003	-
Lead-210	22	20	<0.001	0.0005	0.001	0.0001	-
Polonium-210	22	19	<0.0002	0.0001	0.0004	0.00008	0.0002
Radium-226	22	21	<0.00005	0.00003	0.0001	0.00002	-
Thorium-230	22	22	<0.0001	0.00005	<0.0002	-	-
Black Lake							
Arsenic	23	0	0.04	0.07	0.14	0.02	0.08
Cadmium	23	23	<0.002	0.001	<0.002	-	-
Cobalt	23	14	<0.002	0.002	0.006	0.001	0.003
Copper	23	0	0.18	0.32	1.0	0.17	0.38
Lead	23	14	<0.002	0.002	0.007	0.002	0.003
Molybdenum	23	23	<0.02	0.01	<0.02	-	-
Nickel	23	18	<0.01	0.008	0.04	0.008	0.01
Selenium	23	0	0.11	0.15	0.18	0.02	0.16
Uranium	23	19	<0.001	0.0006	0.002	0.0003	0.001
Lead-210	23	19	<0.001	0.0007	0.002	0.0004	0.001
Polonium-210	23	22	<0.0002	0.0001	0.0002	0.00002	-
Radium-226	23	21	<0.00003	0.00003	0.0001	0.00002	0.00004
Thorium-230	23	22	<0.00007	0.00005	0.0001	0.00002	-
Wollaston Lake							
Arsenic	23	0	0.01	0.04	0.09	0.02	0.05
Cadmium	23	23	<0.002	0.001	<0.002	-	-
Cobalt	23	18	<0.002	0.002	0.006	0.001	0.003
Copper	23	0	0.20	0.37	0.69	0.12	0.42
Lead	23	21	<0.002	0.001	0.005	0.001	0.003
Molybdenum	23	23	<0.02	0.01	<0.02	-	-
Nickel	23	19	<0.01	0.008	0.05	0.010	0.02
Selenium	23	0	0.16	0.21	0.28	0.03	0.22
Uranium	23	21	<0.001	0.0006	0.002	0.0003	0.001
Lead-210	23	22	<0.001	0.0005	0.001	0.0001	-
Polonium-210	23	23	<0.0002	0.0001	<0.0002	-	-
Radium-226	23	18	<0.00004	0.00005	0.0003	0.00007	0.00009
Thorium-230	23	23	<0.00008	0.00005	<0.0001	-	-

Note: Concentrations are for northern pike and lake trout in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL; 95% Upper Confidence Limit of the Mean (UCLM) only calculated by ProUCL 5.1 when N≥10 and sufficient unique values (e.g., not all <MDL).

Table A.9 Summary statistics for COPC in surface water

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Camsell Portage							
Arsenic	5	0	0.0001	0.0002	0.0002	0.00004	-
Cadmium	5	2	<0.00001	0.000008	0.00001	0.000003	-
Cobalt	5	5	<0.0001	0.00005	<0.0001	-	-
Copper	5	3	<0.0002	0.0001	0.0002	0.00005	-
Lead	5	5	<0.0001	0.00005	<0.0001	-	-
Molybdenum	5	0	0.0002	0.0002	0.0002	-	-
Nickel	5	0	0.0002	0.0002	0.0002	-	-
Selenium	5	5	<0.0001	0.00005	<0.0001	-	-
Uranium	5	2	<0.0001	0.00008	0.0001	0.00003	-
Lead-210	5	4	<0.02	0.01	0.02	0.004	-
Polonium-210	5	5	<0.005	0.003	<0.005	-	-
Radium-226	5	4	<0.005	0.004	0.009	0.003	-
Thorium-230	5	4	<0.01	0.008	0.02	0.007	-
Uranium City							
Arsenic	5	0	0.0001	0.0001	0.0002	0.00005	-
Cadmium	5	2	<0.00001	0.00001	0.00002	0.000006	-
Cobalt	5	5	<0.0001	0.00005	<0.0001	-	-
Copper	5	4	<0.0002	0.0002	0.0006	0.0002	-
Lead	5	4	<0.0001	0.00008	0.0002	0.00007	-
Molybdenum	5	0	0.0004	0.0004	0.0005	0.00004	-
Nickel	5	1	<0.0001	0.0001	0.0002	0.00005	-
Selenium	5	4	<0.0001	0.00006	0.0001	0.00002	-
Uranium	5	0	0.001	0.002	0.004	0.0010	-
Lead-210	5	5	<0.02	0.01	<0.02	-	-
Polonium-210	5	5	<0.005	0.003	<0.005	-	-
Radium-226	5	3	<0.005	0.005	0.01	0.004	-
Thorium-230	5	5	<0.01	0.005	<0.01	-	-
Fond du Lac							
Arsenic	5	0	0.0001	0.0001	0.0001	-	-
Cadmium	5	2	<0.00001	0.00001	0.00003	0.00001	-
Cobalt	5	5	<0.0001	0.00005	<0.0001	-	-
Copper	5	5	<0.0002	0.0001	<0.0002	-	-
Lead	5	4	<0.0001	0.00006	0.0001	0.00002	-
Molybdenum	5	1	<0.0001	0.00009	0.0001	0.00002	-
Nickel	5	0	0.0001	0.0002	0.0003	0.00007	-
Selenium	5	5	<0.0001	0.00005	<0.0001	-	-
Uranium	5	5	<0.0001	0.00005	<0.0001	-	-
Lead-210	5	5	<0.02	0.01	<0.02	-	-
Polonium-210	5	5	<0.005	0.003	<0.005	-	-
Radium-226	5	4	<0.005	0.003	0.005	0.001	-
Thorium-230	5	5	<0.01	0.005	<0.01	-	-

Note: Concentrations are in mg/L (non-radionuclides) or Bq/L (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL.

Table A.9 Summary statistics for COPC in surface water

COPC	N	N<MDL	Concentration				
			Min	Average	Max	StDev	UCLM
Stony Rapids							
Arsenic	5	0	0.0001	0.0002	0.0002	0.00005	-
Cadmium	5	2	<0.00001	0.00001	0.00002	0.000006	-
Cobalt	5	5	<0.0001	0.00005	<0.0001	-	-
Copper	5	5	<0.0002	0.0001	<0.0002	-	-
Lead	5	5	<0.0001	0.00005	<0.0001	-	-
Molybdenum	5	0	0.0001	0.0001	0.0002	0.00005	-
Nickel	5	0	0.0001	0.0001	0.0002	0.00005	-
Selenium	5	5	<0.0001	0.00005	<0.0001	-	-
Uranium	5	5	<0.0001	0.00005	<0.0001	-	-
Lead-210	5	5	<0.02	0.01	<0.02	-	-
Polonium-210	5	5	<0.005	0.003	<0.006	-	-
Radium-226	5	4	<0.005	0.004	0.01	0.003	-
Thorium-230	5	5	<0.01	0.005	<0.01	-	-
Black Lake							
Arsenic	5	1	<0.0001	0.0001	0.0002	0.00007	-
Cadmium	5	3	<0.00001	0.000007	0.00001	0.000003	-
Cobalt	5	5	<0.0001	0.00005	<0.0001	-	-
Copper	5	4	<0.0002	0.0001	0.0003	0.00009	-
Lead	5	5	<0.0001	0.00005	<0.0001	-	-
Molybdenum	5	0	0.0001	0.0001	0.0002	0.00004	-
Nickel	5	1	<0.0001	0.0001	0.0002	0.00005	-
Selenium	5	5	<0.0001	0.00005	<0.0001	-	-
Uranium	5	5	<0.0001	0.00005	<0.0001	-	-
Lead-210	5	5	<0.02	0.01	<0.02	-	-
Polonium-210	5	5	<0.005	0.003	<0.005	-	-
Radium-226	5	3	<0.005	0.005	0.009	0.003	-
Thorium-230	5	5	<0.01	0.005	<0.01	-	-
Wollaston Lake							
Arsenic	5	2	<0.0001	0.00008	0.0001	0.00003	-
Cadmium	5	3	<0.00001	0.00003	0.0001	0.00006	-
Cobalt	5	5	<0.0001	0.00005	<0.0001	-	-
Copper	5	5	<0.0002	0.0001	<0.0002	-	-
Lead	5	5	<0.0001	0.00005	<0.0001	-	-
Molybdenum	5	0	0.0008	0.001	0.001	0.0002	-
Nickel	5	2	<0.0001	0.00008	0.0001	0.00003	-
Selenium	5	5	<0.0001	0.00005	<0.0001	-	-
Uranium	5	5	<0.0001	0.00005	<0.0001	-	-
Lead-210	5	5	<0.02	0.01	<0.02	-	-
Polonium-210	5	5	<0.005	0.003	<0.005	-	-
Radium-226	5	4	<0.005	0.004	0.009	0.003	-
Thorium-230	5	5	<0.01	0.005	<0.01	-	-

Note: Concentrations are in mg/L (non-radionuclides) or Bq/L (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL.

A.2 Qamanirjuaq Caribou

The following section summarizes the available flesh and organ (kidney and liver) data available for caribou from the Qamanirjuaq herd which is considered to represent background caribou.

Table A.10 Summary statistics for COPC in Qamanirjuaq caribou flesh

COPC	N	N<MDL	Concentration			
			Min	Average	Max	StDev
Arsenic	23	1	<0.01	0.03	0.06	0.01
Cadmium	23	2	<0.002	0.010	0.068	0.01
Cobalt	23	0	0.002	0.008	0.021	0.00
Copper	23	0	0.74	2.36	4.2	0.815
Lead	23	0	0.002	0.02	0.049	0.01
Molybdenum	23	13	<0.02	0.046	0.46	0.093
Nickel	23	7	<0.01	0.03	0.16	0.036
Selenium	23	0	0.1	0.174	0.22	0.024
Uranium	22	8	<0.001	0.006	0.032	0.01
Lead-210	23	14	<0.001	0.00	0.007	0.00
Polonium-210	23	0	0.0042	0.03	0.046	0.01
Radium-226	23	6	<0.00005	0.000	0.00035	0.000
Thorium-230	23	22	<0.00007	0.0001	<0.001	0.00009

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL.

Table A.11 Summary statistics for COPC in Qamanirjuaq caribou organs

COPC	N	N<MDL	Concentration			
			Min	Average	Max	StDev
Kidney						
Arsenic	15	0	0.01	0.021	0.03	0.0059
Cadmium	15	0	0.6	3.17	5.8	1.53
Cobalt	15	0	0.029	0.047	0.076	0.015
Copper	15	0	3.1	4.54	6.4	0.79
Lead	15	0	0.11	0.14	0.2	0.024
Molybdenum	15	0	0.03	0.12	0.17	0.036
Nickel	15	4	<0.01	0.02	0.08	0.023
Selenium	15	0	0.76	1.09	1.4	0.16
Uranium	15	6	<0.001	0.0039	0.021	0.0056
Lead-210	15	0	0.036	0.072	0.12	0.027
Polonium-210	15	0	0.18	0.34	0.51	0.089
Radium-226	15	11	<0.0006	0.0010	0.004	0.0011
Thorium-230	15	15	<0.001	0.0012	<0.004	0.00077
Liver						
Arsenic	14	0	0.01	0.016	0.02	0.0050
Cadmium	14	0	0.15	0.58	0.87	0.21
Cobalt	14	0	0.069	0.083	0.095	0.009
Copper	14	0	9.6	25	41	10
Lead	14	0	0.21	0.42	0.86	0.17
Molybdenum	14	0	0.33	0.57	0.74	0.12
Nickel	14	7	<0.01	0.070	0.61	0.16
Selenium	14	0	0.33	0.44	0.57	0.070
Uranium	14	6	<0.001	0.0036	0.017	0.0052
Lead-210	14	0	0.075	0.19	0.36	0.076
Polonium-210	14	0	0.27	0.45	0.68	0.10
Radium-226	14	8	<0.00007	0.00033	0.001	0.00026
Thorium-230	14	12	<0.0001	0.0032	0.04	0.011

Note: Concentrations are in µg/g ww (non-radionuclides) or Bq/g ww (radionuclides); minimum (Min) and maximum (Max) values with < are reported as the Method Detection Limit (MDL); average and standard deviation (StDev) calculated after setting values <MDL equal to ½ the MDL.

ATTACHMENT B

FOOD INGESTION RATES

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ATTACHMENT B: FOOD INGESTION RATES

B.1 Country Food Ingestion Rates

In 2000, CanNorth carried out a dietary survey of the Hatchet Lake Band, residing on the east side of Wollaston Lake, in order to identify the food which were consumed by different age groups over two seasons (summer and winter), its geographical source, how the food was prepared and stored, and the quantity consumed (CanNorth 2000). The survey considered adults in three different age groups (21-40, 41-60 and >60 years old), teens (11 – 20 years old) and children (2 -10 years old). Food ingestion rates derived from the Hatchet Lake dietary survey were applied to the Wollaston Lake, Black Lake, Stony Rapids, and Fond du Lac communities.

In 2011, CanNorth carried out a comprehensive country food assessment which included a dietary survey for the residents of Uranium City (adults and children) to determine the country food type, amount, and location of harvest in an effort to better understand the utilization and potential implications to human health from country foods gathered in the area (CanNorth 2011). Food ingestion rates derived from the Uranium City study were applied to the Uranium City and Camsell Portage communities.

B.1.1 Hatchet Lake Dietary Survey

Traditional meat sources utilized by the Hatchet Lake Band are barren-ground caribou, beaver, and other small mammals such as snowshoe hare, muskrat, porcupine, and otter. Although moose are hunted, moose meat comprises a very small percentage of the diet of community members. Caribou are hunted from November to March in the general area north of Wollaston Lake towards the border with the Northwest Territories and east over the Manitoba border, while moose are found locally in small numbers and are available locally all year round. Snowshoe hares and other small mammals are also available locally (CanNorth 2000). Fish from Wollaston Lake commonly eaten by the Hatchet Lake Band include lake whitefish, lake trout, and northern pike, although walleye, Arctic grayling, longnose sucker, and white sucker are also consumed.

Both local and migratory birds are consumed by Hatchet Lake Band members. Local birds include spruce grouse (wild chicken), ruffed grouse, sharp-tailed grouse, and ptarmigan. Migratory birds are hunted during the open water season and include several species of duck, goose, swan and sandhill crane. Seagull eggs are eaten during early summer and are obtained from islands near the community.

Local plants consumed are Labrador tea, bog cranberries, raspberries, blueberries, and cloudberry.

CanNorth (2000) developed intake rates for different age groups comprising the Hatchet Lake Band, specifically 2-10 years, 11-20 years, 21-40 years, 41-60 years, and >60 years. For this assessment, the age group 2-10 years was used to develop intake rates for the toddler and child (the same intake rates were applied to both the toddler and child), 11-20 years was used for the teen, and the age groups comprising 21-60 years for the adult.

The intake rates were developed for numerous country foods; however, the values for meat (caribou, moose, beaver, and other small mammals), poultry (ground birds, water birds), fish, and berries were used for this assessment. Moose represents an insignificant portion of the country food diet for the Hatchet Lake Band (i.e., less than 1% of meat), and it was therefore assumed for the purposes of this assessment that moose is not eaten and the moose intake rates were added to the caribou intake rates. Concentrations of COPC from EARMP and other monitoring programs are available for small mammals (snowshoe hare) and game birds (spruce grouse); for the assessment, the intake rates of snowshoe hare were assumed to be represented by the sum of intake rates for beaver and other small mammals, while those for spruce grouse were assumed to be represented by the sum of intake rates for ground birds and water birds. The intake rates for berries (bog cranberry and blueberry) were assumed to be represented by traditional fruit.

Mean daily intake rates were developed by CanNorth (2000) separately for summer and winter, and for both males and females. These values were averaged to provide overall mean intake rates for each age group. The overall mean daily intake rates for the adult were calculated as weighted averages of the values reported for the two age groups (21-40 years and 41-60 years), based on 21-40 year olds representing 29.7% of the population and 41-60 year olds representing 9.7% of the population (CanNorth 2000). The Hatchet Lake survey indicated that the majority of people eat whitefish (CanNorth 2000) and since lake white fish had the highest concentrations for a number of the COPC it was assumed that approximately 80% of the fish people eat are whitefish. The study found that, on average, adults consume approximately 6 g/d of caribou organ meats (liver, kidney, heart)¹. The mean daily intake rates are provided in Table B.1 for adults, Table B.2 for teens, and Table B.3 for children and toddlers. These values were applied to residents of Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake.

¹ Organ consumption was considered in the sensitivity analysis for adults and teens only.

Table B.1 Adult country food mean daily intake rates for Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake

Category	Country Food	Adult Mean Intake (g/d)								
		21-40 y Female		21-40 y Male		41-60 y Female		41-60 y Male		21-60 y Adult ^a
		Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	
Meat	Caribou	251	310	180	560	295	609	279	669	359 ^b
	Moose	0	0.3	1.4	7.3	3.1	2.9	2.5	3.9	2.5 ^b
	Beaver	0	0	2.2	1.7	2	0	0	0	0.9 ^c
	Other small mammals	0.4	0	0.6	0.6	0.7	3	19.4	0.9	1.8 ^c
Poultry	Ground birds	0	0.2	0.2	3	0	2.7	3.2	7.4	1.5 ^d
	Water birds	2.3	0	0	0.5	3.1	0	31.9	0	2.7 ^d
Fish		41.4	6.5	59.9	19.7	257	73	376	41.6	70.0 ^e
Organs (caribou)		-	-	-	-	-	-	-	-	6 ^f
Traditional fruit (berries)		2.4	0	2.6	3.2	2.3	1.3	0	0	1.8

Notes: Seasonal mean intake rates and population demographics obtained from CanNorth (2000).

^a Weighted average intake rates were calculated based on 29.7% of the population being 21-40 years old, and 9.7% of the population being 41-60 years old.

^b Moose and caribou intake rates were summed to provide an overall mean daily intake rate of moose of 361 g/d.

^c Beaver and other small mammal intake rates were summed to provide an overall mean daily intake rate of hare of 2.6 g/d.

^d Ground bird and water bird intake rates were summed to provide an overall mean daily intake rate of grouse of 4.1 g/d.

^e Assumed 83% of fish consumed is lake whitefish; remaining 17% represented by 'other' fish for the assessment.

^f On average, adults consume 6 g/d; this was considered in the sensitivity analysis only.

Table B.2 Teen country food mean daily intake rates for Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake

Category	Country Food	Teen Mean Intake (g/d)				Teen
		11-20 y Female		11-20 y Male		
		Summer	Winter	Summer	Winter	
Meat	Caribou	319	167	390	258	284 ^a
	Moose	1.3	0	5.9	0.27	1.9 ^a
	Beaver	0.73	0	0.25	0.49	0.37 ^b
	Other small mammals	0.0	1.0	1.6	2.2	1.2 ^b
Poultry	Ground birds	2.4	0.69	4.8	4.3	3.0 ^c
	Water birds	0	4.6	0	9.5	3.5 ^c
Fish		21.4	23.8	30.7	54.1	32.5 ^d
Organs (caribou)		-	-	-	-	4.7 ^e
Traditional Fruit (Berries)		3.3	6.7	1.3	17.5	7.2

Notes: Seasonal mean intake rates obtained from CanNorth (2000).

^a Moose and caribou intake rates were summed to provide an overall mean daily intake rate of moose of 285 g/d.

^b Beaver and other small mammal intake rates were summed to provide an overall mean daily intake rate of hare of 1.6 g/d.

^c Ground bird and water bird intake rates were summed to provide an overall mean daily intake rate of grouse of 6.6 g/d.

^d Assumed 83% of fish consumed is lake whitefish; remaining 17% represented by 'other' fish for the assessment.

^e Estimated as the adult organ intake rate times the ratio of the teen to adult body weights; considered for the sensitivity analysis only.

Table B.3 Child and toddler country food mean daily intake rates for Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake

Category	Country Food	Child and Toddler Mean Intake (g/d)				Child and Toddler
		2-10 y Female		2-10 y Male		
		Summer	Winter	Summer	Winter	
Meat	Caribou	278.8	219	208.7	253.5	240 ^a
	Moose	1.4	4.2	0.2	0.4	1.6 ^a
	Beaver	0	0.05	0.5	0	0.14 ^b
	Other small mammals	0	0.6	0	0	0.15 ^b
Poultry	Ground birds	0.1	0.5	0	0.3	0.23 ^c
	Water birds	5.3	0	2.8	0	2.0 ^c
Fish		107.5	8.5	51.9	7.2	43.8 ^d
Organs (caribou)		-	-	-	-	0 ^e
Traditional Fruit (Berries)		19.4	0.9	13.6	0.2	8.5

Notes: Seasonal mean intake rates obtained from CanNorth (2000).

^a Moose and caribou intake rates were summed to provide an overall mean daily intake rate of moose of 242 g/d.

^b Beaver and other small mammal intake rates were summed to provide an overall mean daily intake rate of hare of 0.3 g/d.

^c Ground bird and water bird intake rates were summed to provide an overall mean daily intake rate of grouse of 2.3 g/d.

^d Assumed 83% of fish consumed is lake whitefish; remaining 17% represented by 'other' fish for the assessment.

^e Based on input from Hatchet Lake Band members, toddlers and children consume little to no organ meat.

B.1.2 Uranium City Country Foods Study

Uranium City residents consume a large amount of fish, with the mean annual rate for fish being more than two times that of mammals and almost six times that of birds. Fish are consumed year-round on a relatively consistent basis. Lake Athabasca represents the most important fishing area for Uranium City residents, although fishing also occurs in moderate amounts at various lakes in the area (e.g., Milliken Lake, Donaldson Lake, and Rogers Lake). Minimal fishing also occurs in Beaverlodge Lake and Martin Lake, even though a fish advisory is in place for these waterbodies to limit exposure to selenium from this pathway. Rivers and creeks such as the Crackingstone River inlet are also fished.

For meat, residents consume primarily moose, hare, and beaver, and they consume larger quantities in the fall and winter months. For the most part, consumption of mammals was limited to the flesh; however, moose was a notable exception with about 30% to 50% of people also consuming moose organ meat (heart, liver and/or kidneys), bone marrow and tongue. Ptarmigan is consumed largely during the winter, while consumption of migratory birds and waterfowl is largely limited to the open water season. Although almost 15% of the population reported beaver consumption, follow-up discussions with residents since the study have suggested that very few people in fact still trap and eat beaver. The reported consumption likely reflects the time when fur prices were higher and beaver were therefore trapped primarily for their pelts. Moose hunting is spread across the regional study area including the Beaverlodge Properties, the Goldfields area, Milliken Lake, and shorelines of Lake Athabasca. Although caribou (*Rangifer tarandus groenlandicus*) are hunted by residents from November to April, they have not been hunted in the area recently as the herds have migrated much further north.

The most commonly consumed plant species are raspberry, blueberry and bog cranberry, although medicinal plants, wild mushrooms, and mint are also consumed. Wild mushrooms and mint are also consumed.

As part of the Uranium City Country Food Study, CanNorth (2011) presented mean intake rates per person for the following country foods:

- Mammals: bear, moose, rabbit, beaver, muskrat, lynx, and porcupine.
- Fish: lake whitefish, lake trout, northern pike, Arctic grayling, walleye, sucker species, burbot.

- Birds: spruce grouse, ruffed grouse, sharp-tailed grouse, ptarmigan, ducks, Canada goose, swan.
- Berries: cranberry, blueberry, pin cherry, gooseberry, strawberry, raspberry.

Similar to the Hatchet Lake intake rates, intake rates for the above country foods were combined to provide estimates of intakes for foods for which COPC concentrations are available. Thus, snowshoe hare intake rate was estimated from intake rates for all mammals other than moose, while the intake rate for spruce grouse was estimated from intake rates for all birds. The lake whitefish intake rate was the value from CanNorth (2011), while intake of ‘other’ fish was the sum of all other fish species (95% northern pike and lake trout, and 5% grayling, walleye, sucker, and burbot). The resulting composite food intake rates for residents of Uranium City are shown in Table B.4.

Table B.4 Mean intake rates of composite food items for Uranium City residents

Category	Individual Country Foods Included	Mean Intake Rate	
		kg/p/y	g/p/d
Meat	Moose flesh	10.47	28.7
	Snowshoe hare, beaver, lynx, muskrat, black bear, and porcupine flesh	4.34 ^a	11.9 ^a
Poultry	Ptarmigan, spruce grouse, ruffed grouse, sharp-tailed grouse, duck species, Canada goose, and tundra swan flesh	6.22	17.0
Lake whitefish	Lake whitefish flesh	8.17	22.4
Other fish	Lake trout, northern pike, walleye, Arctic grayling, burbot, and sucker species flesh	28.1 ^b	77.0 ^b
Berries	Raspberry, blueberry, bog cranberry, strawberry, gooseberry, pin cherry, blackberry, currant, mooseberry, cloudberry, rosehips, Saskatoon berry	6.72	18.4

Note: From Table 3.2-6 of CanNorth (2011).

^a 94% of this value is snowshoe hare.

^b 95% of this value is lake trout and northern pike.

Intake rates were not developed for different life stages and thus these values had to be estimated for the assessment. CanNorth (2011) reported that 32 of the 115 residents surveyed were below the age of 20 while the remaining 83 were above the age of 20 (ranging from 20 to 85 years old). Thus, adult-specific intake rates for this assessment were estimated according to Equation 1:

$$Intake_{mean} = Intake_{adult} \times f_{adult} + Intake_{other} \times f_{other} \tag{1}$$

Where:

Intake_{mean} = Mean yearly intake of ‘x’ country food per person [kg/p/y]

Intake_{adult} = Mean yearly intake of ‘x’ country food per person (adult) [kg/p/y]

$Intake_{other}$ = Mean yearly intake of ‘x’ country food per person (non-adult) [kg/p/y]
 f_{adult} = Fraction of residents that are adults [-] (83/115)
 f_{other} = Fraction of residents that are not adults [-] (32/115)

To relate an intake rate for the adult to that of non-adults (‘other’) in Equation 1, life stage conversion factors (LCs) were developed as the ratios of child to adult intake rates from other sources, assuming that ‘other’ could be represented by children (less than 20 years old):

$$Intake_{other} = Intake_{adult} \times LC \tag{2}$$

Thus, the intake rates for the adult resident of Uranium City were estimated from Equations 1 and 2 as follows:

$$Intake_{adult} = \frac{Intake_{mean}}{f_{adult} + LC \times f_{other}} \tag{3}$$

The values for fish and wild game for Canadian Aboriginal populations (Health Canada 2012) were used for fish, meat, and poultry, while those for various fruits by the Canadian general population (Health Canada 1994) were used for berries. It is recognized that there is uncertainty in the use of this methodology but it is the best data available to develop the life stage conversion factors. The adult and child intake rates from Health Canada (1994, 2012) and resulting LCs are presented in Table B.5.

Table B.5 Summary of life stage conversion factors used in the assessment

Food Group	Daily Intake Rate (kg/d)		Life Stage Conversion Factor	Source	Applies To
	Child	Adult			
Wild Game	0.125	0.27	0.46	Health Canada (2012)	Moose meat, other meat, poultry
Fish	0.17	0.22	0.77	Health Canada (2012)	Lake whitefish, other fish
Fruits	0.202	0.186	1.08	Health Canada (1994)	Berries

Note: Fruits includes raw and canned citrus fruit, fresh and canned citrus juice, raw apples, canned sweetened and unsweetened applesauce, bananas, grapes, bottled grape juice, peaches, pears, plums, dried prunes, canned plums, cherries, melons, strawberries, blueberries, pineapple, and raisins.

Teen, child, and toddler country food intake rates were then estimated from the adult intake rates assuming that they represent 90%, 70%, and 50% of the adult intakes, based on ratios for intake rates of meat, poultry, fish, and berries for typical Canadians from Health Canada (1994). The values are summarized in Table B.6. These intake rates were used for residents of Uranium City and Camsell Portage.

Table B.6 Country food intake rates for Uranium City and Camsell Portage

Category	Country Food	Mean Intake (g/d)				
		Uranium City Resident ^a	Adult ^b	Teen ^c	Child ^c	Toddler ^c
Meat	Moose flesh	28.7	33.8	30.8	25.3	16.9
	Snowshoe hare flesh	11.9	14.0	12.7	10.5	7.0
Poultry	Spruce grouse flesh	17.0	20.1	18.3	15.1	10.0
Fish flesh	Lake whitefish	22.4	23.9	21.8	17.9	12.0
	Other fish	77.0	82.3	74.9	61.7	41.2
Organs (moose) ^d		-	2.81	2.27	0	0
Berries		18.4	18.0	16.4	13.5	9.0

Note:

^a Based on Table 3.2-6 of CanNorth (2011).

^b Estimated from Uranium City resident using life stage conversion factors based on information from Health Canada (1994, 2012).

^c Estimated assuming teen, child, and toddler intakes are 90%, 70%, and 50%, respectively, of those for an adult (Health Canada 1994).

^d Organ intake rates were not provided and therefore values from Health Canada (1994) were used for the sensitivity analysis. Based on Hatchet Lake results, it was assumed that toddlers and children do not consume organ meats.

B.2 Supermarket Food Ingestion Rates

B.2.1 Athabasca Basin Residents

In addition to country foods, residents may also be exposed to COPC through the ingestion of supermarket (non-country) foods. Although exposures from non-country foods are not as a result of exposure to environmental concentrations caused by historical mining activities, they represent a part of the total exposure to COPC and therefore were considered in the evaluation. Health Canada has been conducting Total Dietary Studies (TDS) for several years in an effort to capture this exposure, which requires not only measured concentrations in various supermarket foods but also intake rates of these foods. In the *Human Health Risk Assessment for Priority Substances*, Health Canada (1994) developed mean intake rates of 112 individual food composites for typical Canadians of different age ranges (i.e., infant, toddler, child, teen, and adult).

The intake rates of non-country foods used in the assessment for residents of the Athabasca Basin are provided in Table B.7.

Table B.7 Supermarket food intake rates for Athabasca Basin residents

Food Group	Mean Intake Rate (g/d)			
	Adult	Teen	Child	Toddler
Milk & Dairy	297	590	622	677
Eggs	32.3	21.5	21.1	24.2
Root Vegetables	142	167	128	81.6
Other Vegetables	161	148	117	78.6
Other Fruits & Juices ^a	176	153	193	186
Cereals & Grains	247	325	300	168
Sugar & Sweets	57.2	66.6	57.2	45.6
Fats, Nuts & Oils	14.7	18.9	14.4	6.9
Non-Alcoholic Drinks	812	406	228	115
Alcoholic Drinks	145	23.3	2.66	1.2

Note: Values from Health Canada (1994); intake rates of individual non-country foods comprising the categories are presented in Table B.10.

^a Does not include intakes of berries (strawberries and blueberries) as these are evaluated as country foods.

B.2.2 Typical Canadians

To enable comparison of total intakes from food between typical Canadians and Athabasca Basin residents, foods consumed by both groups were matched as shown in Table B.8.

Table B.8 Foods consumed by Athabasca Basin residents and typical Canadians

Foods Consumed by Athabasca Basin Residents	Comparable Foods Consumed by Typical Canadians
Meat	
Moose/caribou and snowshoe hare flesh	Beef (steak, roast and stewing, hamburger), pork (fresh and cured), veal, lamb, cold cuts and luncheon meats, canned luncheon meats, canned meat soups, wieners
Poultry	
Spruce grouse flesh	Poultry, chicken, turkey
Fish Flesh	
Lake trout, lake whitefish, northern pike	Fresh or frozen marine and freshwater fish, canned fish, fresh or frozen shellfish
Organs ^a	
Moose and caribou organs	Organ meats, liver, kidney
Berries	
Berries	Strawberries, blueberries
Other	
Supermarket/non-country Foods	Milk and dairy products, root vegetables, other vegetables, cereals and grains, eggs, other fruits and juices, fats, nuts and oils, sugar and sweets, non-alcoholic drinks, alcoholic drinks

Note: Details on the individual food composites comprising each food category are shown Table B.10.

^a Organ consumption considered in the sensitivity analysis only.

The intake rates for each composite food item that were used in this evaluation for the typical Canadians are provided in Table B.10. Since Uranium City residents consume

more fish than the general Canadian population, a typical Canadian receptor with a high fish intake rate was also evaluated. The fish intake rate provided in Health Canada (1994) was developed using data for both people who consume and don't consume fish (i.e., consumers and non-consumers); however, intake rates of fish and shellfish for consumers only are available in the *Compendium of Canadian Human Exposure Factors for Risk Assessment* (Richardson 1997). The fish intake rates for consumers only of 111 g/d, 104 g/d, 90 g/d, and 56 g/d for adults, teens, children, and toddlers are similar to the fish intakes for Uranium City residents and were therefore used in this assessment for the typical Canadian with a high fish intake. In order to maintain the same total meat and fish intake of the typical Canadian, the meat intake rate of a typical Canadian was decreased for the high fish consumer.

The food intake rates for typical Canadians are presented in Table B.9 and are shown as summed intakes for several food groupings, based on the Canadian Council of Ministers of the Environment (CCME 2009) for information purposes; however, the individual food intake rates for each composite food that are shown in Table B.10 were used in the calculations.

Table B.9 Supermarket food intake rates for typical Canadians

Food Group	Mean Intake Rate (g/d)			
	Adult	Teen	Child	Toddler
Meat	168	150	115	87
Meat - High Fish Intake ^a	71	57	33	35
Poultry	21	20	17	13
Fish	14	11	8.4	3.4
Fish – High Fish Intake ^a	111	104	90	56
Organs ^b	2.8	2.3	1.9	0.9
Berries	9.7	6.9	8.6	3.7
Milk & Dairy	297	590	622	677
Eggs	32.3	21.5	21.1	24.2
Root Vegetables	142	167	128	81.6
Other Vegetables	161	148	117	78.6
Other Fruits & Juices ^c	166	146	185	182
Cereals & Grains	247	325	300	168
Sugar & Sweets	57.2	66.6	57.2	45.6
Fats, Nuts & Oils	14.7	18.9	14.4	6.9
Non-Alcoholic Drinks	812	406	228	115
Alcoholic Drinks	145	23.3	2.66	1.2

Note: Values from Health Canada (1994); intake rates of individual non-country foods comprising the categories are presented in Table B.10.

^a Meat intake rates for high fish eaters decreased by fish intake rates from Richardson (1997) to maintain same total meat and fish intakes as typical Canadian.

^b Considered in the sensitivity analysis only.

^c Not including strawberries and blueberries (considered as 'berries').

Table B.10 Country and non-country food intake rates used in the assessment

Food Group	Composite Food Item	Mean Composite Food Intake Rate (g/d)											
		Toddler			Child			Teen			Adult		
		TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR
Country Foods and Comparable Supermarket Foods													
Fish	Fish, Marine, Fresh Or Frozen	1.52	25.41	0	4.81	51.72	0	5	46.35	0	6.59	52.82	0
	Fish, Fresh Water, Fresh Or Frozen	1.12	18.72	0	1.08	11.61	0	1.09	10.1	0	1.26	10.1	0
	Fish, Canned	0.43	7.19	0	1.84	19.78	0	4.13	38.28	0	4.07	32.62	0
	Shellfish, Fresh Or Frozen	0.28	4.68	0	1.08	6.88	0	1.09	9.27	0	1.26	15.47	0
	Lake Whitefish	0	0	12.0 (UC) 36.3 (HL)	0	0	17.9 (UC) 36.3 (HL)	0	0	21.8 (UC) 27.0 (HL)	0	0	23.9 (UC) 58.1 (HL)
	Northern Pike, Lake Trout	0	0	41.2 (UC) 7.4 (HL)	0	0	61.7 (UC) 7.4 (HL)	0	0	74.9 (UC) 5.5 (HL)	0	0	82.3 (UC) 11.9 (HL)
Moose, Caribou, and Snowshoe Hare Flesh	Beef, Steak	3.09	1.23	0	7.37	2.13	0	10.89	4.15	0	17.38	7.33	0
	Beef, Roast And Stewing	6.49	2.58	0	12.21	3.53	0	23.27	8.88	0	27	11.38	0
	Beef, Hamburg	20.05	7.98	0	19.23	5.56	0	30.84	11.76	0	21.61	9.11	0
	Pork, Fresh	7.24	2.88	0	11.98	3.46	0	22.74	8.67	0	22.73	9.58	0
	Pork, Cured	1.95	0.78	0	3.96	1.14	0	4.4	1.68	0	7.78	3.28	0
	Veal	0.5	0.2	0	0.33	0.1	0	1.79	0.68	0	2.16	0.91	0
	Lamb	0.03	0.01	0	1.8	0.52	0	1.2	0.46	0	0.78	0.33	0
	Cold Cuts And Luncheon Meats	5.72	2.28	0	7.85	2.27	0	11.27	4.3	0	9.27	3.91	0
	Luncheon Meats, Canned	0.88	0.35	0	0.97	0.28	0	2.2	0.84	0	2.1	0.89	0
	Soups, Meat, Canned	39.23	15.61	0	42.77	12.36	0	35.94	13.71	0	54.76	23.09	0
	Wieners	2.26	0.9	0	6.35	1.84	0	5.45	2.08	0	2.41	1.02	0
	Moose Meat (Uranium City)	0	0	16.9	0	0	25.3	0	0	30.8	0	0	33.8
	Caribou Meat (Hatchet Lake)	0	0	242	0	0	242	0	0	285	0	0	361
Snowshoe Hare	0	0	7.0 (UC) 0.3 (HL)	0	0	10.5 (UC) 0.3 (HL)	0	0	12.7 (UC) 1.6 (HL)	0	0	14.0 (UC) 2.6 (HL)	
Spruce Grouse Flesh	Poultry, Chicken And Turkey	13.24	13.24	10.0 (UC) 2.3 (HL)	16.72	16.72	15.1 (UC) 2.3 (HL)	20.32	20.32	18.3 (UC) 6.6 (HL)	21.17	21.17	20.1 (UC) 4.1 (HL)
Organs ^a	Organ Meats, Liver, Kidney	0.91	0.91	0	1.85	1.85	0	2.27	2.27	2.27 (UC) 4.7 (HL)	2.81	2.81	2.81 (UC) 6.0 (HL)
Berries	Strawberries	3.01		9.0 (UC) 8.5 (HL)	7.56		13.5 (UC) 8.5 (HL)	5.39		16.4 (UC) 7.2 (HL)	7.75		18 (UC) 1.8 (HL)
	Blueberries	0.67			1			1.51			1.99		

Table B.10 Country and non-country food intake rates used in the assessment (cont'd)

Food Group	Composite Food Item	Mean Composite Food Intake Rate (g/d)											
		Toddler			Child			Teen			Adult		
		TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR
Supermarket Foods not Considered Country Foods													
Alcoholic Drinks	Alcoholic Drinks, Wine	0.02			0.73			1.84			23.54		
	Alcoholic Drinks, Beer	1.22			1.93			21.44			121.05		
Cereals & Grains	Bread, White	34			76.8			94.88			67.45		
	Bread, Whole Wheat And Rye	5.49			6.47			7.43			19.76		
	Rolls And Biscuits	3.64			11.63			15.92			10		
	Flour, Wheat	3.86			10.38			5.17			6.93		
	Cake	8.59			25.62			42.52			20.37		
	Cookies	18.87			26			23.08			15.58		
	Danish And Donuts	3.6			5.39			9.53			5.49		
	Crackers	4.83			5.14			5.67			3.45		
	Pancakes	2.16			2.93			3.37			2.04		
	Cereals, Cooked Wheat	13.94			5.72			4.73			6.53		
	Cereals, Oatmeal	20.86			19.95			12.26			16.44		
	Cereals, Corn	3.42			5.37			3.4			1.82		
	Cereals, Wheat And Bran	3.37			3.37			3.35			2.31		
	Rice	6.73			13.98			14.56			15.14		
	Pie, Apple	2.02			3.87			3.71			9.25		
	Pie, Other	3.68			10.35			10.77			11.7		
	Pizza	0.12			3.09			5.09			1.74		
	Pasta	17.67			36.9			46.99			15.81		
	Pasta, Ordinary	10.85			26.24			10.32			13.47		
Muffins	0.39			0.53			2.12			1.56			
Eggs	Eggs	24.16			21.05			21.5			32.29		
Fats, Nuts & Oils	Cooking Fats & Salad Oils	1.23			2.21			3.97			4.95		
	Margarine	2.65			6.13			8.34			6.23		
	Peanut Butter & Peanuts	2.98			6.08			6.6			3.52		

Table B.10 Country and non-country food intake rates used in the assessment (cont'd)

Food Group	Composite Food Item	Mean Composite Food Intake Rate (g/d)											
		Toddler			Child			Teen			Adult		
		TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR
Milk & Dairy	Milk, Whole	377.88			323.16			255.65			138.24		
	Milk, 2%	194.5			185.61			194.75			60.64		
	Milk, Skim	59.67			55.57			72.56			30.83		
	Evaporated Milk, Canned	12.04			6.54			7.06			11.46		
	Cream, 10-12% Butter Fat	1.63			2.83			2.65			10.19		
	Ice Cream	15.35			25.59			25.78			12.8		
	Yogurt	0.78			0.48			0.87			1.54		
	Cheese	2.56			3.18			5.66			8.33		
	Cheese, Cottage	1.73			1.33			1.74			5.35		
	Cheese, Processed Cheddar	3.59			4.92			6.43			3.81		
	Butter	7.06			12.94			16.67			13.61		
Non-Alcoholic Drinks	Coffee	6.48			11.99			83.95			347.77		
	Tea	8.47			22.2			81.64			354.13		
	Soft Drinks	100.33			193.57			240.7			109.91		
Other Fruits & Juices	Citrus Fruit ^b	11.47			24.87			22.33			33.41		
	Citrus Juice	34.61			22.54			32.98			35.01		
	Citrus Juice, Canned	9.69			12.96			11.05			13.38		
	Apples, Raw	26.79			41.38			33.85			20.52		
	Apple Juice, Canned, Unsweetened	44.21			26.66			9.65			13.3		
	Applesauce, Canned, Sweetened	3.91			8.81			3.16			5.97		
	Bananas	12.98			21.42			11.19			12.82		
	Grapes	0.82			1.52			2.67			2.94		
	Grape Juice, Bottled	5.27			2.52			5.02			2.15		
	Peaches	12.25			10.27			6.56			10.17		
	Pears	18.1			6.7			4.06			7.73		
	Plums, Dried Prunes & Canned Plums	2.15			2.72			2.64			4.74		
	Cherries	0.9			1.15			0.88			1.64		
	Melons	1.18			7.39			3.82			9.53		
	Pineapple	0.7			1.68			1.66			2.22		
Raisins	0.5			0.53			1.08			0.62			

Table B.10 Country and non-country food intake rates used in the assessment (cont'd)

Food Group	Composite Food Item	Mean Composite Food Intake Rate (g/d)											
		Toddler			Child			Teen			Adult		
		TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR
Other Vegetables	Soups, Other ^c	22.22			31.63			44.97			37.43		
	Soups, Dehydrated	10.02			7.98			7.92			7.65		
	Corn	9.9			17.6			12.02			8.16		
	Cabbage	2.69			5.05			6.21			10.26		
	Celery	1.59			2.43			3.45			8.34		
	Peppers	0.05			0.27			0.43			1.28		
	Lettuce	2.37			4.49			8.21			12.7		
	Cauliflower	0.26			0.11			1.11			1.46		
	Broccoli	0.34			1.34			0.2			2.19		
	Beans	2.66			4.27			4.49			6.82		
	Peas	6.1			6.09			7.66			9.34		
	Tomatoes	3.19			7.47			11.16			17.9		
	Tomato Juice, Canned	5.28			4.52			5.64			10.02		
	Tomatoes/sauce, Canned & Ketchup	4.91			7.15			8.88			6.4		
	Mushrooms, Canned	0.47			0.86			2.11			1.63		
Cucumbers	3.47			8.27			11.27			11.37			
Baked Beans	3.11			7.27			12.14			8.12			
Root Vegetables	Potatoes	49.68			82.42			107.57			92.5		
	Potatoes, French Fried, Frozen	18.46			22.78			33.02			20.68		
	Potatoes, Chips	1.64			5.18			7.81			1.31		
	Carrots	8.14			10.34			11.08			14.19		
	Onion	0.89			2.45			3.05			6.15		
	Rutabagas Or Turnip	2.4			3.51			3.29			5.69		
	Beets	0.43			1.26			1			1.8		

Table B.10 Country and non-country food intake rates used in the assessment (cont'd)

Food Group	Composite Food Item	Mean Composite Food Intake Rate (g/d)											
		Toddler			Child			Teen			Adult		
		TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR	TC	TCFE	ABR
Sugar & Sweets	Sugar, White	7.08			11.66			14.46			19.2		
	Syrup	2.89			6.45			5.59			4.94		
	Jams	3.55			6.76			9.63			6.14		
	Honey	0.86			2.02			1.88			2.17		
	Puddings	13.16			8.85			10.59			8.78		
	Candy, Chocolate Bars	3.14			5.45			8.1			3.58		
	Candy, Others	5.36			8.47			10.39			4.58		
	Gelatin Dessert	9.59			7.49			5.98			7.8		

Note: TC – Typical Canadian; TCFE – Typical Canadian Fish Eater; ABR – Athabasca Basin Resident; UC – Uranium City (intake rates based on Uranium City data applied to Uranium City and Camsell Portage); HL – Hatchet Lake (intake rates based on Hatchet Lake data applied to Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake).

^a Organ consumption considered in the sensitivity analysis only for adults and teens.

^b Includes raw and canned citrus fruit.

^c Includes 'soups, pea, canned' and 'soups, tomato, canned'.

^d Includes raw, baked, boiled (skins on), and boiled (skins off).

B.3 Literature Cited

- CanNorth (Canada North Environmental Services). 2000. Hatchet Lake dietary study. Final report; prepared for the Atomic Energy Control Board, March.
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- Richardson, G.M. 1997. Compendium of Canadian human exposure factors for risk assessment. O'Connor Associates Environmental Inc., Ottawa ON.

ATTACHMENT C

ESTIMATED DAILY INTAKES OF
SUPERMARKET FOODS

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ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

C.1 Supermarket Foods

Concentrations of constituents of potential concern (COPC) in supermarket foods were developed based on data gathered by Health Canada (2016) between 2005 and 2007 (1993 and 1999 for molybdenum) for individual food composites. For the assessment, non-detects were set equal to the MDL and the average values were selected as the EPCs (Table C.1), which were then multiplied by the food intake rates (see Attachment B) to provide the estimated daily intakes shown in Table C.2 to Table C.5.

C.2 Literature Cited

EC (Environment Canada). 2015. Federal contaminated sites action plan (FCSAP) ecological risk assessment guidance Module 5 : Defining background conditions and using background concentrations.

Health Canada. 1994. Human health risk assessment for priority substances. Cat. No. En40-215/41E. Ottawa, Ontario.

Health Canada. 2016. Concentration of Contaminants and Other Chemicals in Food Composites - Total Diet Study Results. <https://www.canada.ca/en/health-canada/services/food-nutrition/food-nutrition-surveillance/canadian-total-diet-study/concentration-contaminants-other-chemicals-food-composites.html> (accessed April 26, 2018).

Table C.1 Mean concentrations of constituents in supermarket foods

Food Group ^(a)	Food Composite Item	Mean Supermarket Food Concentrations (mg/kg ww)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
Supermarket Foods Comparable to Country Foods										
Meat	Beef, Steak	5.4E-03	3.5E-04	3.5E-03	1.13	3.0E-03	0.02	0.46	0.28	9.7E-05
	Beef, Roast And Stewing	5.4E-03	3.7E-04	4.0E-03	1.16	3.8E-03	0.02	0.57	0.36	2.5E-04
	Beef, Hamburg	5.5E-03	9.0E-04	0.14	0.92	3.6E-03	0.02	1.11	0.29	1.9E-04
	Pork, Fresh	4.0E-03	6.7E-04	1.4E-03	0.92	1.7E-03	0.02	0.18	0.48	3.4E-04
	Pork, Cured	9.6E-03	2.1E-03	7.2E-03	0.89	6.0E-03	0.03	0.41	0.47	1.9E-03
	Veal	3.6E-03	9.0E-04	6.7E-03	1.05	3.8E-03	8.4E-03	0.07	0.27	3.9E-04
	Lamb	3.1E-03	6.9E-04	4.6E-03	1.42	2.8E-03	0.02	0.21	0.13	9.3E-05
	Cold Cuts And Luncheon Meats	6.7E-03	2.3E-03	2.9E-03	4.55	6.4E-03	0.05	0.03	0.16	9.6E-04
	Luncheon Meats, Canned	6.8E-03	7.5E-04	3.7E-03	0.60	3.4E-03	0.05	0.04	0.16	8.0E-04
	Soups, Meat, Canned	2.6E-03	4.4E-03	1.1E-03	0.25	4.1E-03	0.03	0.05	0.04	2.5E-03
	Wieners	5.5E-03	2.9E-03	3.4E-03	0.87	5.9E-03	0.09	0.12	0.22	2.2E-03
Organ Meats, Liver, Kidney	6.3E-03	0.03	0.07	135.9	0.02	1.08	0.04	1.14	1.6E-04	
Poultry	Poultry, Chicken And Turkey	9.3E-03	2.7E-03	1.9E-03	0.58	2.1E-03	0.05	0.02	0.42	4.0E-04
Fish	Fish, Marine, Fresh Or Frozen	5.45	2.3E-03	4.5E-03	0.29	3.8E-03	4.6E-03	0.02	0.61	2.2E-03
	Fish, Fresh Water, Fresh Or Frozen	0.44	4.0E-04	4.0E-03	0.33	1.4E-03	4.7E-03	0.02	0.43	2.5E-04
	Fish, Canned	0.80	1.0E-02	2.7E-03	0.44	2.8E-03	4.5E-03	0.02	0.72	1.6E-03
	Shellfish, Fresh Or Frozen	0.31	2.4E-03	4.1E-03	1.67	5.5E-03	0.01	0.02	0.36	9.3E-03
Berries	Strawberries	4.2E-03	0.01	0.01	0.34	2.1E-03	0.14	0.06	9.7E-03	4.5E-04
	Blueberries	0.01	1.4E-03	1.8E-03	0.42	3.1E-03	0.05	0.08	1.7E-03	4.8E-04
Other Supermarket Foods										
Alcoholic Drinks	Alcoholic Drinks, Wine	8.6E-03	3.8E-04	3.3E-03	0.07	0.01	0.02	0.02	1.4E-03	7.4E-04
	Alcoholic Drinks, Beer	2.8E-03	9.0E-05	7.2E-04	0.04	3.3E-04	0.01	6.2E-03	0.01	1.6E-04
Cereals and Grains	Bread, White	5.5E-03	0.01	9.2E-03	0.93	3.4E-03	0.23	0.07	0.31	2.2E-03
	Bread, Whole Wheat And Rye	6.5E-03	0.01	9.8E-03	1.28	4.8E-03	0.29	0.09	0.25	1.8E-03
	Rolls And Biscuits	5.9E-03	0.01	0.01	1.01	4.1E-03	0.21	0.07	0.25	1.8E-03
	Flour, Wheat	3.1E-03	0.02	2.8E-03	1.20	1.2E-03	0.28	0.04	0.40	2.0E-04
	Cake	6.9E-03	8.6E-03	0.02	0.89	8.8E-03	0.08	0.25	0.06	3.6E-03
	Cookies	7.3E-03	0.02	0.04	2.16	0.01	0.16	0.62	0.05	9.4E-04
	Danish And Donuts	7.1E-03	9.8E-03	8.7E-03	0.74	5.0E-03	0.18	0.10	0.16	1.8E-03
	Crackers	5.9E-03	0.02	5.4E-03	1.16	2.5E-03	0.28	0.09	0.17	2.7E-04
	Pancakes	5.6E-03	0.01	5.4E-03	0.69	3.5E-03	0.13	0.08	0.12	3.9E-03
	Cereals, Cooked Wheat	2.5E-03	9.1E-03	2.2E-03	0.97	0.01	0.09	0.12	0.10	9.4E-03
	Cereals, Oatmeal	3.6E-03	4.4E-03	1.6E-03	0.91	7.2E-03	0.28	0.38	0.06	8.3E-03
	Cereals, Corn	4.3E-03	1.8E-03	0.02	0.54	1.9E-03	0.15	0.13	0.08	1.4E-04
Cereals, Wheat And Bran	0.06	0.03	0.03	3.36	4.0E-03	0.67	0.17	0.12	1.0E-03	

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group ^(a)	Food Composite Item	Mean Supermarket Food Concentrations (mg/kg ww)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Rice	0.09	7.3E-03	3.8E-03	0.95	7.7E-03	0.32	0.08	0.09	5.7E-03
	Pie, Apple	2.9E-03	5.3E-03	1.4E-03	0.49	2.7E-03	0.08	0.05	0.06	1.6E-04
	Pie, Other	3.3E-03	4.7E-03	1.8E-03	0.39	3.3E-03	0.08	0.07	0.05	3.0E-04
	Pizza	0.01	0.01	9.6E-03	0.77	7.5E-03	0.19	0.09	0.18	1.5E-03
	Pasta	4.0E-03	0.02	6.5E-03	0.86	6.8E-03	0.09	0.08	0.21	3.0E-03
	Pasta, Ordinary	1.7E-03	0.04	1.1E-03	1.50	5.2E-03	0.09	0.05	0.38	8.0E-03
	Muffins	7.1E-03	9.1E-03	4.4E-03	0.99	3.8E-03	0.21	0.07	0.11	2.3E-03
Eggs	Eggs	2.9E-03	5.7E-04	3.0E-03	0.71	1.4E-03	0.09	0.03	0.40	2.3E-04
Fats, Nuts and Oils	Cooking Fats & Salad Oils	0.05	2.4E-04	2.4E-04	0.03	9.6E-04	0.57	0.12	0.16	4.0E-05
	Margarine	0.04	4.9E-04	6.5E-04	0.01	8.7E-04	0.51	0.08	0.07	8.3E-05
	Peanut Butter & Peanuts	0.02	0.04	0.02	3.43	4.7E-03	1.45	0.47	0.05	2.9E-04
Milk and Dairy	Milk, Whole	2.6E-03	3.2E-04	2.6E-03	0.05	2.2E-04	0.04	0.02	0.04	4.2E-05
	Milk, 2%	2.2E-03	1.0E-04	2.5E-03	0.05	2.6E-04	0.04	0.02	0.04	2.9E-05
	Milk, Skim	2.1E-03	1.0E-04	2.6E-03	0.05	2.4E-04	0.04	0.03	0.04	2.7E-05
	Evaporated Milk, Canned	5.1E-03	4.6E-04	5.2E-03	0.11	5.6E-04	0.10	0.05	0.07	4.5E-04
	Cream, 10-12% Butter Fat	4.2E-03	3.5E-04	2.5E-03	0.05	2.1E-04	0.06	0.03	0.03	8.3E-05
	Ice Cream	4.4E-03	2.1E-03	0.01	0.55	2.3E-03	0.09	0.16	0.04	2.7E-04
	Yogurt	2.6E-03	2.5E-04	2.9E-03	0.07	6.0E-04	0.06	0.03	0.04	1.5E-04
	Cheese	0.01	1.4E-03	0.02	0.34	6.2E-03	0.22	0.19	0.31	2.0E-03
	Cheese, Cottage	3.5E-03	2.6E-04	2.6E-03	0.18	9.8E-04	0.07	0.03	0.16	1.0E-03
	Cheese, Processed Cheddar	0.01	9.9E-04	0.01	0.26	6.3E-03	0.19	0.13	0.17	2.4E-03
	Butter	0.02	3.3E-04	9.4E-04	0.03	1.1E-03	0.06	0.01	0.04	1.6E-04
Non-Alcoholic Drinks	Coffee	1.1E-03	1.5E-04	4.4E-03	0.12	2.8E-03	0.02	0.02	6.1E-04	2.6E-03
	Tea	1.8E-03	1.1E-04	2.1E-03	0.34	5.9E-03	0.02	0.09	6.0E-04	6.6E-03
	Soft Drinks	4.6E-04	4.0E-05	2.1E-04	9.2E-03	2.8E-04	4.7E-03	3.1E-03	3.4E-04	3.4E-04
Other Fruits and Juices	Citrus Fruit ^(b)	1.3E-03	7.0E-04	2.6E-03	0.37	1.2E-03	0.03	0.05	1.2E-03	6.0E-05
	Citrus Juice	1.2E-03	1.2E-04	2.3E-03	0.52	2.0E-03	0.04	0.02	9.8E-04	4.7E-03
	Citrus Juice, Canned	7.4E-04	8.0E-05	1.4E-03	0.24	4.9E-04	0.03	0.01	9.3E-04	3.6E-04
	Apples, Raw	4.1E-03	4.5E-04	9.9E-04	0.46	5.1E-03	0.19	8.8E-03	3.5E-04	3.0E-03
	Apple Juice, Canned, Unsweetened	6.0E-03	2.0E-04	1.1E-03	0.10	1.7E-03	0.03	7.1E-03	4.6E-04	1.8E-04
	Applesauce, Canned, Sweetened	8.3E-04	1.8E-04	8.2E-04	0.23	3.3E-03	0.18	5.3E-03	3.7E-04	4.0E-05
	Bananas	1.1E-03	7.7E-04	1.5E-03	0.98	6.8E-04	0.11	0.03	6.9E-03	5.7E-05
	Grapes	5.2E-03	9.7E-04	1.3E-03	1.11	1.5E-03	0.06	7.3E-03	1.0E-03	4.9E-04
	Grape Juice, Bottled	0.01	1.0E-03	2.5E-03	0.07	9.3E-03	0.05	0.02	6.8E-04	4.1E-03
	Peaches	4.6E-03	1.1E-03	2.4E-03	0.51	0.01	0.04	0.06	7.5E-04	4.6E-04
	Pears	3.6E-03	9.7E-04	7.5E-03	0.71	1.5E-03	0.05	0.03	1.3E-03	1.8E-04
	Plums, Dried Prunes & Canned Plums	5.3E-03	5.5E-04	3.7E-03	0.93	4.7E-03	0.23	0.10	1.4E-03	5.0E-04
	Cherries	4.7E-03	2.1E-04	2.4E-03	0.69	2.4E-03	0.04	0.02	1.3E-03	9.4E-04
Melons	5.4E-03	5.2E-03	3.4E-03	0.31	3.1E-03	0.05	0.05	0.01	1.1E-04	

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group ^(a)	Food Composite Item	Mean Supermarket Food Concentrations (mg/kg ww)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Pineapple	7.7E-03	0.01	9.3E-03	0.46	0.02	0.05	0.12	9.1E-04	4.4E-04
	Raisins	0.02	8.5E-04	8.6E-03	2.58	0.02	0.29	0.05	8.8E-03	2.4E-03
Other Vegetables	Soups, Other ^(c)	2.9E-03	4.8E-03	2.1E-03	0.30	4.0E-03	0.04	0.06	8.6E-03	3.6E-03
	Soups, Dehydrated	2.0E-03	4.3E-03	1.9E-03	0.36	5.2E-03	0.05	0.02	0.05	6.0E-03
	Corn	1.4E-03	4.7E-03	1.4E-03	0.41	2.7E-03	0.11	0.03	0.01	1.5E-03
	Cabbage	1.6E-03	3.6E-03	5.7E-03	0.22	4.0E-03	0.87	0.15	0.01	5.6E-03
	Celery	4.7E-03	0.03	2.1E-03	0.31	3.3E-03	0.02	0.04	4.5E-03	2.6E-03
	Peppers	7.2E-04	0.01	6.4E-03	0.75	2.5E-03	0.02	0.22	1.5E-03	1.7E-04
	Lettuce	4.8E-03	0.07	7.6E-03	0.23	4.0E-03	2.5E-04	0.08	2.7E-03	1.4E-03
	Cauliflower	1.9E-03	0.01	8.3E-03	0.34	4.3E-03	0.05	0.06	0.04	4.8E-03
	Broccoli	2.9E-03	8.9E-03	0.01	0.45	3.7E-03	0.07	0.15	9.1E-03	7.4E-03
	Beans	1.7E-03	9.1E-04	6.8E-03	0.50	5.9E-03	0.12	0.22	1.5E-03	3.3E-03
	Peas	1.4E-03	2.1E-03	5.1E-03	0.89	3.4E-03	0.36	0.14	0.01	2.9E-03
	Tomatoes	5.7E-04	3.2E-03	2.4E-03	0.29	1.4E-03	0.06	0.01	1.9E-03	8.3E-05
	Tomato Juice, Canned	1.7E-03	0.01	3.9E-03	0.39	1.3E-03	0.04	0.04	4.2E-03	2.8E-04
	Tomatoes/sauce, Canned & Ketchup	2.5E-03	0.02	4.8E-03	0.61	8.4E-03	0.09	0.06	6.1E-03	1.5E-03
	Mushrooms, Canned	0.01	4.4E-03	3.3E-04	2.49	3.1E-03	0.02	6.2E-03	0.20	3.5E-03
	Cucumbers	4.3E-03	1.6E-03	3.1E-03	0.31	3.2E-03	0.03	0.05	1.7E-03	1.4E-03
Baked Beans	3.0E-03	3.4E-03	0.02	1.95	5.4E-03	0.40	0.15	0.02	3.5E-04	
Root Vegetables	Potatoes ^(d)	1.7E-03	0.03	0.02	0.95	3.6E-03	0.04	0.12	4.3E-03	2.6E-03
	Potatoes, French Fried, Frozen	0.01	0.04	0.02	1.04	2.0E-03	0.08	0.21	0.02	2.4E-03
	Potatoes, Chips	6.9E-03	0.06	0.03	1.71	1.9E-03	0.19	0.17	0.02	6.6E-04
	Carrots	3.2E-03	0.02	3.9E-03	0.46	0.01	0.04	0.15	3.1E-03	4.7E-03
	Onion	3.8E-03	0.01	2.4E-03	0.49	3.3E-03	0.01	0.03	1.8E-03	3.3E-03
	Rutabagas Or Turnip	1.3E-03	6.4E-03	4.8E-03	0.21	1.7E-03	0.04	0.06	8.0E-03	3.4E-03
	Beets	1.8E-03	0.02	5.3E-03	0.50	6.1E-03	0.02	0.05	3.5E-03	1.2E-03
Sugar and Sweets	Sugar, White	6.4E-04	6.0E-05	4.9E-04	0.03	3.7E-04	0.05	1.7E-03	9.6E-04	1.3E-05
	Syrup	1.2E-03	5.5E-04	9.1E-04	0.04	2.8E-03	0.03	0.03	2.4E-04	1.0E-04
	Jams	3.5E-03	4.8E-03	0.01	0.24	3.9E-03	0.05	0.04	2.5E-03	4.1E-04
	Honey	1.6E-03	2.6E-04	2.3E-03	0.08	7.7E-03	0.07	0.01	1.4E-03	8.3E-05
	Puddings	2.1E-03	1.6E-03	0.01	0.49	2.0E-03	0.08	0.14	0.01	6.9E-04
	Candy, Chocolate Bars	8.9E-03	0.01	0.06	2.60	9.4E-03	0.59	0.72	0.03	4.2E-04
	Candy, Others	4.0E-03	8.5E-04	3.6E-03	0.18	4.6E-03	0.47	0.02	9.4E-03	5.5E-04
	Gelatin Dessert	3.0E-03	4.8E-04	7.4E-04	0.12	4.0E-03	0.07	0.01	2.0E-03	6.2E-03

Notes:

^a Food groups developed by Health Canada (1994).

^b Includes raw and canned citrus fruits.

^c Includes canned pea and canned tomato soups.

^d Includes raw, baked and boiled (skins on and skins off) potatoes

Table C.2 Mean estimated daily intakes of individual supermarket foods - adult

Food Group	Food Composite	EDIs of Food - Adult (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
For all Receptors										
Alcoholic Drinks	Alcoholic Drinks, Wine	2.85E-06	1.25E-07	1.08E-06	2.45E-05	4.17E-06	5.91E-06	6.80E-06	4.73E-07	2.46E-07
	Alcoholic Drinks, Beer	4.84E-06	1.54E-07	1.24E-06	6.33E-05	5.65E-07	1.76E-05	1.07E-05	2.52E-05	2.80E-07
	Total Alcoholic Drinks	7.69E-06	2.80E-07	2.32E-06	8.78E-05	4.74E-06	2.35E-05	1.75E-05	2.56E-05	5.26E-07
Cereals & Grains	Bread, White	5.22E-06	1.29E-05	8.74E-06	8.84E-04	3.25E-06	2.24E-04	7.02E-05	2.92E-04	2.10E-06
	Bread, Whole Wheat And Rye	1.81E-06	3.76E-06	2.75E-06	3.57E-04	1.35E-06	8.05E-05	2.38E-05	6.87E-05	5.05E-07
	Rolls And Biscuits	8.36E-07	1.86E-06	1.47E-06	1.43E-04	5.76E-07	2.93E-05	9.53E-06	3.57E-05	2.56E-07
	Flour, Wheat	3.03E-07	2.12E-06	2.79E-07	1.17E-04	1.17E-07	2.71E-05	4.32E-06	3.88E-05	1.99E-08
	Cake	1.98E-06	2.48E-06	5.67E-06	2.57E-04	2.55E-06	2.27E-05	7.14E-05	1.61E-05	1.05E-06
	Cookies	1.61E-06	4.87E-06	9.66E-06	4.76E-04	2.33E-06	3.61E-05	1.37E-04	1.20E-05	2.07E-07
	Danish And Donuts	5.53E-07	7.65E-07	6.72E-07	5.72E-05	3.89E-07	1.41E-05	7.64E-06	1.26E-05	1.39E-07
	Crackers	2.90E-07	1.13E-06	2.64E-07	5.67E-05	1.21E-07	1.39E-05	4.62E-06	8.49E-06	1.32E-08
	Pancakes	1.60E-07	2.90E-07	1.56E-07	1.99E-05	1.01E-07	3.73E-06	2.44E-06	3.36E-06	1.13E-07
	Cereals, Cooked Wheat	2.30E-07	8.43E-07	2.02E-07	8.94E-05	9.37E-07	7.99E-06	1.13E-05	8.86E-06	8.72E-07
	Cereals, Oatmeal	8.40E-07	1.02E-06	3.62E-07	2.13E-04	1.66E-06	6.52E-05	8.90E-05	1.36E-05	1.93E-06
	Cereals, Corn	1.11E-07	4.59E-08	4.57E-07	1.39E-05	4.82E-08	3.91E-06	3.32E-06	2.01E-06	3.52E-09
	Cereals, Wheat And Bran	1.97E-06	1.04E-06	9.40E-07	1.10E-04	1.30E-07	2.19E-05	5.58E-06	3.96E-06	3.28E-08
	Rice	2.01E-05	1.57E-06	8.04E-07	2.03E-04	1.64E-06	6.76E-05	1.75E-05	1.94E-05	1.23E-06
	Pie, Apple	3.83E-07	6.93E-07	1.84E-07	6.39E-05	3.59E-07	9.94E-06	6.40E-06	7.56E-06	2.14E-08
	Pie, Other	5.53E-07	7.80E-07	2.90E-07	6.49E-05	5.49E-07	1.36E-05	1.20E-05	8.66E-06	4.91E-08
	Pizza	2.61E-07	3.20E-07	2.36E-07	1.90E-05	1.85E-07	4.59E-06	2.22E-06	4.50E-06	3.61E-08
	Pasta	8.93E-07	4.26E-06	1.44E-06	1.93E-04	1.51E-06	1.98E-05	1.71E-05	4.61E-05	6.63E-07
	Pasta, Ordinary	3.31E-07	7.89E-06	2.18E-07	2.85E-04	9.84E-07	1.70E-05	1.01E-05	7.26E-05	1.53E-06
	Muffins	1.56E-07	2.01E-07	9.75E-08	2.18E-05	8.38E-08	4.63E-06	1.63E-06	2.46E-06	5.17E-08
	Total Cereals & Grains	3.86E-05	4.88E-05	3.49E-05	3.64E-03	1.89E-05	6.87E-04	5.07E-04	6.78E-04	1.08E-05
Eggs	Eggs	1.32E-06	2.59E-07	1.35E-06	3.26E-04	6.56E-07	4.26E-05	1.25E-05	1.82E-04	1.05E-07
	Total Eggs	1.32E-06	2.59E-07	1.35E-06	3.26E-04	6.56E-07	4.26E-05	1.25E-05	1.82E-04	1.05E-07
Fats, nuts & oils	Cooking Fats & Salad Oils	3.60E-06	1.70E-08	1.66E-08	2.00E-06	6.70E-08	4.00E-05	8.62E-06	1.09E-05	2.80E-09
	Margarine	3.42E-06	4.29E-08	5.70E-08	1.04E-06	7.64E-08	4.49E-05	7.44E-06	6.55E-06	7.34E-09
	Peanut Butter & Peanuts	1.12E-06	1.74E-06	9.26E-07	1.71E-04	2.32E-07	7.22E-05	2.35E-05	2.65E-06	1.44E-08
	Total Fats, Nuts & Oils	8.13E-06	1.80E-06	1.00E-06	1.74E-04	3.76E-07	1.57E-04	3.95E-05	2.01E-05	2.46E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Adult (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
Milk & Dairy	Milk, Whole	5.13E-06	6.19E-07	5.02E-06	9.22E-05	4.24E-07	8.39E-05	4.43E-05	7.32E-05	8.15E-08
	Milk, 2%	1.92E-06	8.72E-08	2.15E-06	4.15E-05	2.26E-07	3.47E-05	1.98E-05	3.03E-05	2.52E-08
	Milk, Skim	9.11E-07	4.36E-08	1.15E-06	2.05E-05	1.06E-07	1.69E-05	1.14E-05	1.59E-05	1.16E-08
	Evaporated Milk, Canned	8.28E-07	7.46E-08	8.36E-07	1.71E-05	9.08E-08	1.61E-05	8.47E-06	1.07E-05	7.35E-08
	Cream, 10-12% Butter Fat	6.09E-07	5.00E-08	3.58E-07	6.63E-06	3.03E-08	9.17E-06	3.91E-06	5.02E-06	1.20E-08
	Ice Cream	7.89E-07	3.85E-07	2.69E-06	9.98E-05	4.23E-07	1.69E-05	2.83E-05	7.06E-06	4.95E-08
	Yogurt	5.63E-08	5.37E-09	6.25E-08	1.51E-06	1.31E-08	1.34E-06	6.80E-07	7.96E-07	3.27E-09
	Cheese	1.52E-06	1.67E-07	1.83E-06	4.06E-05	7.27E-07	2.57E-05	2.23E-05	3.66E-05	2.31E-07
	Cheese, Cottage	2.63E-07	1.94E-08	1.95E-07	1.35E-05	7.44E-08	5.45E-06	2.42E-06	1.18E-05	7.82E-08
	Cheese, Processed Cheddar	7.65E-07	5.34E-08	6.29E-07	1.39E-05	3.41E-07	1.01E-05	6.91E-06	8.89E-06	1.31E-07
Butter	4.21E-06	6.42E-08	1.82E-07	5.04E-06	2.14E-07	1.07E-05	2.44E-06	7.97E-06	3.14E-08	
Total Milk & Dairy		1.70E-05	1.57E-06	1.51E-05	3.52E-04	2.67E-06	2.31E-04	1.51E-04	2.08E-04	7.27E-07
Non-Alcoholic Drinks	Coffee	5.53E-06	7.38E-07	2.14E-05	5.91E-04	1.37E-05	1.22E-04	1.11E-04	3.02E-06	1.30E-05
	Tea	8.80E-06	5.51E-07	1.06E-05	1.70E-03	2.95E-05	9.61E-05	4.30E-04	3.02E-06	3.29E-05
	Soft Drinks	7.15E-07	6.22E-08	3.21E-07	1.43E-05	4.40E-07	7.35E-06	4.78E-06	5.34E-07	5.34E-07
Total Non-Alcoholic Drinks		1.50E-05	1.35E-06	3.23E-05	2.31E-03	4.36E-05	2.25E-04	5.46E-04	6.57E-06	4.64E-05
Other Fruits & Juices	Citrus Fruit ³	6.33E-07	3.31E-07	1.25E-06	1.76E-04	5.67E-07	1.45E-05	2.25E-05	5.84E-07	2.84E-08
	Citrus Juice	5.94E-07	5.78E-08	1.12E-06	2.56E-04	9.80E-07	2.22E-05	9.94E-06	4.85E-07	2.35E-06
	Citrus Juice, Canned	1.40E-07	1.51E-08	2.72E-07	4.61E-05	9.21E-08	5.92E-06	2.20E-06	1.76E-07	6.75E-08
	Apples, Raw	1.19E-06	1.32E-07	2.87E-07	1.35E-04	1.49E-06	5.64E-05	2.56E-06	1.02E-07	8.65E-07
	Apple Juice, Canned, Unsweetened	1.14E-06	3.70E-08	2.08E-07	1.85E-05	3.16E-07	5.11E-06	1.34E-06	8.72E-08	3.39E-08
	Applesauce, Canned, Sweetened	7.04E-08	1.52E-08	6.95E-08	1.98E-05	2.78E-07	1.53E-05	4.47E-07	3.10E-08	3.38E-09
	Bananas	2.01E-07	1.40E-07	2.77E-07	1.77E-04	1.24E-07	1.95E-05	5.74E-06	1.26E-06	1.03E-08
	Grapes	2.17E-07	4.05E-08	5.21E-08	4.60E-05	6.11E-08	2.44E-06	3.04E-07	4.30E-08	2.04E-08
	Grape Juice, Bottled	4.02E-07	3.10E-08	7.65E-08	2.18E-06	2.84E-07	1.44E-06	5.26E-07	2.06E-08	1.23E-07
	Peaches	6.68E-07	1.58E-07	3.46E-07	7.36E-05	1.49E-06	6.44E-06	8.24E-06	1.08E-07	6.57E-08
	Pears	3.95E-07	1.06E-07	8.24E-07	7.79E-05	1.68E-07	5.55E-06	3.16E-06	1.43E-07	1.97E-08
	Plums, Dried Prunes & Canned Plums	3.55E-07	3.69E-08	2.51E-07	6.23E-05	3.12E-07	1.56E-05	6.67E-06	9.14E-08	3.35E-08
	Cherries	1.10E-07	4.87E-09	5.61E-08	1.60E-05	5.48E-08	8.28E-07	5.27E-07	3.08E-08	2.18E-08
	Melons	7.30E-07	6.96E-07	4.52E-07	4.18E-05	4.21E-07	6.08E-06	6.86E-06	1.71E-06	1.44E-08
	Pineapple	2.40E-07	3.16E-07	2.91E-07	1.45E-05	5.48E-07	1.50E-06	3.80E-06	2.87E-08	1.39E-08
	Raisins	1.92E-07	7.48E-09	7.52E-08	2.26E-05	2.13E-07	2.58E-06	4.32E-07	7.69E-08	2.10E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Adult (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Total Other Fruits & Juices	7.27E-06	2.12E-06	5.91E-06	1.18E-03	7.40E-06	1.81E-04	7.53E-05	4.97E-06	3.69E-06
Other Vegetables	Soups, Other ²	1.54E-06	2.51E-06	1.10E-06	1.61E-04	2.11E-06	1.94E-05	3.26E-05	4.53E-06	1.93E-06
	Soups, Dehydrated	2.16E-07	4.64E-07	2.06E-07	3.87E-05	5.62E-07	5.13E-06	2.68E-06	5.38E-06	6.51E-07
	Corn	1.65E-07	5.46E-07	1.64E-07	4.79E-05	3.09E-07	1.32E-05	3.88E-06	1.19E-06	1.69E-07
	Cabbage	2.33E-07	5.18E-07	8.31E-07	3.24E-05	5.79E-07	1.27E-04	2.15E-05	1.64E-06	8.08E-07
	Celery	5.50E-07	4.11E-06	2.50E-07	3.68E-05	3.93E-07	2.53E-06	4.28E-06	5.31E-07	3.01E-07
	Peppers	1.30E-08	2.04E-07	1.16E-07	1.35E-05	4.54E-08	3.97E-07	3.90E-06	2.70E-08	3.14E-09
	Lettuce	8.56E-07	1.30E-05	1.36E-06	4.05E-05	7.23E-07	4.49E-08	1.51E-05	4.83E-07	2.50E-07
	Cauliflower	3.88E-08	2.76E-07	1.71E-07	6.95E-06	8.80E-08	1.13E-06	1.27E-06	7.71E-07	9.91E-08
	Broccoli	9.07E-08	2.76E-07	4.20E-07	1.40E-05	1.15E-07	2.16E-06	4.57E-06	2.82E-07	2.28E-07
	Beans	1.59E-07	8.78E-08	6.57E-07	4.78E-05	5.72E-07	1.14E-05	2.10E-05	1.44E-07	3.23E-07
	Peas	1.79E-07	2.74E-07	6.68E-07	1.18E-04	4.54E-07	4.72E-05	1.82E-05	1.96E-06	3.85E-07
	Tomatoes	1.43E-07	8.07E-07	6.14E-07	7.40E-05	3.63E-07	1.43E-05	3.63E-06	4.90E-07	2.11E-08
	Tomato Juice, Canned	2.40E-07	1.53E-06	5.57E-07	5.56E-05	1.84E-07	5.12E-06	6.01E-06	5.95E-07	3.97E-08
	Tomatoes/sauce, Canned & Ketchup	2.26E-07	1.56E-06	4.33E-07	5.52E-05	7.64E-07	8.22E-06	5.36E-06	5.56E-07	1.32E-07
	Mushrooms, Canned	2.74E-07	1.01E-07	7.61E-09	5.75E-05	7.05E-08	4.17E-07	1.44E-07	4.58E-06	8.02E-08
	Cucumbers	6.87E-07	2.65E-07	4.92E-07	4.92E-05	5.14E-07	5.37E-06	7.40E-06	2.81E-07	2.31E-07
	Baked Beans	3.50E-07	3.93E-07	1.94E-06	2.24E-04	6.14E-07	4.62E-05	1.74E-05	2.75E-06	4.02E-08
	Total Other Vegetables	5.96E-06	2.69E-05	9.99E-06	1.07E-03	8.46E-06	3.09E-04	1.69E-04	2.62E-05	5.69E-06
Root Vegetables	Potatoes ¹	2.17E-06	3.62E-05	2.01E-05	1.25E-03	4.67E-06	5.77E-05	1.59E-04	5.66E-06	3.34E-06
	Potatoes, French Fried, Frozen	2.98E-06	1.20E-05	4.80E-06	3.04E-04	5.80E-07	2.27E-05	6.08E-05	5.77E-06	7.05E-07
	Potatoes, Chips	1.29E-07	1.18E-06	5.96E-07	3.17E-05	3.47E-08	3.49E-06	3.14E-06	4.34E-07	1.22E-08
	Carrots	6.43E-07	5.00E-06	7.91E-07	9.23E-05	2.56E-06	7.59E-06	2.98E-05	6.19E-07	9.35E-07
	Onion	3.30E-07	1.12E-06	2.11E-07	4.25E-05	2.90E-07	1.05E-06	3.04E-06	1.56E-07	2.90E-07
	Rutabagas Or Turnip	1.04E-07	5.16E-07	3.84E-07	1.68E-05	1.39E-07	3.11E-06	5.22E-06	6.43E-07	2.74E-07
	Beets	4.63E-08	3.82E-07	1.35E-07	1.26E-05	1.55E-07	4.11E-07	1.21E-06	8.95E-08	3.03E-08
		Total Root Vegetables	6.40E-06	5.63E-05	2.70E-05	1.75E-03	8.43E-06	9.61E-05	2.62E-04	1.34E-05
Sugar & Sweets	Sugar, White	1.75E-07	1.63E-08	1.33E-07	9.14E-06	9.96E-08	1.25E-05	4.52E-07	2.60E-07	3.62E-09
	Syrup	8.29E-08	3.82E-08	6.38E-08	2.48E-06	1.97E-07	2.15E-06	1.88E-06	1.68E-08	6.99E-09
	Jams	3.07E-07	4.17E-07	1.06E-06	2.08E-05	3.35E-07	3.99E-06	3.52E-06	2.14E-07	3.56E-08
	Honey	4.88E-08	8.08E-09	7.00E-08	2.43E-06	2.36E-07	2.09E-06	4.50E-07	4.31E-08	2.56E-09
	Puddings	2.66E-07	1.95E-07	1.54E-06	6.13E-05	2.44E-07	9.58E-06	1.70E-05	1.77E-06	8.61E-08
	Candy, Chocolate Bars	4.52E-07	7.59E-07	3.07E-06	1.31E-04	4.78E-07	2.96E-05	3.66E-05	1.72E-06	2.13E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Adult (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Candy, Others	2.58E-07	5.48E-08	2.36E-07	1.14E-05	2.95E-07	3.02E-05	1.50E-06	6.07E-07	3.56E-08
	Gelatin Dessert	3.30E-07	5.33E-08	8.20E-08	1.36E-05	4.39E-07	7.26E-06	1.18E-06	2.21E-07	6.80E-07
	Total Sugar & Sweets	1.92E-06	1.54E-06	6.26E-06	2.53E-04	2.32E-06	9.74E-05	6.25E-05	4.85E-06	8.72E-07
Total Non-Country Foods		1.09E-04	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05
For Canadian (Typical and High Fish Eater)										
Organs	Organ Meats, Liver, Kidney	2.52E-07	1.36E-06	2.97E-06	5.40E-03	7.42E-07	4.28E-05	1.70E-06	4.52E-05	6.23E-09
	Total Organs	2.52E-07	1.36E-06	2.97E-06	5.40E-03	7.42E-07	4.28E-05	1.70E-06	4.52E-05	6.23E-09
Poultry	Poultry, Chicken And Turkey	2.78E-06	8.15E-07	5.63E-07	1.74E-04	6.37E-07	1.35E-05	5.44E-06	1.26E-04	1.21E-07
	Total Poultry	2.78E-06	8.15E-07	5.63E-07	1.74E-04	6.37E-07	1.35E-05	5.44E-06	1.26E-04	1.21E-07
Berries	Strawberries	4.63E-07	1.22E-06	1.53E-06	3.78E-05	2.27E-07	1.54E-05	6.79E-06	1.06E-06	4.93E-08
	Blueberries	3.16E-07	3.85E-08	5.05E-08	1.19E-05	8.75E-08	1.45E-06	2.26E-06	4.91E-08	1.34E-08
	Total Berries	7.79E-07	1.26E-06	1.58E-06	4.97E-05	3.14E-07	1.68E-05	9.05E-06	1.11E-06	6.27E-08
For Typical Canadian										
Meat, other mammals	Beef, Steak	1.33E-06	8.52E-08	8.66E-07	2.79E-04	7.33E-07	3.98E-06	1.13E-04	6.81E-05	2.38E-08
	Beef, Roast And Stewing	2.05E-06	1.40E-07	1.52E-06	4.44E-04	1.44E-06	7.71E-06	2.19E-04	1.36E-04	9.67E-08
	Beef, Hamburg	1.68E-06	2.75E-07	4.30E-05	2.81E-04	1.11E-06	6.18E-06	3.39E-04	8.80E-05	5.91E-08
	Pork, Fresh	1.28E-06	2.16E-07	4.45E-07	2.97E-04	5.51E-07	7.85E-06	5.81E-05	1.53E-04	1.10E-07
	Pork, Cured	1.05E-06	2.30E-07	7.90E-07	9.74E-05	6.61E-07	3.53E-06	4.53E-05	5.13E-05	2.09E-07
	Veal	1.09E-07	2.74E-08	2.03E-07	3.22E-05	1.15E-07	2.57E-07	2.26E-06	8.38E-06	1.19E-08
	Lamb	3.46E-08	7.61E-09	5.09E-08	1.56E-05	3.11E-08	1.87E-07	2.29E-06	1.40E-06	1.03E-09
	Cold Cuts And Luncheon Meats	8.77E-07	3.04E-07	3.81E-07	5.97E-04	8.34E-07	7.19E-06	4.27E-06	2.08E-05	1.25E-07
	Luncheon Meats, Canned	2.02E-07	2.24E-08	1.11E-07	1.77E-05	9.99E-08	1.44E-06	1.22E-06	4.86E-06	2.37E-08
	Soups, Meat, Canned	1.99E-06	3.41E-06	8.29E-07	1.96E-04	3.14E-06	2.17E-05	3.60E-05	2.73E-05	1.95E-06
	Wieners	1.87E-07	9.99E-08	1.17E-07	2.97E-05	2.02E-07	3.07E-06	4.07E-06	7.42E-06	7.57E-08
	Total Meat, Other Mammals	1.08E-05	4.82E-06	4.83E-05	2.29E-03	8.92E-06	6.31E-05	8.25E-04	5.66E-04	2.69E-06
	Fish and Fish Products	Fish, Marine, Fresh Or Frozen	5.08E-04	2.14E-07	4.19E-07	2.72E-05	3.55E-07	4.25E-07	1.83E-06	5.66E-05
Fish, Fresh Water, Fresh Or Frozen		7.89E-06	7.07E-09	7.18E-08	5.81E-06	2.42E-08	8.29E-08	2.99E-07	7.60E-06	4.40E-09
Fish, Canned		4.59E-05	5.73E-07	1.55E-07	2.50E-05	1.59E-07	2.58E-07	9.30E-07	4.17E-05	8.92E-08
Shellfish, Fresh Or Frozen		8.48E-06	6.44E-08	1.12E-07	4.56E-05	1.49E-07	3.04E-07	5.99E-07	9.95E-06	2.54E-07
Total Fish and Fish Products		5.71E-04	8.59E-07	7.57E-07	1.04E-04	6.88E-07	1.07E-06	3.66E-06	1.16E-04	5.53E-07
For Canadian Fish Eater										
Meat, other	Beef, Steak	5.63E-07	3.59E-08	3.65E-07	1.18E-04	3.09E-07	1.68E-06	4.77E-05	2.87E-05	1.00E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Adult (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
mammals	Beef, Roast And Stewing	8.64E-07	5.90E-08	6.39E-07	1.87E-04	6.07E-07	3.25E-06	9.24E-05	5.72E-05	4.08E-08
	Beef, Hamburg	7.09E-07	1.16E-07	1.81E-05	1.18E-04	4.67E-07	2.60E-06	1.43E-04	3.71E-05	2.49E-08
	Pork, Fresh	5.39E-07	9.12E-08	1.87E-07	1.25E-04	2.32E-07	3.31E-06	2.45E-05	6.45E-05	4.65E-08
	Pork, Cured	4.44E-07	9.68E-08	3.33E-07	4.11E-05	2.79E-07	1.49E-06	1.91E-05	2.16E-05	8.81E-08
	Veal	4.60E-08	1.15E-08	8.57E-08	1.36E-05	4.86E-08	1.08E-07	9.50E-07	3.53E-06	5.02E-09
	Lamb	1.46E-08	3.22E-09	2.15E-08	6.62E-06	1.32E-08	7.92E-08	9.67E-07	5.93E-07	4.36E-10
	Cold Cuts And Luncheon Meats	3.70E-07	1.28E-07	1.61E-07	2.52E-04	3.52E-07	3.03E-06	1.80E-06	8.77E-06	5.29E-08
	Luncheon Meats, Canned	8.56E-08	9.48E-09	4.71E-08	7.50E-06	4.23E-08	6.09E-07	5.19E-07	2.06E-06	1.00E-08
	Soups, Meat, Canned	8.39E-07	1.44E-06	3.49E-07	8.25E-05	1.33E-06	9.17E-06	1.52E-05	1.15E-05	8.24E-07
	Wieners	7.90E-08	4.23E-08	4.96E-08	1.26E-05	8.56E-08	1.30E-06	1.72E-06	3.14E-06	3.20E-08
	Total Meat, Other Mammals	4.55E-06	2.03E-06	2.04E-05	9.64E-04	3.76E-06	2.66E-05	3.48E-04	2.39E-04	1.13E-06
Fish and Fish Products	Fish, Marine, Fresh Or Frozen	4.07E-03	1.72E-06	3.35E-06	2.18E-04	2.85E-06	3.41E-06	1.47E-05	4.54E-04	1.65E-06
	Fish, Fresh Water, Fresh Or Frozen	6.32E-05	5.67E-08	5.75E-07	4.66E-05	1.94E-07	6.64E-07	2.40E-06	6.09E-05	3.52E-08
	Fish, Canned	3.68E-04	4.59E-06	1.24E-06	2.01E-04	1.28E-06	2.07E-06	7.45E-06	3.34E-04	7.15E-07
	Shellfish, Fresh Or Frozen	6.80E-05	5.16E-07	8.99E-07	3.66E-04	1.19E-06	2.44E-06	4.80E-06	7.98E-05	2.04E-06
		Total Fish and Fish Products	4.57E-03	6.88E-06	6.07E-06	8.32E-04	5.51E-06	8.58E-06	2.93E-05	9.29E-04

Notes: 1- Four food composites for potatoes (raw, baked, boiled skins on and boiled skins off) were grouped together for better match with TDS data.

2 - All soups other than meat and dehydrated were grouped together.

3 - Citrus fruit, raw and canned, were grouped into one group.

Table C.3 Mean estimated daily intakes of individual supermarket foods - teen

Food Group	Food Composite	EDIs of Food - Teen (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
For all Receptors										
Alcoholic Drinks	Alcoholic Drinks, Wine	2.64E-07	1.16E-08	1.00E-07	2.27E-06	3.86E-07	5.47E-07	6.30E-07	4.38E-08	2.28E-08
	Alcoholic Drinks, Beer	1.02E-06	3.23E-08	2.60E-07	1.33E-05	1.19E-07	3.69E-06	2.24E-06	5.28E-06	5.87E-08
	Total Alcoholic Drinks	1.28E-06	4.39E-08	3.60E-07	1.55E-05	5.05E-07	4.24E-06	2.87E-06	5.32E-06	8.15E-08
Cereals & Grains	Bread, White	8.69E-06	2.15E-05	1.46E-05	1.47E-03	5.41E-06	3.73E-04	1.17E-04	4.87E-04	3.49E-06
	Bread, Whole Wheat And Rye	8.06E-07	1.68E-06	1.22E-06	1.59E-04	6.02E-07	3.58E-05	1.06E-05	3.06E-05	2.25E-07
	Rolls And Biscuits	1.58E-06	3.51E-06	2.77E-06	2.69E-04	1.09E-06	5.52E-05	1.80E-05	6.74E-05	4.84E-07
	Flour, Wheat	2.67E-07	1.87E-06	2.46E-07	1.04E-04	1.04E-07	2.39E-05	3.82E-06	3.43E-05	1.76E-08
	Cake	4.90E-06	6.13E-06	1.40E-05	6.35E-04	6.30E-06	5.61E-05	1.76E-04	3.98E-05	2.59E-06
	Cookies	2.82E-06	8.54E-06	1.69E-05	8.35E-04	4.09E-06	6.34E-05	2.40E-04	2.11E-05	3.63E-07
	Danish And Donuts	1.14E-06	1.57E-06	1.38E-06	1.18E-04	7.99E-07	2.89E-05	1.57E-05	2.59E-05	2.86E-07
	Crackers	5.64E-07	2.20E-06	5.13E-07	1.10E-04	2.36E-07	2.71E-05	8.99E-06	1.65E-05	2.56E-08
	Pancakes	3.13E-07	5.67E-07	3.06E-07	3.88E-05	1.97E-07	7.30E-06	4.78E-06	6.57E-06	2.21E-07
	Cereals, Cooked Wheat	1.97E-07	7.23E-07	1.73E-07	7.67E-05	8.04E-07	6.86E-06	9.66E-06	7.60E-06	7.48E-07
	Cereals, Oatmeal	7.42E-07	8.99E-07	3.20E-07	1.88E-04	1.47E-06	5.76E-05	7.86E-05	1.20E-05	1.70E-06
	Cereals, Corn	2.45E-07	1.02E-07	1.01E-06	3.08E-05	1.07E-07	8.66E-06	7.35E-06	4.44E-06	7.78E-09
	Cereals, Wheat And Bran	3.39E-06	1.78E-06	1.61E-06	1.88E-04	2.24E-07	3.76E-05	9.58E-06	6.81E-06	5.63E-08
	Rice	2.29E-05	1.78E-06	9.15E-07	2.32E-04	1.87E-06	7.70E-05	1.99E-05	2.21E-05	1.40E-06
	Pie, Apple	1.82E-07	3.29E-07	8.76E-08	3.04E-05	1.70E-07	4.72E-06	3.04E-06	3.59E-06	1.02E-08
	Pie, Other	6.03E-07	8.50E-07	3.16E-07	7.07E-05	5.98E-07	1.48E-05	1.31E-05	9.44E-06	5.35E-08
	Pizza	9.04E-07	1.11E-06	8.16E-07	6.57E-05	6.42E-07	1.59E-05	7.70E-06	1.56E-05	1.25E-07
	Pasta	3.14E-06	1.50E-05	5.08E-06	6.80E-04	5.32E-06	6.97E-05	6.01E-05	1.62E-04	2.34E-06
	Pasta, Ordinary	3.00E-07	7.16E-06	1.98E-07	2.59E-04	8.93E-07	1.54E-05	9.14E-06	6.59E-05	1.39E-06
	Muffins	2.51E-07	3.24E-07	1.57E-07	3.51E-05	1.35E-07	7.45E-06	2.62E-06	3.96E-06	8.32E-08
	Total Cereals & Grains	5.39E-05	7.76E-05	6.26E-05	5.60E-03	3.11E-05	9.86E-04	8.16E-04	1.04E-03	1.56E-05
Eggs	Eggs	1.04E-06	2.04E-07	1.06E-06	2.57E-04	5.17E-07	3.36E-05	9.86E-06	1.44E-04	8.28E-08
	Total Eggs	1.04E-06	2.04E-07	1.06E-06	2.57E-04	5.17E-07	3.36E-05	9.86E-06	1.44E-04	8.28E-08
Fats, nuts & oils	Cooking Fats & Salad Oils	3.42E-06	1.62E-08	1.57E-08	1.90E-06	6.36E-08	3.80E-05	8.19E-06	1.03E-05	2.66E-09
	Margarine	5.42E-06	6.80E-08	9.03E-08	1.64E-06	1.21E-07	7.12E-05	1.18E-05	1.04E-05	1.16E-08
	Peanut Butter & Peanuts	2.48E-06	3.87E-06	2.06E-06	3.80E-04	5.16E-07	1.60E-04	5.21E-05	5.88E-06	3.21E-08
	Total Fats, Nuts & Oils	1.13E-05	3.95E-06	2.16E-06	3.83E-04	7.01E-07	2.70E-04	7.21E-05	2.66E-05	4.64E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Teen (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
Milk & Dairy	Milk, Whole	1.12E-05	1.36E-06	1.10E-05	2.02E-04	9.28E-07	1.84E-04	9.71E-05	1.60E-04	1.78E-07
	Milk, 2%	7.29E-06	3.32E-07	8.16E-06	1.58E-04	8.59E-07	1.32E-04	7.53E-05	1.15E-04	9.57E-08
	Milk, Skim	2.54E-06	1.22E-07	3.20E-06	5.72E-05	2.96E-07	4.72E-05	3.17E-05	4.43E-05	3.24E-08
	Evaporated Milk, Canned	6.04E-07	5.44E-08	6.10E-07	1.25E-05	6.62E-08	1.18E-05	6.18E-06	7.84E-06	5.36E-08
	Cream, 10-12% Butter Fat	1.88E-07	1.54E-08	1.10E-07	2.04E-06	9.32E-09	2.82E-06	1.20E-06	1.55E-06	3.70E-09
	Ice Cream	1.88E-06	9.18E-07	6.42E-06	2.38E-04	1.01E-06	4.03E-05	6.75E-05	1.68E-05	1.18E-07
	Yogurt	3.77E-08	3.59E-09	4.18E-08	1.01E-06	8.79E-09	8.97E-07	4.55E-07	5.32E-07	2.19E-09
	Cheese	1.23E-06	1.34E-07	1.48E-06	3.27E-05	5.85E-07	2.07E-05	1.79E-05	2.94E-05	1.86E-07
	Cheese, Cottage	1.01E-07	7.48E-09	7.52E-08	5.21E-06	2.87E-08	2.10E-06	9.34E-07	4.53E-06	3.01E-08
	Cheese, Processed Cheddar	1.53E-06	1.07E-07	1.26E-06	2.77E-05	6.82E-07	2.02E-05	1.38E-05	1.78E-05	2.61E-07
Butter	6.11E-06	9.31E-08	2.63E-07	7.32E-06	3.11E-07	1.55E-05	3.55E-06	1.16E-05	4.56E-08	
	Total Milk & Dairy	3.27E-05	3.14E-06	3.26E-05	7.44E-04	4.78E-06	4.77E-04	3.16E-04	4.10E-04	1.01E-06
Non-Alcoholic Drinks	Coffee	1.58E-06	2.11E-07	6.13E-06	1.69E-04	3.91E-06	3.49E-05	3.16E-05	8.62E-07	3.70E-06
	Tea	2.40E-06	1.50E-07	2.89E-06	4.65E-04	8.05E-06	2.62E-05	1.18E-04	8.25E-07	8.98E-06
	Soft Drinks	1.85E-06	1.61E-07	8.33E-07	3.72E-05	1.14E-06	1.91E-05	1.24E-05	1.38E-06	1.38E-06
	Total Non-Alcoholic Drinks	5.84E-06	5.23E-07	9.85E-06	6.72E-04	1.31E-05	8.02E-05	1.62E-04	3.07E-06	1.41E-05
Other Fruits & Juices	Citrus Fruit ³	5.01E-07	2.62E-07	9.86E-07	1.39E-04	4.49E-07	1.15E-05	1.78E-05	4.63E-07	2.24E-08
	Citrus Juice	6.63E-07	6.45E-08	1.25E-06	2.85E-04	1.09E-06	2.48E-05	1.11E-05	5.41E-07	2.62E-06
	Citrus Juice, Canned	1.37E-07	1.48E-08	2.66E-07	4.51E-05	9.01E-08	5.79E-06	2.15E-06	1.72E-07	6.60E-08
	Apples, Raw	2.32E-06	2.57E-07	5.61E-07	2.63E-04	2.91E-06	1.10E-04	5.01E-06	1.98E-07	1.69E-06
	Apple Juice, Canned, Unsweetened	9.77E-07	3.18E-08	1.78E-07	1.59E-05	2.72E-07	4.40E-06	1.15E-06	7.49E-08	2.91E-08
	Applesauce, Canned, Sweetened	4.41E-08	9.53E-09	4.36E-08	1.24E-05	1.74E-07	9.59E-06	2.80E-07	1.94E-08	2.12E-09
	Bananas	2.08E-07	1.45E-07	2.86E-07	1.83E-04	1.28E-07	2.02E-05	5.94E-06	1.30E-06	1.06E-08
	Grapes	2.34E-07	4.35E-08	5.61E-08	4.94E-05	6.57E-08	2.63E-06	3.27E-07	4.62E-08	2.19E-08
	Grape Juice, Bottled	1.11E-06	8.58E-08	2.12E-07	6.04E-06	7.85E-07	3.99E-06	1.45E-06	5.69E-08	3.41E-07
	Peaches	5.11E-07	1.21E-07	2.64E-07	5.62E-05	1.14E-06	4.92E-06	6.30E-06	8.28E-08	5.02E-08
	Pears	2.46E-07	6.60E-08	5.12E-07	4.85E-05	1.05E-07	3.45E-06	1.96E-06	8.89E-08	1.22E-08
	Plums, Dried Prunes & Canned Plums	2.34E-07	2.43E-08	1.66E-07	4.11E-05	2.06E-07	1.03E-05	4.40E-06	6.03E-08	2.21E-08
	Cherries	6.98E-08	3.10E-09	3.56E-08	1.01E-05	3.48E-08	5.26E-07	3.35E-07	1.96E-08	1.39E-08
	Melons	3.46E-07	3.30E-07	2.15E-07	1.98E-05	2.00E-07	2.88E-06	3.26E-06	8.11E-07	6.83E-09
	Pineapple	2.13E-07	2.80E-07	2.58E-07	1.29E-05	4.86E-07	1.32E-06	3.36E-06	2.54E-08	1.23E-08
	Raisins	3.97E-07	1.54E-08	1.55E-07	4.66E-05	4.40E-07	5.32E-06	8.91E-07	1.59E-07	4.33E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Teen (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Total Other Fruits & Juices	8.21E-06	1.75E-06	5.45E-06	1.23E-03	8.58E-06	2.22E-04	6.57E-05	4.12E-06	4.96E-06
Other Vegetables	Soups, Other ²	2.19E-06	3.58E-06	1.57E-06	2.28E-04	3.00E-06	2.75E-05	4.64E-05	6.45E-06	2.75E-06
	Soups, Dehydrated	2.65E-07	5.69E-07	2.53E-07	4.74E-05	6.89E-07	6.28E-06	3.29E-06	6.60E-06	7.98E-07
	Corn	2.89E-07	9.53E-07	2.86E-07	8.35E-05	5.39E-07	2.30E-05	6.77E-06	2.08E-06	2.94E-07
	Cabbage	1.67E-07	3.71E-07	5.95E-07	2.32E-05	4.15E-07	9.09E-05	1.54E-05	1.18E-06	5.79E-07
	Celery	2.69E-07	2.01E-06	1.23E-07	1.80E-05	1.93E-07	1.24E-06	2.10E-06	2.60E-07	1.47E-07
	Peppers	5.16E-09	8.11E-08	4.61E-08	5.39E-06	1.81E-08	1.58E-07	1.55E-06	1.07E-08	1.25E-09
	Lettuce	6.56E-07	9.96E-06	1.04E-06	3.10E-05	5.54E-07	3.44E-08	1.15E-05	3.70E-07	1.92E-07
	Cauliflower	3.50E-08	2.48E-07	1.54E-07	6.25E-06	7.93E-08	1.02E-06	1.14E-06	6.94E-07	8.92E-08
	Broccoli	9.80E-09	2.98E-08	4.54E-08	1.52E-06	1.25E-08	2.34E-07	4.95E-07	3.05E-08	2.47E-08
	Beans	1.24E-07	6.84E-08	5.12E-07	3.73E-05	4.46E-07	8.88E-06	1.64E-05	1.12E-07	2.51E-07
	Peas	1.74E-07	2.66E-07	6.48E-07	1.15E-04	4.41E-07	4.59E-05	1.77E-05	1.91E-06	3.74E-07
	Tomatoes	1.06E-07	5.96E-07	4.54E-07	5.46E-05	2.68E-07	1.06E-05	2.68E-06	3.62E-07	1.56E-08
	Tomato Juice, Canned	1.60E-07	1.02E-06	3.71E-07	3.71E-05	1.22E-07	3.41E-06	4.01E-06	3.96E-07	2.65E-08
	Tomatoes/sauce, Canned & Ketchup	3.71E-07	2.56E-06	7.12E-07	9.08E-05	1.26E-06	1.35E-05	8.81E-06	9.14E-07	2.18E-07
	Mushrooms, Canned	4.20E-07	1.55E-07	1.17E-08	8.81E-05	1.08E-07	6.39E-07	2.20E-07	7.02E-06	1.23E-07
	Cucumbers	8.07E-07	3.11E-07	5.78E-07	5.78E-05	6.03E-07	6.31E-06	8.68E-06	3.30E-07	2.71E-07
	Baked Beans	6.19E-07	6.95E-07	3.44E-06	3.97E-04	1.09E-06	8.17E-05	3.08E-05	4.87E-06	7.12E-08
	Total Other Vegetables	6.67E-06	2.35E-05	1.08E-05	1.32E-03	9.83E-06	3.21E-04	1.78E-04	3.36E-05	6.22E-06
Root Vegetables	Potatoes ¹	2.98E-06	4.98E-05	2.77E-05	1.72E-03	6.43E-06	7.95E-05	2.19E-04	7.79E-06	4.60E-06
	Potatoes, French Fried, Frozen	5.63E-06	2.26E-05	9.08E-06	5.76E-04	1.10E-06	4.30E-05	1.15E-04	1.09E-05	1.33E-06
	Potatoes, Chips	9.08E-07	8.36E-06	4.21E-06	2.24E-04	2.45E-07	2.46E-05	2.22E-05	3.06E-06	8.59E-08
	Carrots	5.95E-07	4.63E-06	7.32E-07	8.54E-05	2.37E-06	7.02E-06	2.76E-05	5.72E-07	8.65E-07
	Onion	1.94E-07	6.55E-07	1.24E-07	2.49E-05	1.70E-07	6.15E-07	1.78E-06	9.18E-08	1.70E-07
	Rutabagas Or Turnip	7.11E-08	3.53E-07	2.63E-07	1.15E-05	9.50E-08	2.13E-06	3.57E-06	4.41E-07	1.88E-07
	Beets	3.05E-08	2.51E-07	8.88E-08	8.29E-06	1.02E-07	2.71E-07	7.96E-07	5.89E-08	1.99E-08
		Total Root Vegetables	1.04E-05	8.67E-05	4.22E-05	2.65E-03	1.05E-05	1.57E-04	3.90E-04	2.29E-05
Sugar & Sweets	Sugar, White	1.56E-07	1.45E-08	1.19E-07	8.15E-06	8.88E-08	1.12E-05	4.03E-07	2.32E-07	3.23E-09
	Syrup	1.11E-07	5.12E-08	8.55E-08	3.33E-06	2.64E-07	2.88E-06	2.51E-06	2.25E-08	9.36E-09
	Jams	5.71E-07	7.75E-07	1.97E-06	3.86E-05	6.22E-07	7.42E-06	6.54E-06	3.97E-07	6.61E-08
	Honey	5.01E-08	8.29E-09	7.18E-08	2.50E-06	2.42E-07	2.14E-06	4.62E-07	4.42E-08	2.62E-09
	Puddings	3.80E-07	2.79E-07	2.20E-06	8.76E-05	3.49E-07	1.37E-05	2.42E-05	2.53E-06	1.23E-07
	Candy, Chocolate Bars	1.21E-06	2.03E-06	8.23E-06	3.52E-04	1.28E-06	7.94E-05	9.81E-05	4.60E-06	5.70E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Teen (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Candy, Others	6.92E-07	1.47E-07	6.35E-07	3.07E-05	7.92E-07	8.11E-05	4.03E-06	1.63E-06	9.57E-08
	Gelatin Dessert	3.00E-07	4.84E-08	7.45E-08	1.23E-05	3.98E-07	6.59E-06	1.07E-06	2.00E-07	6.17E-07
	Total Sugar & Sweets	3.47E-06	3.36E-06	1.34E-05	5.35E-04	4.04E-06	2.04E-04	1.37E-04	9.66E-06	9.74E-07
Total Non-Country Foods		1.35E-04	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05
For Canadian (Typical and High Fish Eater)										
Organs	Organ Meats, Liver, Kidney	2.41E-07	1.30E-06	2.84E-06	5.17E-03	7.10E-07	4.10E-05	1.63E-06	4.32E-05	5.96E-09
	Total Organs	2.41E-07	1.30E-06	2.84E-06	5.17E-03	7.10E-07	4.10E-05	1.63E-06	4.32E-05	5.96E-09
Poultry	Poultry, Chicken And Turkey	3.17E-06	9.27E-07	6.40E-07	1.98E-04	7.24E-07	1.53E-05	6.19E-06	1.44E-04	1.37E-07
	Total Poultry	3.17E-06	9.27E-07	6.40E-07	1.98E-04	7.24E-07	1.53E-05	6.19E-06	1.44E-04	1.37E-07
Berries	Strawberries	3.81E-07	1.00E-06	1.26E-06	3.11E-05	1.87E-07	1.27E-05	5.59E-06	8.72E-07	4.06E-08
	Blueberries	2.84E-07	3.46E-08	4.54E-08	1.07E-05	7.87E-08	1.30E-06	2.03E-06	4.41E-08	1.21E-08
	Total Berries	6.66E-07	1.04E-06	1.30E-06	4.18E-05	2.65E-07	1.40E-05	7.62E-06	9.16E-07	5.27E-08
For Typical Canadian										
Meat, other mammals	Beef, Steak	9.90E-07	6.32E-08	6.43E-07	2.07E-04	5.44E-07	2.95E-06	8.39E-05	5.05E-05	1.76E-08
	Beef, Roast And Stewing	2.09E-06	1.43E-07	1.55E-06	4.53E-04	1.47E-06	7.87E-06	2.24E-04	1.39E-04	9.87E-08
	Beef, Hamburg	2.84E-06	4.65E-07	7.27E-05	4.74E-04	1.87E-06	1.04E-05	5.74E-04	1.49E-04	9.99E-08
	Pork, Fresh	1.51E-06	2.56E-07	5.27E-07	3.52E-04	6.53E-07	9.31E-06	6.89E-05	1.81E-04	1.31E-07
	Pork, Cured	7.05E-07	1.54E-07	5.29E-07	6.52E-05	4.43E-07	2.37E-06	3.04E-05	3.43E-05	1.40E-07
	Veal	1.07E-07	2.69E-08	2.00E-07	3.16E-05	1.13E-07	2.52E-07	2.21E-06	8.23E-06	1.17E-08
	Lamb	6.30E-08	1.39E-08	9.27E-08	2.85E-05	5.68E-08	3.41E-07	4.17E-06	2.55E-06	1.88E-09
	Cold Cuts And Luncheon Meats	1.26E-06	4.37E-07	5.48E-07	8.60E-04	1.20E-06	1.03E-05	6.15E-06	3.00E-05	1.81E-07
	Luncheon Meats, Canned	2.51E-07	2.78E-08	1.38E-07	2.20E-05	1.24E-07	1.78E-06	1.52E-06	6.03E-06	2.94E-08
	Soups, Meat, Canned	1.55E-06	2.65E-06	6.44E-07	1.52E-04	2.44E-06	1.69E-05	2.80E-05	2.12E-05	1.52E-06
	Wieners	5.00E-07	2.67E-07	3.14E-07	7.95E-05	5.41E-07	8.23E-06	1.09E-05	1.99E-05	2.03E-07
	Total Meat, Other Mammals	1.19E-05	4.51E-06	7.78E-05	2.72E-03	9.46E-06	7.08E-05	1.03E-03	6.41E-04	2.43E-06
Fish and Fish Products	Fish, Marine, Fresh Or Frozen	4.57E-04	1.93E-07	3.76E-07	2.45E-05	3.19E-07	3.82E-07	1.64E-06	5.09E-05	1.85E-07
	Fish, Fresh Water, Fresh Or Frozen	8.08E-06	7.24E-09	7.35E-08	5.95E-06	2.48E-08	8.49E-08	3.06E-07	7.78E-06	4.50E-09
	Fish, Canned	5.52E-05	6.89E-07	1.86E-07	3.01E-05	1.92E-07	3.11E-07	1.12E-06	5.01E-05	1.07E-07
	Shellfish, Fresh Or Frozen	5.20E-06	3.95E-08	6.88E-08	2.80E-05	9.13E-08	1.87E-07	3.67E-07	6.11E-06	1.56E-07
	Total Fish and Fish Products	5.25E-04	9.28E-07	7.05E-07	8.85E-05	6.27E-07	9.64E-07	3.44E-06	1.15E-04	4.52E-07
For Canadian Fish Eater										
Meat, other	Beef, Steak	3.77E-07	2.41E-08	2.45E-07	7.88E-05	2.07E-07	1.13E-06	3.20E-05	1.93E-05	6.72E-09

Food Group	Food Composite	EDIs of Food - Teen (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
mammals	Beef, Roast And Stewing	7.98E-07	5.45E-08	5.91E-07	1.73E-04	5.61E-07	3.00E-06	8.54E-05	5.29E-05	3.77E-08
	Beef, Hamburg	1.08E-06	1.77E-07	2.77E-05	1.81E-04	7.14E-07	3.98E-06	2.19E-04	5.67E-05	3.81E-08
	Pork, Fresh	5.78E-07	9.78E-08	2.01E-07	1.34E-04	2.49E-07	3.55E-06	2.63E-05	6.91E-05	4.99E-08
	Pork, Cured	2.69E-07	5.87E-08	2.02E-07	2.49E-05	1.69E-07	9.03E-07	1.16E-05	1.31E-05	5.35E-08
	Veal	4.07E-08	1.02E-08	7.59E-08	1.20E-05	4.30E-08	9.59E-08	8.41E-07	3.12E-06	4.44E-09
	Lamb	2.41E-08	5.32E-09	3.55E-08	1.09E-05	2.18E-08	1.31E-07	1.60E-06	9.78E-07	7.19E-10
	Cold Cuts And Luncheon Meats	4.82E-07	1.67E-07	2.09E-07	3.28E-04	4.58E-07	3.95E-06	2.35E-06	1.14E-05	6.89E-08
	Luncheon Meats, Canned	9.57E-08	1.06E-08	5.26E-08	8.38E-06	4.73E-08	6.81E-07	5.80E-07	2.30E-06	1.12E-08
	Soups, Meat, Canned	5.90E-07	1.01E-06	2.46E-07	5.80E-05	9.32E-07	6.45E-06	1.07E-05	8.08E-06	5.79E-07
	Wieners	1.91E-07	1.02E-07	1.20E-07	3.03E-05	2.07E-07	3.14E-06	4.16E-06	7.58E-06	7.73E-08
	Total Meat, Other Mammals	4.53E-06	1.72E-06	2.97E-05	1.04E-03	3.61E-06	2.70E-05	3.94E-04	2.45E-04	9.28E-07
Fish and Fish Products	Fish, Marine, Fresh Or Frozen	4.23E-03	1.79E-06	3.49E-06	2.27E-04	2.96E-06	3.54E-06	1.52E-05	4.72E-04	1.71E-06
	Fish, Fresh Water, Fresh Or Frozen	7.49E-05	6.71E-08	6.81E-07	5.52E-05	2.30E-07	7.87E-07	2.84E-06	7.21E-05	4.17E-08
	Fish, Canned	5.11E-04	6.38E-06	1.73E-06	2.79E-04	1.78E-06	2.88E-06	1.04E-05	4.64E-04	9.94E-07
	Shellfish, Fresh Or Frozen	4.82E-05	3.66E-07	6.38E-07	2.60E-04	8.46E-07	1.73E-06	3.41E-06	5.66E-05	1.45E-06
		Total Fish and Fish Products	4.87E-03	8.60E-06	6.53E-06	8.21E-04	5.81E-06	8.94E-06	3.18E-05	1.06E-03

Notes: 1- Four food composites for potatoes (raw, baked, boiled skins on and boiled skins off) were grouped together for better match with TDS data.

2 - All soups other than meat and dehydrated were grouped together.

3 - Citrus fruit, raw and canned, were grouped into one group.

Table C.4 Mean estimated daily intakes of individual supermarket foods - child

Food Group	Food Composite	EDIs of Food - Child (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
For all Receptors										
Alcoholic Drinks	Alcoholic Drinks, Wine	1.90E-07	8.36E-09	7.21E-08	1.63E-06	2.78E-07	3.94E-07	4.53E-07	3.15E-08	1.64E-08
	Alcoholic Drinks, Beer	1.66E-07	5.28E-09	4.24E-08	2.17E-06	1.94E-08	6.02E-07	3.66E-07	8.62E-07	9.58E-09
	Total Alcoholic Drinks	3.56E-07	1.36E-08	1.15E-07	3.80E-06	2.97E-07	9.96E-07	8.20E-07	8.94E-07	2.60E-08
Cereals & Grains	Bread, White	1.28E-05	3.16E-05	2.14E-05	2.16E-03	7.94E-06	5.47E-04	1.72E-04	7.15E-04	5.13E-06
	Bread, Whole Wheat And Rye	1.27E-06	2.65E-06	1.93E-06	2.52E-04	9.51E-07	5.66E-05	1.68E-05	4.83E-05	3.56E-07
	Rolls And Biscuits	2.09E-06	4.65E-06	3.68E-06	3.57E-04	1.44E-06	7.32E-05	2.38E-05	8.93E-05	6.41E-07
	Flour, Wheat	9.74E-07	6.83E-06	8.97E-07	3.77E-04	3.78E-07	8.72E-05	1.39E-05	1.25E-04	6.42E-08
	Cake	5.36E-06	6.70E-06	1.53E-05	6.94E-04	6.89E-06	6.13E-05	1.93E-04	4.35E-05	2.83E-06
	Cookies	5.77E-06	1.75E-05	3.46E-05	1.71E-03	8.37E-06	1.30E-04	4.92E-04	4.32E-05	7.43E-07
	Danish And Donuts	1.17E-06	1.61E-06	1.42E-06	1.21E-04	8.20E-07	2.97E-05	1.61E-05	2.66E-05	2.94E-07
	Crackers	9.28E-07	3.62E-06	8.44E-07	1.82E-04	3.88E-07	4.45E-05	1.48E-05	2.72E-05	4.22E-08
	Pancakes	4.94E-07	8.94E-07	4.82E-07	6.13E-05	3.11E-07	1.15E-05	7.55E-06	1.04E-05	3.49E-07
	Cereals, Cooked Wheat	4.33E-07	1.59E-06	3.80E-07	1.68E-04	1.76E-06	1.50E-05	2.12E-05	1.67E-05	1.64E-06
	Cereals, Oatmeal	2.19E-06	2.66E-06	9.44E-07	5.54E-04	4.34E-06	1.70E-04	2.32E-04	3.55E-05	5.03E-06
	Cereals, Corn	7.01E-07	2.91E-07	2.89E-06	8.82E-05	3.06E-07	2.48E-05	2.11E-05	1.27E-05	2.23E-08
	Cereals, Wheat And Bran	6.19E-06	3.25E-06	2.95E-06	3.44E-04	4.09E-07	6.86E-05	1.75E-05	1.24E-05	1.03E-07
	Rice	3.99E-05	3.11E-06	1.59E-06	4.03E-04	3.26E-06	1.34E-04	3.46E-05	3.85E-05	2.44E-06
	Pie, Apple	3.44E-07	6.23E-07	1.66E-07	5.75E-05	3.23E-07	8.94E-06	5.76E-06	6.80E-06	1.92E-08
	Pie, Other	1.05E-06	1.48E-06	5.51E-07	1.23E-04	1.04E-06	2.58E-05	2.28E-05	1.65E-05	9.33E-08
	Pizza	9.96E-07	1.22E-06	8.99E-07	7.24E-05	7.07E-07	1.75E-05	8.48E-06	1.72E-05	1.38E-07
	Pasta	4.48E-06	2.13E-05	7.24E-06	9.68E-04	7.59E-06	9.93E-05	8.56E-05	2.31E-04	3.33E-06
	Pasta, Ordinary	1.39E-06	3.30E-05	9.12E-07	1.20E-03	4.12E-06	7.10E-05	4.22E-05	3.04E-04	6.39E-06
	Muffins	1.14E-07	1.47E-07	7.11E-08	1.59E-05	6.12E-08	3.38E-06	1.19E-06	1.80E-06	3.77E-08
	Total Cereals & Grains	8.86E-05	1.45E-04	9.92E-05	9.90E-03	5.14E-05	1.68E-03	1.44E-03	1.82E-03	2.97E-05
Eggs	Eggs	1.84E-06	3.63E-07	1.89E-06	4.57E-04	9.19E-07	5.97E-05	1.75E-05	2.56E-04	1.47E-07
	Total Eggs	1.84E-06	3.63E-07	1.89E-06	4.57E-04	9.19E-07	5.97E-05	1.75E-05	2.56E-04	1.47E-07
Fats, nuts & oils	Cooking Fats & Salad Oils	3.45E-06	1.63E-08	1.59E-08	1.91E-06	6.43E-08	3.84E-05	8.27E-06	1.04E-05	2.69E-09
	Margarine	7.23E-06	9.07E-08	1.20E-07	2.19E-06	1.61E-07	9.50E-05	1.57E-05	1.38E-05	1.55E-08
	Peanut Butter & Peanuts	4.15E-06	6.47E-06	3.44E-06	6.35E-04	8.62E-07	2.68E-04	8.71E-05	9.83E-06	5.36E-08
	Total Fats, Nuts & Oils	1.48E-05	6.58E-06	3.57E-06	6.39E-04	1.09E-06	4.01E-04	1.11E-04	3.41E-05	7.18E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Child (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
Milk & Dairy	Milk, Whole	2.58E-05	3.11E-06	2.52E-05	4.63E-04	2.13E-06	4.21E-04	2.23E-04	3.68E-04	4.09E-07
	Milk, 2%	1.26E-05	5.74E-07	1.41E-05	2.73E-04	1.49E-06	2.28E-04	1.30E-04	1.99E-04	1.65E-07
	Milk, Skim	3.53E-06	1.69E-07	4.44E-06	7.95E-05	4.11E-07	6.56E-05	4.40E-05	6.15E-05	4.50E-08
	Evaporated Milk, Canned	1.02E-06	9.14E-08	1.03E-06	2.10E-05	1.11E-07	1.98E-05	1.04E-05	1.32E-05	9.01E-08
	Cream, 10-12% Butter Fat	3.64E-07	2.98E-08	2.14E-07	3.96E-06	1.81E-08	5.47E-06	2.33E-06	3.00E-06	7.17E-09
	Ice Cream	3.39E-06	1.65E-06	1.16E-05	4.29E-04	1.82E-06	7.25E-05	1.22E-04	3.03E-05	2.13E-07
	Yogurt	3.77E-08	3.60E-09	4.19E-08	1.01E-06	8.80E-09	8.98E-07	4.55E-07	5.33E-07	2.19E-09
	Cheese	1.25E-06	1.37E-07	1.50E-06	3.33E-05	5.96E-07	2.11E-05	1.83E-05	3.00E-05	1.89E-07
	Cheese, Cottage	1.41E-07	1.04E-08	1.04E-07	7.22E-06	3.98E-08	2.91E-06	1.29E-06	6.29E-06	4.18E-08
	Cheese, Processed Cheddar	2.12E-06	1.48E-07	1.74E-06	3.85E-05	9.48E-07	2.81E-05	1.92E-05	2.47E-05	3.63E-07
Butter	8.60E-06	1.31E-07	3.71E-07	1.03E-05	4.38E-07	2.18E-05	5.00E-06	1.63E-05	6.42E-08	
	Total Milk & Dairy	5.88E-05	6.06E-06	6.03E-05	1.36E-03	8.00E-06	8.87E-04	5.75E-04	7.53E-04	1.59E-06
Non-Alcoholic Drinks	Coffee	4.09E-07	5.47E-08	1.59E-06	4.38E-05	1.01E-06	9.03E-06	8.20E-06	2.24E-07	9.60E-07
	Tea	1.19E-06	7.42E-08	1.42E-06	2.30E-04	3.97E-06	1.29E-05	5.80E-05	4.07E-07	4.43E-06
	Soft Drinks	2.71E-06	2.35E-07	1.22E-06	5.42E-05	1.67E-06	2.78E-05	1.81E-05	2.02E-06	2.02E-06
	Total Non-Alcoholic Drinks	4.30E-06	3.64E-07	4.23E-06	3.28E-04	6.65E-06	4.98E-05	8.43E-05	2.65E-06	7.41E-06
Other Fruits & Juices	Citrus Fruit ³	1.01E-06	5.29E-07	1.99E-06	2.81E-04	9.07E-07	2.32E-05	3.60E-05	9.35E-07	4.54E-08
	Citrus Juice	8.22E-07	7.99E-08	1.56E-06	3.54E-04	1.36E-06	3.08E-05	1.37E-05	6.71E-07	3.25E-06
	Citrus Juice, Canned	2.92E-07	3.15E-08	5.66E-07	9.60E-05	1.92E-07	1.23E-05	4.58E-06	3.66E-07	1.40E-07
	Apples, Raw	5.14E-06	5.70E-07	1.25E-06	5.83E-04	6.45E-06	2.44E-04	1.11E-05	4.40E-07	3.75E-06
	Apple Juice, Canned, Unsweetened	4.90E-06	1.59E-07	8.94E-07	7.97E-05	1.36E-06	2.20E-05	5.79E-06	3.75E-07	1.46E-07
	Applesauce, Canned, Sweetened	2.23E-07	4.82E-08	2.20E-07	6.27E-05	8.83E-07	4.85E-05	1.42E-06	9.82E-08	1.07E-08
	Bananas	7.23E-07	5.03E-07	9.94E-07	6.35E-04	4.45E-07	7.00E-05	2.06E-05	4.52E-06	3.69E-08
	Grapes	2.41E-07	4.50E-08	5.79E-08	5.11E-05	6.79E-08	2.71E-06	3.37E-07	4.77E-08	2.26E-08
	Grape Juice, Bottled	1.01E-06	7.81E-08	1.93E-07	5.50E-06	7.15E-07	3.64E-06	1.33E-06	5.18E-08	3.10E-07
	Peaches	1.45E-06	3.42E-07	7.50E-07	1.60E-04	3.24E-06	1.40E-05	1.79E-05	2.35E-07	1.43E-07
	Pears	7.36E-07	1.98E-07	1.53E-06	1.45E-04	3.14E-07	1.03E-05	5.88E-06	2.66E-07	3.67E-08
	Plums, Dried Prunes & Canned Plums	4.38E-07	4.55E-08	3.10E-07	7.68E-05	3.85E-07	1.92E-05	8.23E-06	1.13E-07	4.13E-08
	Cherries	1.66E-07	7.34E-09	8.45E-08	2.40E-05	8.26E-08	1.25E-06	7.95E-07	4.64E-08	3.29E-08
	Melons	1.22E-06	1.16E-06	7.54E-07	6.96E-05	7.01E-07	1.01E-05	1.14E-05	2.85E-06	2.40E-08
	Pineapple	3.91E-07	5.13E-07	4.74E-07	2.37E-05	8.92E-07	2.43E-06	6.18E-06	4.66E-08	2.26E-08
	Raisins	3.53E-07	1.37E-08	1.38E-07	4.15E-05	3.92E-07	4.74E-06	7.93E-07	1.41E-07	3.86E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Child (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Total Other Fruits & Juices	1.91E-05	4.32E-06	1.18E-05	2.69E-03	1.84E-05	5.20E-04	1.46E-04	1.12E-05	8.04E-06
Other Vegetables	Soups, Other ²	2.80E-06	4.57E-06	2.00E-06	2.92E-04	3.82E-06	3.52E-05	5.92E-05	8.23E-06	3.51E-06
	Soups, Dehydrated	4.84E-07	1.04E-06	4.62E-07	8.68E-05	1.26E-06	1.15E-05	6.02E-06	1.21E-05	1.46E-06
	Corn	7.67E-07	2.53E-06	7.60E-07	2.22E-04	1.43E-06	6.10E-05	1.80E-05	5.51E-06	7.81E-07
	Cabbage	2.47E-07	5.47E-07	8.79E-07	3.42E-05	6.12E-07	1.34E-04	2.27E-05	1.73E-06	8.54E-07
	Celery	3.44E-07	2.57E-06	1.57E-07	2.31E-05	2.46E-07	1.58E-06	2.68E-06	3.33E-07	1.88E-07
	Peppers	5.88E-09	9.24E-08	5.25E-08	6.14E-06	2.06E-08	1.80E-07	1.77E-06	1.22E-08	1.42E-09
	Lettuce	6.51E-07	9.88E-06	1.03E-06	3.08E-05	5.50E-07	3.41E-08	1.15E-05	3.67E-07	1.90E-07
	Cauliflower	6.29E-09	4.47E-08	2.77E-08	1.12E-06	1.43E-08	1.83E-07	2.06E-07	1.25E-07	1.60E-08
	Broccoli	1.19E-07	3.62E-07	5.52E-07	1.85E-05	1.52E-07	2.84E-06	6.01E-06	3.71E-07	3.00E-07
	Beans	2.15E-07	1.18E-07	8.83E-07	6.43E-05	7.70E-07	1.53E-05	2.83E-05	1.93E-07	4.34E-07
	Peas	2.51E-07	3.84E-07	9.35E-07	1.65E-04	6.37E-07	6.62E-05	2.55E-05	2.75E-06	5.40E-07
	Tomatoes	1.29E-07	7.24E-07	5.51E-07	6.64E-05	3.25E-07	1.28E-05	3.25E-06	4.40E-07	1.89E-08
	Tomato Juice, Canned	2.33E-07	1.49E-06	5.40E-07	5.39E-05	1.78E-07	4.96E-06	5.83E-06	5.77E-07	3.85E-08
	Tomatoes/sauce, Canned & Ketchup	5.42E-07	3.75E-06	1.04E-06	1.33E-04	1.83E-06	1.97E-05	1.29E-05	1.34E-06	3.18E-07
	Mushrooms, Canned	3.11E-07	1.15E-07	8.63E-09	6.51E-05	8.00E-08	4.73E-07	1.63E-07	5.19E-06	9.10E-08
	Cucumbers	1.07E-06	4.14E-07	7.69E-07	7.69E-05	8.03E-07	8.40E-06	1.16E-05	4.39E-07	3.61E-07
	Baked Beans	6.72E-07	7.56E-07	3.73E-06	4.32E-04	1.18E-06	8.88E-05	3.35E-05	5.29E-06	7.73E-08
		Total Other Vegetables	8.85E-06	2.94E-05	1.44E-05	1.77E-03	1.39E-05	4.63E-04	2.49E-04	4.50E-05
Root Vegetables	Potatoes ¹	4.15E-06	6.93E-05	3.85E-05	2.39E-03	8.94E-06	1.10E-04	3.05E-04	1.08E-05	6.40E-06
	Potatoes, French Fried, Frozen	7.05E-06	2.83E-05	1.14E-05	7.21E-04	1.37E-06	5.38E-05	1.44E-04	1.37E-05	1.67E-06
	Potatoes, Chips	1.09E-06	1.01E-05	5.07E-06	2.69E-04	2.95E-07	2.97E-05	2.67E-05	3.68E-06	1.03E-07
	Carrots	1.01E-06	7.84E-06	1.24E-06	1.45E-04	4.01E-06	1.19E-05	4.67E-05	9.69E-07	1.46E-06
	Onion	2.83E-07	9.55E-07	1.81E-07	3.64E-05	2.48E-07	8.96E-07	2.60E-06	1.34E-07	2.48E-07
	Rutabagas Or Turnip	1.38E-07	6.84E-07	5.10E-07	2.23E-05	1.84E-07	4.12E-06	6.91E-06	8.53E-07	3.63E-07
	Beets	6.97E-08	5.74E-07	2.03E-07	1.90E-05	2.33E-07	6.19E-07	1.82E-06	1.35E-07	4.56E-08
		Total Root Vegetables	1.38E-05	1.18E-04	5.70E-05	3.60E-03	1.53E-05	2.11E-04	5.34E-04	3.03E-05
Sugar & Sweets	Sugar, White	2.28E-07	2.13E-08	1.74E-07	1.19E-05	1.30E-07	1.63E-05	5.89E-07	3.39E-07	4.73E-09
	Syrup	2.33E-07	1.07E-07	1.79E-07	6.97E-06	5.54E-07	6.03E-06	5.27E-06	4.71E-08	1.96E-08
	Jams	7.27E-07	9.87E-07	2.50E-06	4.91E-05	7.92E-07	9.45E-06	8.33E-06	5.05E-07	8.42E-08
	Honey	9.76E-08	1.62E-08	1.40E-07	4.87E-06	4.72E-07	4.18E-06	9.01E-07	8.62E-08	5.12E-09
	Puddings	5.76E-07	4.23E-07	3.34E-06	1.33E-04	5.29E-07	2.07E-05	3.68E-05	3.84E-06	1.87E-07
	Candy, Chocolate Bars	1.48E-06	2.48E-06	1.00E-05	4.30E-04	1.56E-06	9.69E-05	1.20E-04	5.62E-06	6.96E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Child (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Candy, Others	1.02E-06	2.18E-07	9.39E-07	4.55E-05	1.17E-06	1.20E-04	5.96E-06	2.41E-06	1.42E-07
	Gelatin Dessert	6.81E-07	1.10E-07	1.69E-07	2.80E-05	9.05E-07	1.50E-05	2.44E-06	4.55E-07	1.40E-06
	Total Sugar & Sweets	5.04E-06	4.37E-06	1.75E-05	7.09E-04	6.12E-06	2.89E-04	1.80E-04	1.33E-05	1.91E-06
Total Non-Country Foods		2.16E-04	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05
For Canadian (Typical and High Fish Eater)										
Organs	Organ Meats, Liver, Kidney	3.56E-07	1.92E-06	4.20E-06	7.64E-03	1.05E-06	6.06E-05	2.41E-06	6.39E-05	8.81E-09
	Total Organs	3.56E-07	1.92E-06	4.20E-06	7.64E-03	1.05E-06	6.06E-05	2.41E-06	6.39E-05	8.81E-09
Poultry	Poultry, Chicken And Turkey	4.73E-06	1.38E-06	9.55E-07	2.95E-04	1.08E-06	2.29E-05	9.24E-06	2.14E-04	2.05E-07
	Total Poultry	4.73E-06	1.38E-06	9.55E-07	2.95E-04	1.08E-06	2.29E-05	9.24E-06	2.14E-04	2.05E-07
Berries	Strawberries	9.70E-07	2.55E-06	3.20E-06	7.92E-05	4.75E-07	3.22E-05	1.42E-05	2.22E-06	1.03E-07
	Blueberries	3.42E-07	4.15E-08	5.45E-08	1.29E-05	9.45E-08	1.57E-06	2.44E-06	5.30E-08	1.45E-08
	Total Berries	1.31E-06	2.59E-06	3.26E-06	9.21E-05	5.69E-07	3.38E-05	1.67E-05	2.27E-06	1.18E-07
For Typical Canadian										
Meat, other mammals	Beef, Steak	1.22E-06	7.77E-08	7.89E-07	2.54E-04	6.68E-07	3.63E-06	1.03E-04	6.21E-05	2.17E-08
	Beef, Roast And Stewing	1.99E-06	1.36E-07	1.47E-06	4.31E-04	1.40E-06	7.49E-06	2.13E-04	1.32E-04	9.40E-08
	Beef, Hamburg	3.22E-06	5.26E-07	8.22E-05	5.37E-04	2.12E-06	1.18E-05	6.49E-04	1.68E-04	1.13E-07
	Pork, Fresh	1.45E-06	2.45E-07	5.04E-07	3.36E-04	6.24E-07	8.90E-06	6.58E-05	1.73E-04	1.25E-07
	Pork, Cured	1.15E-06	2.51E-07	8.64E-07	1.07E-04	7.23E-07	3.86E-06	4.96E-05	5.61E-05	2.29E-07
	Veal	3.59E-08	8.99E-09	6.68E-08	1.06E-05	3.79E-08	8.45E-08	7.40E-07	2.75E-06	3.91E-09
	Lamb	1.71E-07	3.78E-08	2.52E-07	7.76E-05	1.54E-07	9.28E-07	1.13E-05	6.95E-06	5.11E-09
	Cold Cuts And Luncheon Meats	1.60E-06	5.53E-07	6.93E-07	1.09E-03	1.52E-06	1.31E-05	7.78E-06	3.79E-05	2.28E-07
	Luncheon Meats, Canned	2.00E-07	2.22E-08	1.10E-07	1.76E-05	9.92E-08	1.43E-06	1.22E-06	4.83E-06	2.35E-08
	Soups, Meat, Canned	3.34E-06	5.73E-06	1.39E-06	3.28E-04	5.28E-06	3.65E-05	6.05E-05	4.58E-05	3.28E-06
	Wieners	1.06E-06	5.66E-07	6.64E-07	1.68E-04	1.14E-06	1.74E-05	2.31E-05	4.20E-05	4.28E-07
	Total Meat, Other Mammals	1.54E-05	8.15E-06	8.90E-05	3.35E-03	1.38E-05	1.05E-04	1.19E-03	7.32E-04	4.55E-06
Fish and Fish Products	Fish, Marine, Fresh Or Frozen	7.97E-04	3.36E-07	6.56E-07	4.27E-05	5.58E-07	6.67E-07	2.87E-06	8.88E-05	3.22E-07
	Fish, Fresh Water, Fresh Or Frozen	1.45E-05	1.30E-08	1.32E-07	1.07E-05	4.46E-08	1.53E-07	5.51E-07	1.40E-05	8.10E-09
	Fish, Canned	4.46E-05	5.57E-07	1.51E-07	2.43E-05	1.55E-07	2.51E-07	9.04E-07	4.05E-05	8.67E-08
	Shellfish, Fresh Or Frozen	6.04E-06	4.59E-08	7.99E-08	3.25E-05	1.06E-07	2.17E-07	4.27E-07	7.09E-06	1.81E-07
	Total Fish and Fish Products	8.62E-04	9.52E-07	1.02E-06	1.10E-04	8.63E-07	1.29E-06	4.75E-06	1.50E-04	5.98E-07
For Canadian Fish Eater										
Meat, other	Beef, Steak	3.52E-07	2.24E-08	2.28E-07	7.34E-05	1.93E-07	1.05E-06	2.98E-05	1.79E-05	6.26E-09

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Child (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
mammals	Beef, Roast And Stewing	5.76E-07	3.93E-08	4.26E-07	1.25E-04	4.05E-07	2.17E-06	6.16E-05	3.81E-05	2.72E-08
	Beef, Hamburg	9.30E-07	1.52E-07	2.38E-05	1.55E-04	6.13E-07	3.42E-06	1.88E-04	4.87E-05	3.27E-08
	Pork, Fresh	4.18E-07	7.08E-08	1.45E-07	9.71E-05	1.80E-07	2.57E-06	1.90E-05	5.01E-05	3.61E-08
	Pork, Cured	3.32E-07	7.23E-08	2.49E-07	3.07E-05	2.08E-07	1.11E-06	1.43E-05	1.61E-05	6.58E-08
	Veal	1.09E-08	2.73E-09	2.02E-08	3.20E-06	1.15E-08	2.56E-08	2.24E-07	8.34E-07	1.19E-09
	Lamb	4.95E-08	1.09E-08	7.29E-08	2.24E-05	4.46E-08	2.68E-07	3.28E-06	2.01E-06	1.48E-09
	Cold Cuts And Luncheon Meats	4.62E-07	1.60E-07	2.00E-07	3.14E-04	4.39E-07	3.78E-06	2.25E-06	1.09E-05	6.60E-08
	Luncheon Meats, Canned	5.79E-08	6.41E-09	3.18E-08	5.07E-06	2.86E-08	4.12E-07	3.51E-07	1.39E-06	6.78E-09
	Soups, Meat, Canned	9.66E-07	1.66E-06	4.02E-07	9.49E-05	1.53E-06	1.05E-05	1.75E-05	1.32E-05	9.48E-07
	Wieners	3.06E-07	1.64E-07	1.92E-07	4.87E-05	3.32E-07	5.04E-06	6.69E-06	1.22E-05	1.24E-07
	Total Meat, Other Mammals	4.46E-06	2.36E-06	2.57E-05	9.70E-04	3.98E-06	3.04E-05	3.43E-04	2.12E-04	1.32E-06
Fish and Fish Products	Fish, Marine, Fresh Or Frozen	8.57E-03	3.62E-06	7.06E-06	4.60E-04	5.99E-06	7.17E-06	3.09E-05	9.55E-04	3.46E-06
	Fish, Fresh Water, Fresh Or Frozen	1.56E-04	1.40E-07	1.42E-06	1.15E-04	4.80E-07	1.64E-06	5.92E-06	1.50E-04	8.70E-08
	Fish, Canned	4.80E-04	5.98E-06	1.62E-06	2.62E-04	1.67E-06	2.70E-06	9.71E-06	4.35E-04	9.32E-07
	Shellfish, Fresh Or Frozen	6.50E-05	4.94E-07	8.59E-07	3.50E-04	1.14E-06	2.33E-06	4.59E-06	7.63E-05	1.95E-06
		Total Fish and Fish Products	9.27E-03	1.02E-05	1.10E-05	1.19E-03	9.28E-06	1.38E-05	5.11E-05	1.62E-03

Notes: 1- Four food composites for potatoes (raw, baked, boiled skins on and boiled skins off) were grouped together for better match with TDS data.

2 - All soups other than meat and dehydrated were grouped together.

3 - Citrus fruit, raw and canned, were grouped into one group.

Table C.5 Mean estimated daily intakes of individual supermarket foods - toddler

Food Group	Food Composite	EDIs of Food - Toddler (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
For all Receptors										
Alcoholic Drinks	Alcoholic Drinks, Wine	1.04E-08	4.57E-10	3.94E-09	8.91E-08	1.52E-08	2.15E-08	2.48E-08	1.72E-09	8.97E-10
	Alcoholic Drinks, Beer	2.09E-07	6.65E-09	5.35E-08	2.73E-06	2.44E-08	7.59E-07	4.62E-07	1.09E-06	1.21E-08
	Total Alcoholic Drinks	2.19E-07	7.11E-09	5.74E-08	2.82E-06	3.96E-08	7.81E-07	4.86E-07	1.09E-06	1.30E-08
Cereals & Grains	Bread, White	1.13E-05	2.79E-05	1.89E-05	1.91E-03	7.01E-06	4.83E-04	1.52E-04	6.31E-04	4.53E-06
	Bread, Whole Wheat And Rye	2.16E-06	4.48E-06	3.27E-06	4.26E-04	1.61E-06	9.58E-05	2.84E-05	8.17E-05	6.02E-07
	Rolls And Biscuits	1.30E-06	2.90E-06	2.29E-06	2.23E-04	8.99E-07	4.57E-05	1.49E-05	5.57E-05	4.00E-07
	Flour, Wheat	7.22E-07	5.06E-06	6.65E-07	2.80E-04	2.80E-07	6.46E-05	1.03E-05	9.27E-05	4.76E-08
	Cake	3.58E-06	4.48E-06	1.02E-05	4.64E-04	4.61E-06	4.10E-05	1.29E-04	2.91E-05	1.89E-06
	Cookies	8.36E-06	2.53E-05	5.01E-05	2.47E-03	1.21E-05	1.87E-04	7.11E-04	6.25E-05	1.08E-06
	Danish And Donuts	1.55E-06	2.15E-06	1.89E-06	1.61E-04	1.09E-06	3.95E-05	2.15E-05	3.54E-05	3.91E-07
	Crackers	1.74E-06	6.79E-06	1.58E-06	3.40E-04	7.28E-07	8.34E-05	2.77E-05	5.09E-05	7.90E-08
	Pancakes	7.27E-07	1.31E-06	7.09E-07	9.01E-05	4.56E-07	1.69E-05	1.11E-05	1.52E-05	5.13E-07
	Cereals, Cooked Wheat	2.10E-06	7.71E-06	1.85E-06	8.18E-04	8.57E-06	7.31E-05	1.03E-04	8.10E-05	7.97E-06
	Cereals, Oatmeal	4.57E-06	5.54E-06	1.97E-06	1.16E-03	9.05E-06	3.54E-04	4.84E-04	7.40E-05	1.05E-05
	Cereals, Corn	8.90E-07	3.70E-07	3.68E-06	1.12E-04	3.88E-07	3.15E-05	2.67E-05	1.62E-05	2.83E-08
	Cereals, Wheat And Bran	1.23E-05	6.49E-06	5.88E-06	6.85E-04	8.16E-07	1.37E-04	3.49E-05	2.48E-05	2.05E-07
	Rice	3.83E-05	2.98E-06	1.53E-06	3.87E-04	3.13E-06	1.29E-04	3.33E-05	3.70E-05	2.34E-06
	Pie, Apple	3.58E-07	6.48E-07	1.73E-07	5.98E-05	3.36E-07	9.30E-06	5.99E-06	7.08E-06	2.00E-08
	Pie, Other	7.46E-07	1.05E-06	3.90E-07	8.74E-05	7.40E-07	1.83E-05	1.61E-05	1.17E-05	6.62E-08
	Pizza	7.71E-08	9.45E-08	6.96E-08	5.60E-06	5.48E-08	1.36E-06	6.57E-07	1.33E-06	1.07E-08
	Pasta	4.28E-06	2.04E-05	6.91E-06	9.25E-04	7.24E-06	9.49E-05	8.17E-05	2.21E-04	3.18E-06
	Pasta, Ordinary	1.14E-06	2.72E-05	7.52E-07	9.85E-04	3.40E-06	5.86E-05	3.48E-05	2.51E-04	5.27E-06
	Muffins	1.67E-07	2.16E-07	1.04E-07	2.34E-05	8.98E-08	4.96E-06	1.74E-06	2.63E-06	5.54E-08
	Total Cereals & Grains	9.64E-05	1.53E-04	1.13E-04	1.16E-02	6.26E-05	1.97E-03	1.93E-03	1.78E-03	3.92E-05
Eggs	Eggs	4.22E-06	8.30E-07	4.32E-06	1.05E-03	2.10E-06	1.37E-04	4.01E-05	5.85E-04	3.37E-07
	Total Eggs	4.22E-06	8.30E-07	4.32E-06	1.05E-03	2.10E-06	1.37E-04	4.01E-05	5.85E-04	3.37E-07
Fats, nuts & oils	Cooking Fats & Salad Oils	3.83E-06	1.81E-08	1.76E-08	2.12E-06	7.13E-08	4.26E-05	9.18E-06	1.16E-05	2.98E-09
	Margarine	6.23E-06	7.82E-08	1.04E-07	1.89E-06	1.39E-07	8.19E-05	1.36E-05	1.19E-05	1.34E-08
	Peanut Butter & Peanuts	4.05E-06	6.32E-06	3.36E-06	6.20E-04	8.43E-07	2.62E-04	8.51E-05	9.60E-06	5.24E-08
	Total Fats, Nuts & Oils	1.41E-05	6.42E-06	3.48E-06	6.24E-04	1.05E-06	3.86E-04	1.08E-04	3.31E-05	6.87E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Toddler (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
Milk & Dairy	Milk, Whole	6.01E-05	7.25E-06	5.88E-05	1.08E-03	4.96E-06	9.82E-04	5.19E-04	8.57E-04	9.54E-07
	Milk, 2%	2.63E-05	1.20E-06	2.95E-05	5.71E-04	3.10E-06	4.77E-04	2.72E-04	4.17E-04	3.46E-07
	Milk, Skim	7.56E-06	3.62E-07	9.51E-06	1.70E-04	8.80E-07	1.40E-04	9.43E-05	1.32E-04	9.64E-08
	Evaporated Milk, Canned	3.73E-06	3.36E-07	3.76E-06	7.71E-05	4.09E-07	7.25E-05	3.81E-05	4.84E-05	3.31E-07
	Cream, 10-12% Butter Fat	4.18E-07	3.42E-08	2.46E-07	4.54E-06	2.07E-08	6.28E-06	2.68E-06	3.44E-06	8.23E-09
	Ice Cream	4.05E-06	1.98E-06	1.38E-05	5.13E-04	2.17E-06	8.67E-05	1.45E-04	3.63E-05	2.54E-07
	Yogurt	1.22E-07	1.17E-08	1.36E-07	3.27E-06	2.85E-08	2.91E-06	1.47E-06	1.73E-06	7.09E-09
	Cheese	2.01E-06	2.19E-07	2.42E-06	5.35E-05	9.57E-07	3.39E-05	2.93E-05	4.81E-05	3.04E-07
	Cheese, Cottage	3.65E-07	2.69E-08	2.71E-07	1.87E-05	1.03E-07	7.55E-06	3.36E-06	1.63E-05	1.08E-07
	Cheese, Processed Cheddar	3.09E-06	2.15E-07	2.54E-06	5.60E-05	1.38E-06	4.08E-05	2.79E-05	3.59E-05	5.28E-07
	Butter	9.36E-06	1.43E-07	4.04E-07	1.12E-05	4.76E-07	2.37E-05	5.43E-06	1.77E-05	6.99E-08
	Total Milk & Dairy	1.17E-04	1.18E-05	1.21E-04	2.56E-03	1.45E-05	1.87E-03	1.14E-03	1.61E-03	3.01E-06
Non-Alcoholic Drinks	Coffee	4.41E-07	5.89E-08	1.71E-06	4.72E-05	1.09E-06	9.74E-06	8.84E-06	2.41E-07	1.03E-06
	Tea	9.02E-07	5.65E-08	1.08E-06	1.75E-04	3.02E-06	9.85E-06	4.41E-05	3.10E-07	3.37E-06
	Soft Drinks	2.80E-06	2.43E-07	1.26E-06	5.61E-05	1.72E-06	2.88E-05	1.87E-05	2.09E-06	2.09E-06
		Total Non-Alcoholic Drinks	4.14E-06	3.59E-07	4.05E-06	2.78E-04	5.83E-06	4.83E-05	7.17E-05	2.64E-06
Other Fruits & Juices	Citrus Fruit ³	9.32E-07	4.87E-07	1.83E-06	2.59E-04	8.34E-07	2.14E-05	3.31E-05	8.60E-07	4.17E-08
	Citrus Juice	2.52E-06	2.45E-07	4.76E-06	1.08E-03	4.15E-06	9.42E-05	4.21E-05	2.06E-06	9.94E-06
	Citrus Juice, Canned	4.35E-07	4.70E-08	8.44E-07	1.43E-04	2.86E-07	1.84E-05	6.83E-06	5.46E-07	2.09E-07
	Apples, Raw	6.64E-06	7.36E-07	1.61E-06	7.53E-04	8.32E-06	3.16E-04	1.43E-05	5.68E-07	4.84E-06
	Apple Juice, Canned, Unsweetened	1.62E-05	5.27E-07	2.96E-06	2.63E-04	4.50E-06	7.29E-05	1.91E-05	1.24E-06	4.82E-07
	Applesauce, Canned, Sweetened	1.97E-07	4.27E-08	1.95E-07	5.55E-05	7.81E-07	4.30E-05	1.25E-06	8.69E-08	9.48E-09
	Bananas	8.73E-07	6.08E-07	1.20E-06	7.67E-04	5.38E-07	8.46E-05	2.49E-05	5.46E-06	4.46E-08
	Grapes	2.60E-07	4.84E-08	6.23E-08	5.49E-05	7.31E-08	2.92E-06	3.63E-07	5.14E-08	2.44E-08
	Grape Juice, Bottled	4.23E-06	3.26E-07	8.04E-07	2.29E-05	2.98E-06	1.52E-05	5.53E-06	2.16E-07	1.29E-06
	Peaches	3.45E-06	8.14E-07	1.78E-06	3.80E-04	7.71E-06	3.33E-05	4.25E-05	5.59E-07	3.39E-07
	Pears	3.96E-06	1.06E-06	8.26E-06	7.82E-04	1.69E-06	5.57E-05	3.17E-05	1.43E-06	1.97E-07
	Plums, Dried Prunes & Canned Plums	6.91E-07	7.17E-08	4.88E-07	1.21E-04	6.06E-07	3.03E-05	1.30E-05	1.78E-07	6.52E-08
	Cherries	2.58E-07	1.15E-08	1.32E-07	3.75E-05	1.29E-07	1.95E-06	1.24E-06	7.24E-08	5.13E-08
	Melons	3.87E-07	3.69E-07	2.40E-07	2.22E-05	2.23E-07	3.22E-06	3.64E-06	9.06E-07	7.63E-09
	Pineapple	3.25E-07	4.27E-07	3.94E-07	1.97E-05	7.41E-07	2.02E-06	5.13E-06	3.87E-08	1.88E-08
	Raisins	6.65E-07	2.59E-08	2.60E-07	7.81E-05	7.37E-07	8.91E-06	1.49E-06	2.66E-07	7.25E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Toddler (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Total Other Fruits & Juices	4.20E-05	5.85E-06	2.58E-05	4.84E-03	3.43E-05	8.03E-04	2.46E-04	1.45E-05	1.76E-05
Other Vegetables	Soups, Other ²	3.92E-06	6.40E-06	2.81E-06	4.08E-04	5.36E-06	4.92E-05	8.29E-05	1.15E-05	4.91E-06
	Soups, Dehydrated	1.21E-06	2.61E-06	1.16E-06	2.17E-04	3.15E-06	2.88E-05	1.51E-05	3.02E-05	3.65E-06
	Corn	8.60E-07	2.84E-06	8.52E-07	2.49E-04	1.61E-06	6.84E-05	2.02E-05	6.18E-06	8.76E-07
	Cabbage	2.62E-07	5.81E-07	9.33E-07	3.64E-05	6.50E-07	1.43E-04	2.41E-05	1.84E-06	9.08E-07
	Celery	4.49E-07	3.36E-06	2.04E-07	3.01E-05	3.21E-07	2.07E-06	3.49E-06	4.34E-07	2.46E-07
	Peppers	2.17E-09	3.41E-08	1.94E-08	2.27E-06	7.60E-09	6.65E-08	6.53E-07	4.52E-09	5.25E-10
	Lettuce	6.85E-07	1.04E-05	1.09E-06	3.24E-05	5.78E-07	3.59E-08	1.21E-05	3.86E-07	2.00E-07
	Cauliflower	2.96E-08	2.11E-07	1.31E-07	5.30E-06	6.72E-08	8.62E-07	9.69E-07	5.88E-07	7.56E-08
	Broccoli	6.03E-08	1.83E-07	2.79E-07	9.33E-06	7.67E-08	1.44E-06	3.04E-06	1.88E-07	1.52E-07
	Beans	2.67E-07	1.47E-07	1.10E-06	7.99E-05	9.57E-07	1.90E-05	3.51E-05	2.40E-07	5.39E-07
	Peas	5.02E-07	7.67E-07	1.87E-06	3.30E-04	1.27E-06	1.32E-04	5.09E-05	5.50E-06	1.08E-06
	Tomatoes	1.10E-07	6.16E-07	4.69E-07	5.65E-05	2.77E-07	1.09E-05	2.77E-06	3.74E-07	1.61E-08
	Tomato Juice, Canned	5.42E-07	3.46E-06	1.26E-06	1.26E-04	4.15E-07	1.16E-05	1.36E-05	1.34E-06	8.96E-08
	Tomatoes/sauce, Canned & Ketchup	7.42E-07	5.13E-06	1.42E-06	1.82E-04	2.51E-06	2.70E-05	1.76E-05	1.83E-06	4.35E-07
	Mushrooms, Canned	3.39E-07	1.25E-07	9.40E-09	7.10E-05	8.72E-08	5.15E-07	1.77E-07	5.66E-06	9.91E-08
	Cucumbers	8.99E-07	3.46E-07	6.44E-07	6.44E-05	6.72E-07	7.02E-06	9.67E-06	3.67E-07	3.02E-07
	Baked Beans	5.74E-07	6.45E-07	3.19E-06	3.68E-04	1.01E-06	7.58E-05	2.86E-05	4.51E-06	6.60E-08
	Total Other Vegetables	1.15E-05	3.78E-05	1.74E-05	2.27E-03	1.90E-05	5.77E-04	3.21E-04	7.12E-05	1.36E-05
Root Vegetables	Potatoes ¹	4.98E-06	8.33E-05	4.62E-05	2.87E-03	1.07E-05	1.33E-04	3.66E-04	1.30E-05	7.69E-06
	Potatoes, French Fried, Frozen	1.14E-05	4.58E-05	1.84E-05	1.16E-03	2.22E-06	8.70E-05	2.33E-04	2.21E-05	2.70E-06
	Potatoes, Chips	6.90E-07	6.35E-06	3.20E-06	1.70E-04	1.86E-07	1.87E-05	1.69E-05	2.33E-06	6.53E-08
	Carrots	1.58E-06	1.23E-05	1.95E-06	2.27E-04	6.29E-06	1.87E-05	7.34E-05	1.52E-06	2.30E-06
	Onion	2.05E-07	6.92E-07	1.31E-07	2.63E-05	1.80E-07	6.49E-07	1.88E-06	9.69E-08	1.80E-07
	Rutabagas Or Turnip	1.88E-07	9.33E-07	6.95E-07	3.04E-05	2.51E-07	5.61E-06	9.43E-06	1.16E-06	4.95E-07
	Beets	4.74E-08	3.91E-07	1.38E-07	1.29E-05	1.58E-07	4.21E-07	1.24E-06	9.16E-08	3.10E-08
		Total Root Vegetables	1.91E-05	1.50E-04	7.07E-05	4.50E-03	2.00E-05	2.64E-04	7.02E-04	4.03E-05
Sugar & Sweets	Sugar, White	2.76E-07	2.57E-08	2.10E-07	1.44E-05	1.57E-07	1.98E-05	7.14E-07	4.10E-07	5.72E-09
	Syrup	2.08E-07	9.57E-08	1.60E-07	6.22E-06	4.95E-07	5.39E-06	4.70E-06	4.20E-08	1.75E-08
	Jams	7.62E-07	1.03E-06	2.62E-06	5.14E-05	8.29E-07	9.89E-06	8.72E-06	5.29E-07	8.82E-08
	Honey	8.29E-08	1.37E-08	1.19E-07	4.13E-06	4.01E-07	3.55E-06	7.64E-07	7.31E-08	4.34E-09
	Puddings	1.71E-06	1.25E-06	9.90E-06	3.94E-04	1.57E-06	6.15E-05	1.09E-04	1.14E-05	5.53E-07
	Candy, Chocolate Bars	1.70E-06	2.85E-06	1.15E-05	4.94E-04	1.80E-06	1.11E-04	1.38E-04	6.46E-06	7.99E-08

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Toddler (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
	Candy, Others	1.29E-06	2.75E-07	1.18E-06	5.74E-05	1.48E-06	1.51E-04	7.53E-06	3.04E-06	1.79E-07
	Gelatin Dessert	1.74E-06	2.81E-07	4.32E-07	7.15E-05	2.31E-06	3.82E-05	6.23E-06	1.16E-06	3.58E-06
	Total Sugar & Sweets	7.76E-06	5.83E-06	2.62E-05	1.09E-03	9.04E-06	4.01E-04	2.75E-04	2.31E-05	4.51E-06
Total Non-Country Foods		3.16E-04	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05
For Canadian (Typical and High Fish Eater)										
Organs	Organ Meats, Liver, Kidney	3.49E-07	1.89E-06	4.12E-06	7.49E-03	1.03E-06	5.94E-05	2.36E-06	6.27E-05	8.64E-09
	Total Organs	3.49E-07	1.89E-06	4.12E-06	7.49E-03	1.03E-06	5.94E-05	2.36E-06	6.27E-05	8.64E-09
Poultry	Poultry, Chicken And Turkey	7.46E-06	2.19E-06	1.51E-06	4.66E-04	1.71E-06	3.62E-05	1.46E-05	3.38E-04	3.24E-07
	Total Poultry	7.46E-06	2.19E-06	1.51E-06	4.66E-04	1.71E-06	3.62E-05	1.46E-05	3.38E-04	3.24E-07
Berries	Strawberries	7.70E-07	2.02E-06	2.54E-06	6.29E-05	3.77E-07	2.56E-05	1.13E-05	1.76E-06	8.21E-08
	Blueberries	4.56E-07	5.55E-08	7.28E-08	1.72E-05	1.26E-07	2.09E-06	3.26E-06	7.08E-08	1.94E-08
	Total Berries	1.23E-06	2.08E-06	2.61E-06	8.01E-05	5.03E-07	2.77E-05	1.46E-05	1.83E-06	1.01E-07
For Typical Canadian										
Meat, other mammals	Beef, Steak	1.02E-06	6.49E-08	6.60E-07	2.12E-04	5.59E-07	3.03E-06	8.62E-05	5.19E-05	1.81E-08
	Beef, Roast And Stewing	2.11E-06	1.44E-07	1.56E-06	4.57E-04	1.48E-06	7.94E-06	2.26E-04	1.40E-04	9.96E-08
	Beef, Hamburg	6.69E-06	1.09E-06	1.71E-04	1.12E-03	4.41E-06	2.46E-05	1.35E-03	3.50E-04	2.35E-07
	Pork, Fresh	1.74E-06	2.95E-07	6.07E-07	4.05E-04	7.52E-07	1.07E-05	7.93E-05	2.09E-04	1.51E-07
	Pork, Cured	1.13E-06	2.47E-07	8.49E-07	1.05E-04	7.10E-07	3.79E-06	4.87E-05	5.51E-05	2.25E-07
	Veal	1.08E-07	2.72E-08	2.02E-07	3.19E-05	1.14E-07	2.55E-07	2.24E-06	8.31E-06	1.18E-08
	Lamb	5.70E-09	1.25E-09	8.38E-09	2.58E-06	5.13E-09	3.09E-08	3.77E-07	2.31E-07	1.70E-10
	Cold Cuts And Luncheon Meats	2.32E-06	8.03E-07	1.01E-06	1.58E-03	2.20E-06	1.90E-05	1.13E-05	5.50E-05	3.32E-07
	Luncheon Meats, Canned	3.63E-07	4.02E-08	1.99E-07	3.18E-05	1.79E-07	2.58E-06	2.20E-06	8.73E-06	4.25E-08
	Soups, Meat, Canned	6.11E-06	1.05E-05	2.54E-06	6.01E-04	9.65E-06	6.68E-05	1.11E-04	8.37E-05	6.00E-06
	Wieners	7.50E-07	4.01E-07	4.71E-07	1.19E-04	8.12E-07	1.23E-05	1.64E-05	2.98E-05	3.04E-07
	Total Meat, Other Mammals	2.23E-05	1.36E-05	1.79E-04	4.66E-03	2.09E-05	1.51E-04	1.93E-03	9.91E-04	7.42E-06
	Fish and Fish Products	Fish, Marine, Fresh Or Frozen	5.02E-04	2.12E-07	4.14E-07	2.69E-05	3.51E-07	4.20E-07	1.81E-06	5.60E-05
Fish, Fresh Water, Fresh Or Frozen		3.00E-05	2.69E-08	2.73E-07	2.21E-05	9.23E-08	3.16E-07	1.14E-06	2.89E-05	1.67E-08
Fish, Canned		2.08E-05	2.59E-07	7.02E-08	1.13E-05	7.22E-08	1.17E-07	4.21E-07	1.89E-05	4.04E-08
Shellfish, Fresh Or Frozen		5.27E-06	4.00E-08	6.97E-08	2.84E-05	9.25E-08	1.89E-07	3.72E-07	6.19E-06	1.58E-07
Total Fish and Fish Products		5.58E-04	5.38E-07	8.27E-07	8.88E-05	6.08E-07	1.04E-06	3.74E-06	1.10E-04	4.18E-07
For Canadian Fish Eater										
Meat, other	Beef, Steak	4.05E-07	2.58E-08	2.63E-07	8.45E-05	2.22E-07	1.21E-06	3.43E-05	2.06E-05	7.21E-09

ATTACHMENT C: ESTIMATED DAILY INTAKES OF SUPERMARKET FOODS

Food Group	Food Composite	EDIs of Food - Toddler (mg/kg-d)								
		Arsenic	Cadmium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Uranium
mammals	Beef, Roast And Stewing	8.39E-07	5.73E-08	6.21E-07	1.82E-04	5.89E-07	3.16E-06	8.98E-05	5.56E-05	3.96E-08
	Beef, Hamburg	2.66E-06	4.35E-07	6.80E-05	4.44E-04	1.75E-06	9.77E-06	5.37E-04	1.39E-04	9.35E-08
	Pork, Fresh	6.94E-07	1.18E-07	2.41E-07	1.61E-04	2.99E-07	4.26E-06	3.16E-05	8.31E-05	5.99E-08
	Pork, Cured	4.52E-07	9.86E-08	3.39E-07	4.18E-05	2.84E-07	1.52E-06	1.95E-05	2.20E-05	8.98E-08
	Veal	4.34E-08	1.09E-08	8.07E-08	1.28E-05	4.58E-08	1.02E-07	8.95E-07	3.33E-06	4.73E-09
	Lamb	1.90E-09	4.18E-10	2.79E-09	8.60E-07	1.71E-09	1.03E-08	1.26E-07	7.69E-08	5.66E-11
	Cold Cuts And Luncheon Meats	9.24E-07	3.20E-07	4.01E-07	6.29E-04	8.79E-07	7.58E-06	4.50E-06	2.19E-05	1.32E-07
	Luncheon Meats, Canned	1.44E-07	1.60E-08	7.93E-08	1.26E-05	7.13E-08	1.03E-06	8.75E-07	3.47E-06	1.69E-08
	Soups, Meat, Canned	2.43E-06	4.17E-06	1.01E-06	2.39E-04	3.84E-06	2.66E-05	4.40E-05	3.33E-05	2.39E-06
	Wieners	2.99E-07	1.60E-07	1.88E-07	4.75E-05	3.23E-07	4.92E-06	6.52E-06	1.19E-05	1.21E-07
	Total Meat, Other Mammals	8.90E-06	5.41E-06	7.13E-05	1.86E-03	8.31E-06	6.01E-05	7.69E-04	3.95E-04	2.95E-06
Fish and Fish Products	Fish, Marine, Fresh Or Frozen	8.40E-03	3.54E-06	6.91E-06	4.50E-04	5.87E-06	7.02E-06	3.02E-05	9.36E-04	3.39E-06
	Fish, Fresh Water, Fresh Or Frozen	5.02E-04	4.50E-07	4.57E-06	3.70E-04	1.54E-06	5.28E-06	1.90E-05	4.84E-04	2.80E-07
	Fish, Canned	3.48E-04	4.34E-06	1.17E-06	1.90E-04	1.21E-06	1.96E-06	7.04E-06	3.16E-04	6.75E-07
	Shellfish, Fresh Or Frozen	8.81E-05	6.69E-07	1.16E-06	4.74E-04	1.55E-06	3.16E-06	6.22E-06	1.03E-04	2.64E-06
		Total Fish and Fish Products	9.33E-03	9.00E-06	1.38E-05	1.48E-03	1.02E-05	1.74E-05	6.25E-05	1.84E-03
Notes: 1- Four food composites for potatoes (raw, baked, boiled skins on and boiled skins off) were grouped together for better match with TDS data. 2 - All soups other than meat and dehydrated were grouped together. 3 - Citrus fruit, raw and canned, were grouped into one group.										

ATTACHMENT D

DETAILED RESULTS

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ATTACHMENT D: DETAILED RESULTS

This attachment provides the equations used to calculate non-radiological intakes and radiological doses to human receptors, and provides the detailed intakes and doses and risks for all life stages.

D.1 Exposure Equations

The methodology and equations for estimating exposure to humans as a result of food and water ingestion is discussed in the following sections. Sample calculations are provided in Attachment E. The exposure assessment considered the ingestion pathway using the receptor characteristics discussed in Attachment B.

D.1.1 Non-Radiological Intake

Intake of non-radiological COPC (i.e. arsenic, cadmium, cobalt, copper, lead, molybdenum, nickel, selenium, and uranium) from ingestion of water and country and supermarket foods by humans was calculated using the following equation from Health Canada (2012):

$$I_x = \frac{C_x \times IR_x \times AF_{ing} \times C_1 \times C_2}{BW} \quad (D-1)$$

Where:

- I_x = Intake of COPC through the ingestion of 'x' (food or water) [mg/(kg-d)]
- C_x = Concentration of COPC in 'x' (food [mg/kg ww] or water [mg/L])
- IR_x = Ingestion rate of 'x' (food [kg ww/d] or water [L/d])
- AF_{ing} = Ingestion absorption factor [-] {assumed to be 1}
- BW = Body weight [kg]
- C_1 = Days per week exposed divided by 7 days per week [-] {assumed to be 1}
- C_2 = Weeks per year exposed divided by 52 weeks per year [-] {assumed to be 1}

D.1.2 Radiological Dose

For radiological COPC (i.e., lead-210, polonium-210, radium-226, thorium-230, and uranium-238), dose coefficients (DCs; in $\mu\text{Sv/Bq}$) are used to estimate radiological dose (in $\mu\text{Sv/y}$) from ingestion using Equation D-2:

$$D_x = C_x \times IR_x \times DC \times AF_{ing} \times CF_1 \times CF_2 \times C_1 \times C_2 \quad (D-1)$$

Where:

- D_x = Dose of COPC through the ingestion of 'x' (food or water) [$\mu\text{Sv}/\text{y}$]
 C_x = Concentration of COPC in 'x' (food [Bq/g ww] or water [Bq/L])
 IR_x = Ingestion rate of 'x' (food [kg ww/d] or water [L/d])
 DC = Dose coefficient [$\mu\text{Sv}/\text{Bq}$]
 AF_{ing} = Ingestion absorption factor [-] {assumed to be 1}
 CF_1 = Conversion factor (365) [d/y]
 CF_2 = Conversion factor (1000) [g/kg] {for food ingestion only}
 C_1 = Days per week exposed divided by 7 days per week [-] {assumed to be 1}
 C_2 = Weeks per year exposed divided by 52 weeks per year [-] {assumed to be 1}

The DCs used in the assessment are those recommended by the International Commission on Radiation Protection (ICRP). Ingestion DCs depend on the chemical form of the radionuclide and the consequent gut-to-blood transfer factor (f_1). Table D.1 reflects the ICRP Publication 72 (1996) recommended f_1 values and DCs for members of the public.

Table D.1 ICRP ingestion dose coefficients for members of the public

Radionuclide	ICRP 72 (1996) DC ($\mu\text{Sv}/\text{Bq}$)				
	f_1	Adult ^a	Teen	Child ^b	Toddler ^c
Lead-210		0.69	1.9	2.2	3.6
Polonium-210	5.0×10^{-4}	1.2	1.6	4.4	8.8
Radium-226	0.2	0.28	1.5	0.62	0.96
Thorium-230	0.2	0.21	0.22	0.31	0.41
Uranium-238	0.5	0.094	0.14	0.17	0.25

^a Values shown are ICRP Publication 72 (1996) default values recommended for adult members of the public.

^b Values shown are for a 5-year old child.

^c Values shown are for a 1-year old child.

D.2 Intakes

D.2.1 Non-Radionuclides

D.2.1.1 Camsell Portage

Concentrations		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/L	0	0.0002	0.00001	0.0001	0.0002	0.0001	0.0002	0.0002	0.0001	0.0001
Moose	mg/kg ww	0	0.01	0.03	0.02	1.7	0.02	0.02	0.0008	0.13	0.002
Lake Whitefish	mg/kg ww	0	0.29	0.002	0.005	0.23	0.004	0.02	0.03	0.27	0.002
Other Fish	mg/kg ww	0	0.12	0.002	0.003	0.36	0.002	0.02	0.02	0.18	0.002
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg ww	0	0.0075	0.0015	0.0015	0.57	0.003	0.0255	0.066	0.0075	0.0045
Grouse	mg/kg ww	0	0.01	0.008	0.002	3.2	0.02	0.02	0.01	0.2	0.001
Hare	mg/kg ww	0	0.01	0.004	0.009	1.9	0.002	0.02	0.02	0.07	0.001
Organ	-	-	-	-	-	-	-	-	-	-	-
Adult Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.24E-06	2.12E-07	2.12E-06	4.24E-06	2.12E-06	4.24E-06	4.24E-06	2.12E-06	2.12E-06
Moose	mg/kg-d	0.00E+00	4.78E-06	1.43E-05	9.56E-06	8.13E-04	9.56E-06	9.56E-06	3.82E-07	6.21E-05	9.56E-07
Lake Whitefish	mg/kg-d	0.00E+00	9.81E-05	6.77E-07	1.69E-06	7.78E-05	1.35E-06	6.77E-06	1.02E-05	9.14E-05	6.77E-07
Other Fish	mg/kg-d	0.00E+00	1.40E-04	2.33E-06	3.49E-06	4.19E-04	2.33E-06	2.33E-05	2.33E-05	2.10E-04	2.33E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	1.91E-06	3.82E-07	3.82E-07	1.45E-04	7.64E-07	6.49E-06	1.68E-05	1.91E-06	1.15E-06
Grouse	mg/kg-d	0.00E+00	2.84E-06	2.27E-06	5.68E-07	9.09E-04	5.68E-06	5.68E-06	2.84E-06	5.68E-05	2.84E-07
Hare	mg/kg-d	0.00E+00	1.98E-06	7.93E-07	1.78E-06	3.76E-04	3.96E-07	3.96E-06	3.96E-06	1.39E-05	1.98E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket Foods	mg/kg-d	-	1.09E-04	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05
Total-Ingestion	mg/kg-d	0.00E+00	3.63E-04	1.62E-04	1.56E-04	1.39E-02	1.20E-04	2.11E-03	1.90E-03	1.61E-03	8.21E-05
Total	mg/kg-d	0.00E+00	3.63E-04	1.62E-04	1.56E-04	1.39E-02	1.20E-04	2.11E-03	1.90E-03	1.61E-03	8.21E-05

Teen											
Intakes											
Pathway	Units	Incremental									
		As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	3.35E-06	1.68E-07	1.68E-06	3.35E-06	1.68E-06	3.35E-06	3.35E-06	1.68E-06	1.68E-06
Moose	mg/kg-d	0.00E+00	5.09E-06	1.53E-05	1.02E-05	8.66E-04	1.02E-05	1.02E-05	4.08E-07	6.62E-05	1.02E-06
Lake Whitefish	mg/kg-d	0.00E+00	1.05E-04	7.21E-07	1.80E-06	8.30E-05	1.44E-06	7.21E-06	1.08E-05	9.74E-05	7.21E-07
Other Fish	mg/kg-d	0.00E+00	1.49E-04	2.48E-06	3.72E-06	4.47E-04	2.48E-06	2.48E-05	2.48E-05	2.23E-04	2.48E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	2.04E-06	4.07E-07	4.07E-07	1.55E-04	8.14E-07	6.92E-06	1.79E-05	2.04E-06	1.22E-06
Grouse	mg/kg-d	0.00E+00	3.03E-06	2.42E-06	6.05E-07	9.68E-04	6.05E-06	6.05E-06	3.03E-06	6.05E-05	3.03E-07
Hare	mg/kg-d	0.00E+00	2.11E-06	8.45E-07	1.90E-06	4.01E-04	4.22E-07	4.22E-06	4.22E-06	1.48E-05	2.11E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	1.35E-04	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05
Total-Ingestion	mg/kg-d	0.00E+00	4.04E-04	2.23E-04	2.01E-04	1.63E-02	1.07E-04	2.82E-03	2.21E-03	2.17E-03	5.79E-05
Total	mg/kg-d	0.00E+00	4.04E-04	2.23E-04	2.01E-04	1.63E-02	1.07E-04	2.82E-03	2.21E-03	2.17E-03	5.79E-05
Child											
Intakes											
Pathway	Units	Incremental									
		As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.86E-06	2.43E-07	2.43E-06	4.86E-06	2.43E-06	4.86E-06	4.86E-06	2.43E-06	2.43E-06
Moose	mg/kg-d	0.00E+00	7.19E-06	2.16E-05	1.44E-05	1.22E-03	1.44E-05	1.44E-05	5.75E-07	9.35E-05	1.44E-06
Lake Whitefish	mg/kg-d	0.00E+00	1.48E-04	1.02E-06	2.55E-06	1.17E-04	2.04E-06	1.02E-05	1.53E-05	1.37E-04	1.02E-06
Other Fish	mg/kg-d	0.00E+00	2.10E-04	3.50E-06	5.25E-06	6.30E-04	3.50E-06	3.50E-05	3.50E-05	3.15E-04	3.50E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	2.87E-06	5.75E-07	5.75E-07	2.18E-04	1.15E-06	9.77E-06	2.53E-05	2.87E-06	1.72E-06
Grouse	mg/kg-d	0.00E+00	4.27E-06	3.42E-06	8.54E-07	1.37E-03	8.54E-06	8.54E-06	4.27E-06	8.54E-05	4.27E-07
Hare	mg/kg-d	0.00E+00	2.98E-06	1.19E-06	2.68E-06	5.66E-04	5.96E-07	5.96E-06	5.96E-06	2.09E-05	2.98E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	2.16E-04	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05
Total-Ingestion	mg/kg-d	0.00E+00	5.96E-04	3.45E-04	2.99E-04	2.56E-02	1.55E-04	4.65E-03	3.43E-03	3.63E-03	7.92E-05
Total	mg/kg-d	0.00E+00	5.96E-04	3.45E-04	2.99E-04	2.56E-02	1.55E-04	4.65E-03	3.43E-03	3.63E-03	7.92E-05

Toddler											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	7.27E-06	3.64E-07	3.64E-06	7.27E-06	3.64E-06	7.27E-06	7.27E-06	3.64E-06	3.64E-06
Moose	mg/kg-d	0.00E+00	1.02E-05	3.07E-05	2.05E-05	1.74E-03	2.05E-05	2.05E-05	8.19E-07	1.33E-04	2.05E-06
Lake Whitefish	mg/kg-d	0.00E+00	2.10E-04	1.45E-06	3.62E-06	1.67E-04	2.90E-06	1.45E-05	2.17E-05	1.96E-04	1.45E-06
Other Fish	mg/kg-d	0.00E+00	2.99E-04	4.99E-06	7.48E-06	8.98E-04	4.99E-06	4.99E-05	4.99E-05	4.49E-04	4.99E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	4.09E-06	8.18E-07	8.18E-07	3.11E-04	1.64E-06	1.39E-05	3.60E-05	4.09E-06	2.46E-06
Grouse	mg/kg-d	0.00E+00	6.08E-06	4.87E-06	1.22E-06	1.95E-03	1.22E-05	1.22E-05	6.08E-06	1.22E-04	6.08E-07
Hare	mg/kg-d	0.00E+00	4.24E-06	1.70E-06	3.82E-06	8.07E-04	8.49E-07	8.49E-06	8.49E-06	2.97E-05	4.24E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	3.16E-04	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05
Total-Ingestion	mg/kg-d	0.00E+00	8.58E-04	4.17E-04	4.27E-04	3.47E-02	2.15E-04	6.59E-03	4.96E-03	5.10E-03	1.14E-04
Total	mg/kg-d	0.00E+00	8.58E-04	4.17E-04	4.27E-04	3.47E-02	2.15E-04	6.59E-03	4.96E-03	5.10E-03	1.14E-04

D.2.1.2 Uranium City

Concentrations		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/L	0	0.0002	0.00002	0.0001	0.0006	0.0002	0.0005	0.0002	0.0001	0.004
Moose	mg/kg ww	0	0.01	0.02	0.02	2.2	0.02	0.02	0.02	0.16	0.004
Lake Whitefish	mg/kg ww	0	0.13	0.002	0.009	0.27	0.004	0.02	0.02	0.27	0.0008
Other Fish	mg/kg ww	0	0.1	0.002	0.002	0.31	0.003	0.02	0.01	0.16	0.0008
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg ww	0	0.0075	0.003	0.0075	0.585	0.0075	0.075	0.114	0.012	0.0045
Grouse	mg/kg ww	0	0.01	0.005	0.003	2.2	0.09	0.02	0.02	0.32	0.007
Hare	mg/kg ww	0	0.007	0.003	0.005	1.6	0.002	0.02	0.02	0.1	0.0007
Organ	-	-	-	-	-	-	-	-	-	-	-
Adult Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.24E-06	4.24E-07	2.12E-06	1.27E-05	4.24E-06	1.06E-05	4.24E-06	2.12E-06	8.49E-05
Moose	mg/kg-d	0.00E+00	4.78E-06	9.56E-06	9.56E-06	1.05E-03	9.56E-06	9.56E-06	9.56E-06	7.65E-05	1.91E-06
Lake Whitefish	mg/kg-d	0.00E+00	4.40E-05	6.77E-07	3.05E-06	9.14E-05	1.35E-06	6.77E-06	6.77E-06	9.14E-05	2.71E-07
Other Fish	mg/kg-d	0.00E+00	1.16E-04	2.33E-06	2.33E-06	3.61E-04	3.49E-06	2.33E-05	1.16E-05	1.86E-04	9.31E-07
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	1.91E-06	7.64E-07	1.91E-06	1.49E-04	1.91E-06	1.91E-05	2.90E-05	3.06E-06	1.15E-06
Grouse	mg/kg-d	0.00E+00	2.84E-06	1.42E-06	8.52E-07	6.25E-04	2.56E-05	5.68E-06	5.68E-06	9.09E-05	1.99E-06
Hare	mg/kg-d	0.00E+00	1.39E-06	5.94E-07	9.91E-07	3.17E-04	3.96E-07	3.96E-06	3.96E-06	1.98E-05	1.39E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket Foods	mg/kg-d	-	1.09E-04	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05
Total Ingestion	mg/kg-d	0.00E+00	2.85E-04	1.57E-04	1.57E-04	1.38E-02	1.44E-04	2.13E-03	1.91E-03	1.64E-03	1.66E-04
Total	mg/kg-d	0.00E+00	2.85E-04	1.57E-04	1.57E-04	1.38E-02	1.44E-04	2.13E-03	1.91E-03	1.64E-03	1.66E-04

Teen											
Intakes											
Pathway	Units	Incremental									
		As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	3.35E-06	3.35E-07	1.68E-06	1.01E-05	3.35E-06	8.38E-06	3.35E-06	1.68E-06	6.70E-05
Moose	mg/kg-d	0.00E+00	5.09E-06	1.02E-05	1.02E-05	1.12E-03	1.02E-05	1.02E-05	1.02E-05	8.15E-05	2.04E-06
Lake Whitefish	mg/kg-d	0.00E+00	4.69E-05	7.21E-07	3.25E-06	9.74E-05	1.44E-06	7.21E-06	7.21E-06	9.74E-05	2.89E-07
Other Fish	mg/kg-d	0.00E+00	1.24E-04	2.48E-06	2.48E-06	3.85E-04	3.72E-06	2.48E-05	1.24E-05	1.99E-04	9.93E-07
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	2.04E-06	8.14E-07	2.04E-06	1.59E-04	2.04E-06	2.04E-05	3.09E-05	3.26E-06	1.22E-06
Grouse	mg/kg-d	0.00E+00	3.03E-06	1.51E-06	9.08E-07	6.66E-04	2.72E-05	6.05E-06	6.05E-06	9.68E-05	2.12E-06
Hare	mg/kg-d	0.00E+00	1.48E-06	6.34E-07	1.06E-06	3.38E-04	4.22E-07	4.22E-06	4.22E-06	2.11E-05	1.48E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	1.35E-04	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05
Total-Ingestion	mg/kg-d	0.00E+00	3.21E-04	2.17E-04	2.02E-04	1.62E-02	1.32E-04	2.84E-03	2.22E-03	2.20E-03	1.24E-04
Total	mg/kg-d	0.00E+00	3.21E-04	2.17E-04	2.02E-04	1.62E-02	1.32E-04	2.84E-03	2.22E-03	2.20E-03	1.24E-04
Child											
Intakes											
Pathway	Units	Incremental									
		As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.86E-06	4.86E-07	2.43E-06	1.46E-05	4.86E-06	1.22E-05	4.86E-06	2.43E-06	9.73E-05
Moose	mg/kg-d	0.00E+00	7.19E-06	1.44E-05	1.44E-05	1.58E-03	1.44E-05	1.44E-05	1.44E-05	1.15E-04	2.88E-06
Lake Whitefish	mg/kg-d	0.00E+00	6.62E-05	1.02E-06	4.58E-06	1.37E-04	2.04E-06	1.02E-05	1.02E-05	1.37E-04	4.07E-07
Other Fish	mg/kg-d	0.00E+00	1.75E-04	3.50E-06	3.50E-06	5.43E-04	5.25E-06	3.50E-05	1.75E-05	2.80E-04	1.40E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	2.87E-06	1.15E-06	2.87E-06	2.24E-04	2.87E-06	2.87E-05	4.37E-05	4.60E-06	1.72E-06
Grouse	mg/kg-d	0.00E+00	4.27E-06	2.14E-06	1.28E-06	9.40E-04	3.84E-05	8.54E-06	8.54E-06	1.37E-04	2.99E-06
Hare	mg/kg-d	0.00E+00	2.09E-06	8.94E-07	1.49E-06	4.77E-04	5.96E-07	5.96E-06	5.96E-06	2.98E-05	2.09E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	2.16E-04	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05
Total-Ingestion	mg/kg-d	0.00E+00	4.78E-04	3.38E-04	3.01E-04	2.54E-02	1.91E-04	4.68E-03	3.44E-03	3.67E-03	1.75E-04
Total	mg/kg-d	0.00E+00	4.78E-04	3.38E-04	3.01E-04	2.54E-02	1.91E-04	4.68E-03	3.44E-03	3.67E-03	1.75E-04

Toddler											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	7.27E-06	7.27E-07	3.64E-06	2.18E-05	7.27E-06	1.82E-05	7.27E-06	3.64E-06	1.45E-04
Moose	mg/kg-d	0.00E+00	1.02E-05	2.05E-05	2.05E-05	2.25E-03	2.05E-05	2.05E-05	2.05E-05	1.64E-04	4.10E-06
Lake Whitefish	mg/kg-d	0.00E+00	9.42E-05	1.45E-06	6.52E-06	1.96E-04	2.90E-06	1.45E-05	1.45E-05	1.96E-04	5.80E-07
Other Fish	mg/kg-d	0.00E+00	2.49E-04	4.99E-06	4.99E-06	7.73E-04	7.48E-06	4.99E-05	2.49E-05	3.99E-04	2.00E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	4.09E-06	1.64E-06	4.09E-06	3.19E-04	4.09E-06	4.09E-05	6.22E-05	6.55E-06	2.46E-06
Grouse	mg/kg-d	0.00E+00	6.08E-06	3.04E-06	1.83E-06	1.34E-03	5.48E-05	1.22E-05	1.22E-05	1.95E-04	4.26E-06
Hare	mg/kg-d	0.00E+00	2.97E-06	1.27E-06	2.12E-06	6.79E-04	8.49E-07	8.49E-06	8.49E-06	4.24E-05	2.97E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	3.16E-04	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05
Total-Ingestion	mg/kg-d	0.00E+00	6.91E-04	4.05E-04	4.30E-04	3.44E-02	2.66E-04	6.63E-03	4.98E-03	5.17E-03	2.57E-04
Total	mg/kg-d	0.00E+00	6.91E-04	4.05E-04	4.30E-04	3.44E-02	2.66E-04	6.63E-03	4.98E-03	5.17E-03	2.57E-04

D.2.1.3 Uranium City (Crackingstone)

Concentrations		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/L	0	0.0002	0.00002	0.0001	0.0006	0.0002	0.0005	0.0002	0.0001	0.004
Moose	mg/kg ww	0	0.01	0.02	0.02	2.2	0.02	0.02	0.02	0.16	0.004
Lake Whitefish	mg/kg ww	0	0.14	0.003	0.01	0.2	0.004	0.02	0.04	1.5	0.008
Other Fish	mg/kg ww	0	0.08	0.007	0.002	0.25	0.003	0.02	0.02	0.4	0.004
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg ww	0	0.0075	0.003	0.0075	0.585	0.0075	0.075	0.114	0.012	0.0045
Grouse	mg/kg ww	0	0.01	0.005	0.003	2.2	0.09	0.02	0.02	0.32	0.007
Hare	mg/kg ww	0	0.007	0.003	0.005	1.6	0.002	0.02	0.02	0.1	0.0007
Organ	-	-	-	-	-	-	-	-	-	-	-
Adult Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.24E-06	4.24E-07	2.12E-06	1.27E-05	4.24E-06	1.06E-05	4.24E-06	2.12E-06	8.49E-05
Moose	mg/kg-d	0.00E+00	4.78E-06	9.56E-06	9.56E-06	1.05E-03	9.56E-06	9.56E-06	9.56E-06	7.65E-05	1.91E-06
Lake Whitefish	mg/kg-d	0.00E+00	4.74E-05	1.02E-06	3.38E-06	6.77E-05	1.35E-06	6.77E-06	1.35E-05	5.08E-04	2.71E-06
Other Fish	mg/kg-d	0.00E+00	9.31E-05	8.15E-06	2.33E-06	2.91E-04	3.49E-06	2.33E-05	2.33E-05	4.66E-04	4.66E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	1.91E-06	7.64E-07	1.91E-06	1.49E-04	1.91E-06	1.91E-05	2.90E-05	3.06E-06	1.15E-06
Grouse	mg/kg-d	0.00E+00	2.84E-06	1.42E-06	8.52E-07	6.25E-04	2.56E-05	5.68E-06	5.68E-06	9.09E-05	1.99E-06
Hare	mg/kg-d	0.00E+00	1.39E-06	5.94E-07	9.91E-07	3.17E-04	3.96E-07	3.96E-06	3.96E-06	1.98E-05	1.39E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket Foods	mg/kg-d	-	1.09E-04	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05
Total-Ingestion	mg/kg-d	0.00E+00	2.65E-04	1.63E-04	1.57E-04	1.37E-02	1.44E-04	2.13E-03	1.93E-03	2.34E-03	1.72E-04
Total	mg/kg-d	0.00E+00	2.65E-04	1.63E-04	1.57E-04	1.37E-02	1.44E-04	2.13E-03	1.93E-03	2.34E-03	1.72E-04

Teen											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	3.35E-06	3.35E-07	1.68E-06	1.01E-05	3.35E-06	8.38E-06	3.35E-06	1.68E-06	6.70E-05
Moose	mg/kg-d	0.00E+00	5.09E-06	1.02E-05	1.02E-05	1.12E-03	1.02E-05	1.02E-05	1.02E-05	8.15E-05	2.04E-06
Lake Whitefish	mg/kg-d	0.00E+00	5.05E-05	1.08E-06	3.61E-06	7.21E-05	1.44E-06	7.21E-06	1.44E-05	5.41E-04	2.89E-06
Other Fish	mg/kg-d	0.00E+00	9.93E-05	8.69E-06	2.48E-06	3.10E-04	3.72E-06	2.48E-05	2.48E-05	4.96E-04	4.96E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	2.04E-06	8.14E-07	2.04E-06	1.59E-04	2.04E-06	2.04E-05	3.09E-05	3.26E-06	1.22E-06
Grouse	mg/kg-d	0.00E+00	3.03E-06	1.51E-06	9.08E-07	6.66E-04	2.72E-05	6.05E-06	6.05E-06	9.68E-05	2.12E-06
Hare	mg/kg-d	0.00E+00	1.48E-06	6.34E-07	1.06E-06	3.38E-04	4.22E-07	4.22E-06	4.22E-06	2.11E-05	1.48E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	1.35E-04	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	3.00E-04	2.24E-04	2.02E-04	1.61E-02	1.32E-04	2.84E-03	2.24E-03	2.94E-03	1.31E-04
Total	mg/kg-d	0.00E+00	3.00E-04	2.24E-04	2.02E-04	1.61E-02	1.32E-04	2.84E-03	2.24E-03	2.94E-03	1.31E-04
Child											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.86E-06	4.86E-07	2.43E-06	1.46E-05	4.86E-06	1.22E-05	4.86E-06	2.43E-06	9.73E-05
Moose	mg/kg-d	0.00E+00	7.19E-06	1.44E-05	1.44E-05	1.58E-03	1.44E-05	1.44E-05	1.44E-05	1.15E-04	2.88E-06
Lake Whitefish	mg/kg-d	0.00E+00	7.13E-05	1.53E-06	5.09E-06	1.02E-04	2.04E-06	1.02E-05	2.04E-05	7.64E-04	4.07E-06
Other Fish	mg/kg-d	0.00E+00	1.40E-04	1.23E-05	3.50E-06	4.38E-04	5.25E-06	3.50E-05	3.50E-05	7.01E-04	7.01E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	2.87E-06	1.15E-06	2.87E-06	2.24E-04	2.87E-06	2.87E-05	4.37E-05	4.60E-06	1.72E-06
Grouse	mg/kg-d	0.00E+00	4.27E-06	2.14E-06	1.28E-06	9.40E-04	3.84E-05	8.54E-06	8.54E-06	1.37E-04	2.99E-06
Hare	mg/kg-d	0.00E+00	2.09E-06	8.94E-07	1.49E-06	4.77E-04	5.96E-07	5.96E-06	5.96E-06	2.98E-05	2.09E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	2.16E-04	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	4.48E-04	3.47E-04	3.01E-04	2.52E-02	1.91E-04	4.68E-03	3.47E-03	4.72E-03	1.84E-04
Total	mg/kg-d	0.00E+00	4.48E-04	3.47E-04	3.01E-04	2.52E-02	1.91E-04	4.68E-03	3.47E-03	4.72E-03	1.84E-04

Toddler											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	7.27E-06	7.27E-07	3.64E-06	2.18E-05	7.27E-06	1.82E-05	7.27E-06	3.64E-06	1.45E-04
Moose	mg/kg-d	0.00E+00	1.02E-05	2.05E-05	2.05E-05	2.25E-03	2.05E-05	2.05E-05	2.05E-05	1.64E-04	4.10E-06
Lake Whitefish	mg/kg-d	0.00E+00	1.01E-04	2.17E-06	7.25E-06	1.45E-04	2.90E-06	1.45E-05	2.90E-05	1.09E-03	5.80E-06
Other Fish	mg/kg-d	0.00E+00	2.00E-04	1.75E-05	4.99E-06	6.24E-04	7.48E-06	4.99E-05	4.99E-05	9.98E-04	9.98E-06
Caribou	-	-	-	-	-	-	-	-	-	-	-
Berry	mg/kg-d	0.00E+00	4.09E-06	1.64E-06	4.09E-06	3.19E-04	4.09E-06	4.09E-05	6.22E-05	6.55E-06	2.46E-06
Grouse	mg/kg-d	0.00E+00	6.08E-06	3.04E-06	1.83E-06	1.34E-03	5.48E-05	1.22E-05	1.22E-05	1.95E-04	4.26E-06
Hare	mg/kg-d	0.00E+00	2.97E-06	1.27E-06	2.12E-06	6.79E-04	8.49E-07	8.49E-06	8.49E-06	4.24E-05	2.97E-07
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	3.16E-04	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	6.48E-04	4.18E-04	4.31E-04	3.42E-02	2.66E-04	6.63E-03	5.02E-03	6.66E-03	2.71E-04
Total	mg/kg-d	0.00E+00	6.48E-04	4.18E-04	4.31E-04	3.42E-02	2.66E-04	6.63E-03	5.02E-03	6.66E-03	2.71E-04

D.2.1.4 Camsell Portage – Caribou Consumption Scenario

Concentrations		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/L	0	0.0002	0.00001	0.0001	0.0002	0.0001	0.0002	0.0002	0.0001	0.0001
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg ww	0	0.29	0.002	0.005	0.23	0.004	0.02	0.03	0.27	0.002
Other Fish	mg/kg ww	0	0.12	0.002	0.003	0.36	0.002	0.02	0.02	0.18	0.002
Caribou	mg/kg ww	0	0.03	0.01	0.008	2.4	0.02	0.05	0.03	0.17	0.006
Berry	mg/kg ww	0	0.0075	0.0015	0.0015	0.57	0.003	0.0255	0.066	0.0075	0.0045
Grouse	mg/kg ww	0	0.01	0.008	0.002	3.2	0.02	0.02	0.01	0.2	0.001
Hare	mg/kg ww	0	0.01	0.004	0.009	1.9	0.002	0.02	0.02	0.07	0.001
Organ	-	-	-	-	-	-	-	-	-	-	-
Adult											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.24E-06	2.12E-07	2.12E-06	4.24E-06	2.12E-06	4.24E-06	4.24E-06	2.12E-06	2.12E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	2.38E-04	1.64E-06	4.11E-06	1.89E-04	3.29E-06	1.64E-05	2.47E-05	2.22E-04	1.64E-06
Other Fish	mg/kg-d	0.00E+00	2.02E-05	3.37E-07	5.05E-07	6.06E-05	3.37E-07	3.37E-06	3.37E-06	3.03E-05	3.37E-07
Caribou	mg/kg-d	0.00E+00	1.53E-04	5.11E-05	4.09E-05	1.23E-02	1.02E-04	2.56E-04	1.53E-04	8.69E-04	3.07E-05
Berry	mg/kg-d	0.00E+00	1.87E-07	3.75E-08	3.75E-08	1.42E-05	7.50E-08	6.37E-07	1.65E-06	1.87E-07	1.12E-07
Grouse	mg/kg-d	0.00E+00	5.86E-07	4.69E-07	1.17E-07	1.87E-04	1.17E-06	1.17E-06	5.86E-07	1.17E-05	5.86E-08
Hare	mg/kg-d	0.00E+00	3.73E-07	1.49E-07	3.36E-07	7.09E-05	7.46E-08	7.46E-07	7.46E-07	2.61E-06	3.73E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket Foods	mg/kg-d	-	1.09E-04	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05
Total-Ingestion	mg/kg-d	0.00E+00	5.27E-04	1.95E-04	1.84E-04	2.39E-02	2.07E-04	2.33E-03	2.03E-03	2.31E-03	1.09E-04
Total	mg/kg-d	0.00E+00	5.27E-04	1.95E-04	1.84E-04	2.39E-02	2.07E-04	2.33E-03	2.03E-03	2.31E-03	1.09E-04

Teen											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	3.35E-06	1.68E-07	1.68E-06	3.35E-06	1.68E-06	3.35E-06	3.35E-06	1.68E-06	1.68E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	1.31E-04	9.03E-07	2.26E-06	1.04E-04	1.81E-06	9.03E-06	1.36E-05	1.22E-04	9.03E-07
Other Fish	mg/kg-d	0.00E+00	1.11E-05	1.85E-07	2.78E-07	3.33E-05	1.85E-07	1.85E-06	1.85E-06	1.67E-05	1.85E-07
Caribou	mg/kg-d	0.00E+00	1.43E-04	4.78E-05	3.82E-05	1.15E-02	9.56E-05	2.39E-04	1.43E-04	8.13E-04	2.87E-05
Berry	mg/kg-d	0.00E+00	9.05E-07	1.81E-07	1.81E-07	6.88E-05	3.62E-07	3.08E-06	7.97E-06	9.05E-07	5.43E-07
Grouse	mg/kg-d	0.00E+00	1.10E-06	8.79E-07	2.20E-07	3.52E-04	2.20E-06	2.20E-06	1.10E-06	2.20E-05	1.10E-07
Hare	mg/kg-d	0.00E+00	2.62E-07	1.05E-07	2.35E-07	4.97E-05	5.23E-08	5.23E-07	5.23E-07	1.83E-06	2.62E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	1.35E-04	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05
Total-Ingestion	mg/kg-d	0.00E+00	4.26E-04	2.51E-04	2.24E-04	2.55E-02	1.86E-04	3.01E-03	2.32E-03	2.68E-03	8.24E-05
Total	mg/kg-d	0.00E+00	4.26E-04	2.51E-04	2.24E-04	2.55E-02	1.86E-04	3.01E-03	2.32E-03	2.68E-03	8.24E-05
Child											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.86E-06	2.43E-07	2.43E-06	4.86E-06	2.43E-06	4.86E-06	4.86E-06	2.43E-06	2.43E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	3.20E-04	2.21E-06	5.52E-06	2.54E-04	4.42E-06	2.21E-05	3.31E-05	2.98E-04	2.21E-06
Other Fish	mg/kg-d	0.00E+00	2.71E-05	4.52E-07	6.79E-07	8.14E-05	4.52E-07	4.52E-06	4.52E-06	4.07E-05	4.52E-07
Caribou	mg/kg-d	0.00E+00	2.20E-04	7.34E-05	5.87E-05	1.76E-02	1.47E-04	3.67E-04	2.20E-04	1.25E-03	4.41E-05
Berry	mg/kg-d	0.00E+00	1.94E-06	3.89E-07	3.89E-07	1.48E-04	7.77E-07	6.61E-06	1.71E-05	1.94E-06	1.17E-06
Grouse	mg/kg-d	0.00E+00	6.84E-07	5.47E-07	1.37E-07	2.19E-04	1.37E-06	1.37E-06	6.84E-07	1.37E-05	6.84E-08
Hare	mg/kg-d	0.00E+00	8.74E-08	3.50E-08	7.86E-08	1.66E-05	1.75E-08	1.75E-07	1.75E-07	6.12E-07	8.74E-09
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	2.16E-04	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05
Total-Ingestion	mg/kg-d	0.00E+00	7.91E-04	3.91E-04	3.38E-04	3.98E-02	2.78E-04	4.97E-03	3.62E-03	4.57E-03	1.19E-04
Total	mg/kg-d	0.00E+00	7.91E-04	3.91E-04	3.38E-04	3.98E-02	2.78E-04	4.97E-03	3.62E-03	4.57E-03	1.19E-04

Toddler											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	7.27E-06	3.64E-07	3.64E-06	7.27E-06	3.64E-06	7.27E-06	7.27E-06	3.64E-06	3.64E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	6.39E-04	4.40E-06	1.10E-05	5.06E-04	8.81E-06	4.40E-05	6.61E-05	5.95E-04	4.40E-06
Other Fish	mg/kg-d	0.00E+00	5.41E-05	9.02E-07	1.35E-06	1.62E-04	9.02E-07	9.02E-06	9.02E-06	8.12E-05	9.02E-07
Caribou	mg/kg-d	0.00E+00	4.39E-04	1.46E-04	1.17E-04	3.51E-02	2.93E-04	7.32E-04	4.39E-04	2.49E-03	8.78E-05
Berry	mg/kg-d	0.00E+00	3.88E-06	7.75E-07	7.75E-07	2.95E-04	1.55E-06	1.32E-05	3.41E-05	3.88E-06	2.33E-06
Grouse	mg/kg-d	0.00E+00	1.36E-06	1.09E-06	2.73E-07	4.36E-04	2.73E-06	2.73E-06	1.36E-06	2.73E-05	1.36E-07
Hare	mg/kg-d	0.00E+00	1.74E-07	6.97E-08	1.57E-07	3.31E-05	3.48E-08	3.48E-07	3.48E-07	1.22E-06	1.74E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	3.16E-04	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	1.46E-03	5.26E-04	5.21E-04	6.54E-02	4.79E-04	7.27E-03	5.39E-03	7.37E-03	1.98E-04
Total	mg/kg-d	0.00E+00	1.46E-03	5.26E-04	5.21E-04	6.54E-02	4.79E-04	7.27E-03	5.39E-03	7.37E-03	1.98E-04

D.2.1.5 Fond du Lac

Concentrations		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/L	0	0.0001	0.00003	0.0001	0.0002	0.0001	0.0001	0.0003	0.0001	0.0001
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg ww	0	0.22	0.003	0.01	0.2	0.003	0.02	0.04	0.23	0.002
Other Fish	mg/kg ww	0	0.09	0.002	0.005	0.31	0.004	0.02	0.02	0.16	0.001
Caribou	mg/kg ww	0	0.02	0.005	0.005	3.5	0.01	0.02	0.03	0.19	0.001
Berry	mg/kg ww	0	0.0075	0.0015	0.0045	0.6	0.006	0.075	0.165	0.009	0.0015
Grouse	mg/kg ww	0	0.01	0.02	0.006	3.2	0.12	0.04	0.02	0.3	0.001
Hare	mg/kg ww	0	0.01	0.007	0.02	2	0.003	0.01	0.07	0.22	0.001
Organ	-	-	-	-	-	-	-	-	-	-	-
Adult Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	2.12E-06	6.36E-07	2.12E-06	4.24E-06	2.12E-06	2.12E-06	6.36E-06	2.12E-06	2.12E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	1.81E-04	2.47E-06	8.22E-06	1.64E-04	2.47E-06	1.64E-05	3.29E-05	1.89E-04	1.64E-06
Other Fish	mg/kg-d	0.00E+00	1.52E-05	3.37E-07	8.42E-07	5.22E-05	6.74E-07	3.37E-06	3.37E-06	2.69E-05	1.68E-07
Caribou	mg/kg-d	0.00E+00	1.02E-04	2.56E-05	2.56E-05	1.79E-02	5.11E-05	1.02E-04	1.53E-04	9.71E-04	5.11E-06
Berry	mg/kg-d	0.00E+00	1.87E-07	3.75E-08	1.12E-07	1.50E-05	1.50E-07	1.87E-06	4.12E-06	2.25E-07	3.75E-08
Grouse	mg/kg-d	0.00E+00	5.86E-07	1.17E-06	3.51E-07	1.87E-04	7.03E-06	2.34E-06	1.17E-06	1.76E-05	5.86E-08
Hare	mg/kg-d	0.00E+00	3.73E-07	2.61E-07	7.46E-07	7.46E-05	1.12E-07	3.73E-07	2.61E-06	8.20E-06	3.73E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	1.09E-04	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05
Foods	mg/kg-d										
Total Ingestion	mg/kg-d	0.00E+00	4.11E-04	1.72E-04	1.74E-04	2.95E-02	1.61E-04	2.18E-03	2.05E-03	2.39E-03	8.36E-05
Total	mg/kg-d	0.00E+00	4.11E-04	1.72E-04	1.74E-04	2.95E-02	1.61E-04	2.18E-03	2.05E-03	2.39E-03	8.36E-05

Teen												
Intakes		Incremental										
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U	
Drinking Water	mg/kg-d	0.00E+00	1.68E-06	5.03E-07	1.68E-06	3.35E-06	1.68E-06	1.68E-06	5.03E-06	1.68E-06	1.68E-06	
Moose	-	-	-	-	-	-	-	-	-	-	-	
Lake Whitefish	mg/kg-d	0.00E+00	9.94E-05	1.36E-06	4.52E-06	9.03E-05	1.36E-06	9.03E-06	1.81E-05	1.04E-04	9.03E-07	
Other Fish	mg/kg-d	0.00E+00	8.33E-06	1.85E-07	4.63E-07	2.87E-05	3.70E-07	1.85E-06	1.85E-06	1.48E-05	9.25E-08	
Caribou	mg/kg-d	0.00E+00	9.56E-05	2.39E-05	2.39E-05	1.67E-02	4.78E-05	9.56E-05	1.43E-04	9.08E-04	4.78E-06	
Berry	mg/kg-d	0.00E+00	9.05E-07	1.81E-07	5.43E-07	7.24E-05	7.24E-07	9.05E-06	1.99E-05	1.09E-06	1.81E-07	
Grouse	mg/kg-d	0.00E+00	1.10E-06	2.20E-06	6.59E-07	3.52E-04	1.32E-05	4.39E-06	2.20E-06	3.30E-05	1.10E-07	
Hare	mg/kg-d	0.00E+00	2.62E-07	1.83E-07	5.23E-07	5.23E-05	7.85E-08	2.62E-07	1.83E-06	5.76E-06	2.62E-08	
Organ	-	-	-	-	-	-	-	-	-	-	-	
Supermarket	-	-	1.35E-04	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05	
Foods	mg/kg-d											
Total-Ingestion	mg/kg-d	0.00E+00	3.42E-04	2.29E-04	2.13E-04	3.07E-02	1.49E-04	2.88E-03	2.34E-03	2.77E-03	5.81E-05	
Total	mg/kg-d	0.00E+00	3.42E-04	2.29E-04	2.13E-04	3.07E-02	1.49E-04	2.88E-03	2.34E-03	2.77E-03	5.81E-05	
Child												
Intakes		Incremental										
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U	
Drinking Water	mg/kg-d	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U	
Moose	-	0.00E+00	2.43E-06	7.29E-07	2.43E-06	4.86E-06	2.43E-06	2.43E-06	7.29E-06	2.43E-06	2.43E-06	
Lake Whitefish	mg/kg-d	-	-	-	-	-	-	-	-	-	-	
Other Fish	mg/kg-d	0.00E+00	2.43E-04	3.31E-06	1.10E-05	2.21E-04	3.31E-06	2.21E-05	4.42E-05	2.54E-04	2.21E-06	
Caribou	mg/kg-d	0.00E+00	2.04E-05	4.52E-07	1.13E-06	7.01E-05	9.05E-07	4.52E-06	4.52E-06	3.62E-05	2.26E-07	
Berry	mg/kg-d	0.00E+00	1.47E-04	3.67E-05	3.67E-05	2.57E-02	7.34E-05	1.47E-04	2.20E-04	1.39E-03	7.34E-06	
Grouse	mg/kg-d	0.00E+00	1.94E-06	3.89E-07	1.17E-06	1.55E-04	1.55E-06	1.94E-05	4.28E-05	2.33E-06	3.89E-07	
Hare	mg/kg-d	0.00E+00	6.84E-07	1.37E-06	4.10E-07	2.19E-04	8.21E-06	2.74E-06	1.37E-06	2.05E-05	6.84E-08	
Organ	-	0.00E+00	8.74E-08	6.12E-08	1.75E-07	1.75E-05	2.62E-08	8.74E-08	6.12E-07	1.92E-06	8.74E-09	
Supermarket	-	-	-	-	-	-	-	-	-	-	-	
Foods	mg/kg-d											
Total-Ingestion	mg/kg-d	-	2.16E-04	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05	
Total	mg/kg-d	0.00E+00	6.31E-04	3.57E-04	3.23E-04	4.78E-02	2.12E-04	4.76E-03	3.66E-03	4.68E-03	8.10E-05	

Toddler											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	3.64E-06	1.09E-06	3.64E-06	7.27E-06	3.64E-06	3.64E-06	1.09E-05	3.64E-06	3.64E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	4.84E-04	6.61E-06	2.20E-05	4.40E-04	6.61E-06	4.40E-05	8.81E-05	5.06E-04	4.40E-06
Other Fish	mg/kg-d	0.00E+00	4.06E-05	9.02E-07	2.26E-06	1.40E-04	1.80E-06	9.02E-06	9.02E-06	7.22E-05	4.51E-07
Caribou	mg/kg-d	0.00E+00	2.93E-04	7.32E-05	7.32E-05	5.12E-02	1.46E-04	2.93E-04	4.39E-04	2.78E-03	1.46E-05
Berry	mg/kg-d	0.00E+00	3.88E-06	7.75E-07	2.33E-06	3.10E-04	3.10E-06	3.88E-05	8.53E-05	4.65E-06	7.75E-07
Grouse	mg/kg-d	0.00E+00	1.36E-06	2.73E-06	8.18E-07	4.36E-04	1.64E-05	5.45E-06	2.73E-06	4.09E-05	1.36E-07
Hare	mg/kg-d	0.00E+00	1.74E-07	1.22E-07	3.48E-07	3.48E-05	5.23E-08	1.74E-07	1.22E-06	3.83E-06	1.74E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	3.16E-04	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05
Total-Ingestion	mg/kg-d	0.00E+00	1.14E-03	4.57E-04	4.91E-04	8.14E-02	3.46E-04	6.85E-03	5.47E-03	7.58E-03	1.22E-04
Total	mg/kg-d	0.00E+00	1.14E-03	4.57E-04	4.91E-04	8.14E-02	3.46E-04	6.85E-03	5.47E-03	7.58E-03	1.22E-04

D.2.1.6 Stony Rapids

Concentrations		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/L	0	0.0002	0.00002	0.0001	0.0002	0.0001	0.0002	0.0002	0.0001	0.0001
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg ww	0	0.05	0.002	0.008	0.23	0.003	0.02	0.02	0.15	0.002
Other Fish	mg/kg ww	0	0.12	0.002	0.003	0.47	0.003	0.02	0.02	0.16	0.002
Caribou	mg/kg ww	0	0.02	0.005	0.005	3.5	0.01	0.02	0.03	0.19	0.001
Berry	mg/kg ww	0	0.0075	0.003	0.0045	0.495	0.006	0.027	0.111	0.0075	0.0015
Grouse	mg/kg ww	0	0.01	0.01	0.004	1.9	0.22	0.04	0.02	0.18	0.001
Hare	mg/kg ww	0	0.01	0.05	0.01	1.6	0.005	0.01	0.03	0.19	0.001
Organ	-	-	-	-	-	-	-	-	-	-	-
Adult											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.24E-06	4.24E-07	2.12E-06	4.24E-06	2.12E-06	4.24E-06	4.24E-06	2.12E-06	2.12E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	4.11E-05	1.64E-06	6.58E-06	1.89E-04	2.47E-06	1.64E-05	1.64E-05	1.23E-04	1.64E-06
Other Fish	mg/kg-d	0.00E+00	2.02E-05	3.37E-07	5.05E-07	7.92E-05	5.05E-07	3.37E-06	3.37E-06	2.69E-05	3.37E-07
Caribou	mg/kg-d	0.00E+00	1.02E-04	2.56E-05	2.56E-05	1.79E-02	5.11E-05	1.02E-04	1.53E-04	9.71E-04	5.11E-06
Berry	mg/kg-d	0.00E+00	1.87E-07	7.50E-08	1.12E-07	1.24E-05	1.50E-07	6.75E-07	2.77E-06	1.87E-07	3.75E-08
Grouse	mg/kg-d	0.00E+00	5.86E-07	5.86E-07	2.34E-07	1.11E-04	1.29E-05	2.34E-06	1.17E-06	1.05E-05	5.86E-08
Hare	mg/kg-d	0.00E+00	3.73E-07	1.86E-06	3.73E-07	5.97E-05	1.86E-07	3.73E-07	1.12E-06	7.09E-06	3.73E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	1.09E-04	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05
Foods	mg/kg-d	-	-	-	-	-	-	-	-	-	-
Total-Ingestion	mg/kg-d	0.00E+00	2.78E-04	1.72E-04	1.72E-04	2.95E-02	1.67E-04	2.18E-03	2.02E-03	2.31E-03	8.38E-05
Total	mg/kg-d	0.00E+00	2.78E-04	1.72E-04	1.72E-04	2.95E-02	1.67E-04	2.18E-03	2.02E-03	2.31E-03	8.38E-05

Teen											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	3.35E-06	3.35E-07	1.68E-06	3.35E-06	1.68E-06	3.35E-06	3.35E-06	1.68E-06	1.68E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	2.26E-05	9.03E-07	3.61E-06	1.04E-04	1.36E-06	9.03E-06	9.03E-06	6.78E-05	9.03E-07
Other Fish	mg/kg-d	0.00E+00	1.11E-05	1.85E-07	2.78E-07	4.35E-05	2.78E-07	1.85E-06	1.85E-06	1.48E-05	1.85E-07
Caribou	mg/kg-d	0.00E+00	9.56E-05	2.39E-05	2.39E-05	1.67E-02	4.78E-05	9.56E-05	1.43E-04	9.08E-04	4.78E-06
Berry	mg/kg-d	0.00E+00	9.05E-07	3.62E-07	5.43E-07	5.97E-05	7.24E-07	3.26E-06	1.34E-05	9.05E-07	1.81E-07
Grouse	mg/kg-d	0.00E+00	1.10E-06	1.10E-06	4.39E-07	2.09E-04	2.42E-05	4.39E-06	2.20E-06	1.98E-05	1.10E-07
Hare	mg/kg-d	0.00E+00	2.62E-07	1.31E-06	2.62E-07	4.19E-05	1.31E-07	2.62E-07	7.85E-07	4.97E-06	2.62E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	1.35E-04	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	2.70E-04	2.29E-04	2.11E-04	3.06E-02	1.60E-04	2.87E-03	2.32E-03	2.72E-03	5.82E-05
Total	mg/kg-d	0.00E+00	2.70E-04	2.29E-04	2.11E-04	3.06E-02	1.60E-04	2.87E-03	2.32E-03	2.72E-03	5.82E-05
Child											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.86E-06	4.86E-07	2.43E-06	4.86E-06	2.43E-06	4.86E-06	4.86E-06	2.43E-06	2.43E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	5.52E-05	2.21E-06	8.83E-06	2.54E-04	3.31E-06	2.21E-05	2.21E-05	1.66E-04	2.21E-06
Other Fish	mg/kg-d	0.00E+00	2.71E-05	4.52E-07	6.79E-07	1.06E-04	6.79E-07	4.52E-06	4.52E-06	3.62E-05	4.52E-07
Caribou	mg/kg-d	0.00E+00	1.47E-04	3.67E-05	3.67E-05	2.57E-02	7.34E-05	1.47E-04	2.20E-04	1.39E-03	7.34E-06
Berry	mg/kg-d	0.00E+00	1.94E-06	7.77E-07	1.17E-06	1.28E-04	1.55E-06	7.00E-06	2.88E-05	1.94E-06	3.89E-07
Grouse	mg/kg-d	0.00E+00	6.84E-07	6.84E-07	2.74E-07	1.30E-04	1.50E-05	2.74E-06	1.37E-06	1.23E-05	6.84E-08
Hare	mg/kg-d	0.00E+00	8.74E-08	4.37E-07	8.74E-08	1.40E-05	4.37E-08	8.74E-08	2.62E-07	1.66E-06	8.74E-09
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	2.16E-04	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	4.52E-04	3.56E-04	3.20E-04	4.78E-02	2.19E-04	4.75E-03	3.62E-03	4.58E-03	8.13E-05
Total	mg/kg-d	0.00E+00	4.52E-04	3.56E-04	3.20E-04	4.78E-02	2.19E-04	4.75E-03	3.62E-03	4.58E-03	8.13E-05

Toddler											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	7.27E-06	7.27E-07	3.64E-06	7.27E-06	3.64E-06	7.27E-06	7.27E-06	3.64E-06	3.64E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	1.10E-04	4.40E-06	1.76E-05	5.06E-04	6.61E-06	4.40E-05	4.40E-05	3.30E-04	4.40E-06
Other Fish	mg/kg-d	0.00E+00	5.41E-05	9.02E-07	1.35E-06	2.12E-04	1.35E-06	9.02E-06	9.02E-06	7.22E-05	9.02E-07
Caribou	mg/kg-d	0.00E+00	2.93E-04	7.32E-05	7.32E-05	5.12E-02	1.46E-04	2.93E-04	4.39E-04	2.78E-03	1.46E-05
Berry	mg/kg-d	0.00E+00	3.88E-06	1.55E-06	2.33E-06	2.56E-04	3.10E-06	1.40E-05	5.74E-05	3.88E-06	7.75E-07
Grouse	mg/kg-d	0.00E+00	1.36E-06	1.36E-06	5.45E-07	2.59E-04	3.00E-05	5.45E-06	2.73E-06	2.45E-05	1.36E-07
Hare	mg/kg-d	0.00E+00	1.74E-07	8.71E-07	1.74E-07	2.79E-05	8.71E-08	1.74E-07	5.23E-07	3.31E-06	1.74E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket											
Foods	mg/kg-d	-	3.16E-04	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05
Total-Ingestion	mg/kg-d	0.00E+00	7.86E-04	4.55E-04	4.85E-04	8.13E-02	3.60E-04	6.83E-03	5.39E-03	7.38E-03	1.23E-04
Total	mg/kg-d	0.00E+00	7.86E-04	4.55E-04	4.85E-04	8.13E-02	3.60E-04	6.83E-03	5.39E-03	7.38E-03	1.23E-04

D.2.1.7 Black Lake

Concentrations		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/L	0	0.0002	0.00001	0.0001	0.0003	0.0001	0.0002	0.0002	0.0001	0.0001
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg ww	0	0.22	0.002	0.004	0.22	0.002	0.02	0.02	0.31	0.002
Other Fish	mg/kg ww	0	0.08	0.002	0.003	0.38	0.003	0.02	0.01	0.16	0.001
Caribou	mg/kg ww	0	0.02	0.005	0.005	3.5	0.01	0.02	0.03	0.19	0.001
Berry	mg/kg ww	0	0.0075	0.0015	0.003	0.495	0.0075	0.0255	0.087	0.0075	0.0015
Grouse	mg/kg ww	0	0.01	0.007	0.02	3.1	0.36	0.03	0.04	0.26	0.001
Hare	mg/kg ww	0	0.01	0.01	0.01	2.5	0.004	0.01	0.05	0.32	0.001
Organ	-	-	-	-	-	-	-	-	-	-	-
Adult											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.24E-06	2.12E-07	2.12E-06	6.36E-06	2.12E-06	4.24E-06	4.24E-06	2.12E-06	2.12E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	1.81E-04	1.64E-06	3.29E-06	1.81E-04	1.64E-06	1.64E-05	1.64E-05	2.55E-04	1.64E-06
Other Fish	mg/kg-d	0.00E+00	1.35E-05	3.37E-07	5.05E-07	6.40E-05	5.05E-07	3.37E-06	1.68E-06	2.69E-05	1.68E-07
Caribou	mg/kg-d	0.00E+00	1.02E-04	2.56E-05	2.56E-05	1.79E-02	5.11E-05	1.02E-04	1.53E-04	9.71E-04	5.11E-06
Berry	mg/kg-d	0.00E+00	1.87E-07	3.75E-08	7.50E-08	1.24E-05	1.87E-07	6.37E-07	2.17E-06	1.87E-07	3.75E-08
Grouse	mg/kg-d	0.00E+00	5.86E-07	4.10E-07	1.17E-06	1.82E-04	2.11E-05	1.76E-06	2.34E-06	1.52E-05	5.86E-08
Hare	mg/kg-d	0.00E+00	3.73E-07	3.73E-07	3.73E-07	9.32E-05	1.49E-07	3.73E-07	1.86E-06	1.19E-05	3.73E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	1.09E-04	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	4.11E-04	1.70E-04	1.69E-04	2.96E-02	1.74E-04	2.18E-03	2.02E-03	2.45E-03	8.36E-05
Total	mg/kg-d	0.00E+00	4.11E-04	1.70E-04	1.69E-04	2.96E-02	1.74E-04	2.18E-03	2.02E-03	2.45E-03	8.36E-05

Teen											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	3.35E-06	1.68E-07	1.68E-06	5.03E-06	1.68E-06	3.35E-06	3.35E-06	1.68E-06	1.68E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	9.94E-05	9.03E-07	1.81E-06	9.94E-05	9.03E-07	9.03E-06	9.03E-06	1.40E-04	9.03E-07
Other Fish	mg/kg-d	0.00E+00	7.40E-06	1.85E-07	2.78E-07	3.52E-05	2.78E-07	1.85E-06	9.25E-07	1.48E-05	9.25E-08
Caribou	mg/kg-d	0.00E+00	9.56E-05	2.39E-05	2.39E-05	1.67E-02	4.78E-05	9.56E-05	1.43E-04	9.08E-04	4.78E-06
Berry	mg/kg-d	0.00E+00	9.05E-07	1.81E-07	3.62E-07	5.97E-05	9.05E-07	3.08E-06	1.05E-05	9.05E-07	1.81E-07
Grouse	mg/kg-d	0.00E+00	1.10E-06	7.69E-07	2.20E-06	3.41E-04	3.95E-05	3.30E-06	4.39E-06	2.86E-05	1.10E-07
Hare	mg/kg-d	0.00E+00	2.62E-07	2.62E-07	2.62E-07	6.54E-05	1.05E-07	2.62E-07	1.31E-06	8.37E-06	2.62E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	1.35E-04	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	3.43E-04	2.27E-04	2.11E-04	3.07E-02	1.75E-04	2.87E-03	2.32E-03	2.80E-03	5.81E-05
Total	mg/kg-d	0.00E+00	3.43E-04	2.27E-04	2.11E-04	3.07E-02	1.75E-04	2.87E-03	2.32E-03	2.80E-03	5.81E-05
Child											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	4.86E-06	2.43E-07	2.43E-06	7.29E-06	2.43E-06	4.86E-06	4.86E-06	2.43E-06	2.43E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	2.43E-04	2.21E-06	4.42E-06	2.43E-04	2.21E-06	2.21E-05	2.21E-05	3.42E-04	2.21E-06
Other Fish	mg/kg-d	0.00E+00	1.81E-05	4.52E-07	6.79E-07	8.60E-05	6.79E-07	4.52E-06	2.26E-06	3.62E-05	2.26E-07
Caribou	mg/kg-d	0.00E+00	1.47E-04	3.67E-05	3.67E-05	2.57E-02	7.34E-05	1.47E-04	2.20E-04	1.39E-03	7.34E-06
Berry	mg/kg-d	0.00E+00	1.94E-06	3.89E-07	7.77E-07	1.28E-04	1.94E-06	6.61E-06	2.25E-05	1.94E-06	3.89E-07
Grouse	mg/kg-d	0.00E+00	6.84E-07	4.79E-07	1.37E-06	2.12E-04	2.46E-05	2.05E-06	2.74E-06	1.78E-05	6.84E-08
Hare	mg/kg-d	0.00E+00	8.74E-08	8.74E-08	8.74E-08	2.18E-05	3.50E-08	8.74E-08	4.37E-07	2.80E-06	8.74E-09
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	2.16E-04	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	6.31E-04	3.55E-04	3.16E-04	4.79E-02	2.27E-04	4.75E-03	3.61E-03	4.77E-03	8.10E-05
Total	mg/kg-d	0.00E+00	6.31E-04	3.55E-04	3.16E-04	4.79E-02	2.27E-04	4.75E-03	3.61E-03	4.77E-03	8.10E-05

Toddler												
Intakes		Incremental	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U	
Drinking Water	mg/kg-d	0.00E+00	7.27E-06	3.64E-07	3.64E-06	1.09E-05	3.64E-06	7.27E-06	7.27E-06	3.64E-06	3.64E-06	
Moose	-	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	4.84E-04	4.40E-06	8.81E-06	4.84E-04	4.40E-06	4.40E-05	4.40E-05	6.83E-04	4.40E-06	
Other Fish	mg/kg-d	0.00E+00	3.61E-05	9.02E-07	1.35E-06	1.71E-04	1.35E-06	9.02E-06	4.51E-06	7.22E-05	4.51E-07	
Caribou	mg/kg-d	0.00E+00	2.93E-04	7.32E-05	7.32E-05	5.12E-02	1.46E-04	2.93E-04	4.39E-04	2.78E-03	1.46E-05	
Berry	mg/kg-d	0.00E+00	3.88E-06	7.75E-07	1.55E-06	2.56E-04	3.88E-06	1.32E-05	4.50E-05	3.88E-06	7.75E-07	
Grouse	mg/kg-d	0.00E+00	1.36E-06	9.55E-07	2.73E-06	4.23E-04	4.91E-05	4.09E-06	5.45E-06	3.55E-05	1.36E-07	
Hare	mg/kg-d	0.00E+00	1.74E-07	1.74E-07	1.74E-07	4.36E-05	6.97E-08	1.74E-07	8.71E-07	5.58E-06	1.74E-08	
Organ	-	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	3.16E-04	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05	
Foods	mg/kg-d											
Total-Ingestion	mg/kg-d	0.00E+00	1.14E-03	4.52E-04	4.78E-04	8.14E-02	3.77E-04	6.83E-03	5.38E-03	7.75E-03	1.22E-04	
Total	mg/kg-d	0.00E+00	1.14E-03	4.52E-04	4.78E-04	8.14E-02	3.77E-04	6.83E-03	5.38E-03	7.75E-03	1.22E-04	

D.2.1.8 Wollaston Lake

Concentrations		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/L	0	0.0001	0.0001	0.0001	0.0002	0.0001	0.001	0.0001	0.0001	0.0001
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg ww	0	0.16	0.002	0.003	0.2	0.002	0.02	0.01	0.49	0.001
Other Fish	mg/kg ww	0	0.05	0.002	0.003	0.42	0.003	0.02	0.02	0.22	0.001
Caribou	mg/kg ww	0	0.02	0.005	0.005	3.5	0.01	0.02	0.03	0.19	0.001
Berry	mg/kg ww	0	0.0075	0.0015	0.009	0.51	0.003	0.042	0.129	0.0075	0.0015
Grouse	mg/kg ww	0	0.01	0.003	0.004	2.1	0.15	0.02	0.02	0.26	0.001
Hare	mg/kg ww	0	0.01	0.01	0.008	2.1	0.006	0.01	0.03	0.14	0.001
Organ	-	-	-	-	-	-	-	-	-	-	-
Adult Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	2.12E-06	2.12E-06	2.12E-06	4.24E-06	2.12E-06	2.12E-05	2.12E-06	2.12E-06	2.12E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	1.32E-04	1.64E-06	2.47E-06	1.64E-04	1.64E-06	1.64E-05	8.22E-06	4.03E-04	8.22E-07
Other Fish	mg/kg-d	0.00E+00	8.42E-06	3.37E-07	5.05E-07	7.07E-05	5.05E-07	3.37E-06	3.37E-06	3.71E-05	1.68E-07
Caribou	mg/kg-d	0.00E+00	1.02E-04	2.56E-05	2.56E-05	1.79E-02	5.11E-05	1.02E-04	1.53E-04	9.71E-04	5.11E-06
Berry	mg/kg-d	0.00E+00	1.87E-07	3.75E-08	2.25E-07	1.27E-05	7.50E-08	1.05E-06	3.22E-06	1.87E-07	3.75E-08
Grouse	mg/kg-d	0.00E+00	5.86E-07	1.76E-07	2.34E-07	1.23E-04	8.79E-06	1.17E-06	1.17E-06	1.52E-05	5.86E-08
Hare	mg/kg-d	0.00E+00	3.73E-07	3.73E-07	2.98E-07	7.83E-05	2.24E-07	3.73E-07	1.12E-06	5.22E-06	3.73E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	1.09E-04	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05
Foods	mg/kg-d										
Total Ingestion	mg/kg-d	0.00E+00	3.55E-04	1.71E-04	1.68E-04	2.95E-02	1.62E-04	2.20E-03	2.02E-03	2.60E-03	8.28E-05
Total	mg/kg-d	0.00E+00	3.55E-04	1.71E-04	1.68E-04	2.95E-02	1.62E-04	2.20E-03	2.02E-03	2.60E-03	8.28E-05

Teen											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	1.68E-06	1.68E-06	1.68E-06	3.35E-06	1.68E-06	1.68E-05	1.68E-06	1.68E-06	1.68E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	7.23E-05	9.03E-07	1.36E-06	9.03E-05	9.03E-07	9.03E-06	4.52E-06	2.21E-04	4.52E-07
Other Fish	mg/kg-d	0.00E+00	4.63E-06	1.85E-07	2.78E-07	3.89E-05	2.78E-07	1.85E-06	1.85E-06	2.04E-05	9.25E-08
Caribou	mg/kg-d	0.00E+00	9.56E-05	2.39E-05	2.39E-05	1.67E-02	4.78E-05	9.56E-05	1.43E-04	9.08E-04	4.78E-06
Berry	mg/kg-d	0.00E+00	9.05E-07	1.81E-07	1.09E-06	6.15E-05	3.62E-07	5.07E-06	1.56E-05	9.05E-07	1.81E-07
Grouse	mg/kg-d	0.00E+00	1.10E-06	3.30E-07	4.39E-07	2.31E-04	1.65E-05	2.20E-06	2.20E-06	2.86E-05	1.10E-07
Hare	mg/kg-d	0.00E+00	2.62E-07	2.62E-07	2.09E-07	5.49E-05	1.57E-07	2.62E-07	7.85E-07	3.66E-06	2.62E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	1.35E-04	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	3.11E-04	2.28E-04	2.09E-04	3.06E-02	1.51E-04	2.89E-03	2.32E-03	2.89E-03	5.76E-05
Total	mg/kg-d	0.00E+00	3.11E-04	2.28E-04	2.09E-04	3.06E-02	1.51E-04	2.89E-03	2.32E-03	2.89E-03	5.76E-05
Child											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	2.43E-06	2.43E-06	2.43E-06	4.86E-06	2.43E-06	2.43E-05	2.43E-06	2.43E-06	2.43E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	1.77E-04	2.21E-06	3.31E-06	2.21E-04	2.21E-06	2.21E-05	1.10E-05	5.41E-04	1.10E-06
Other Fish	mg/kg-d	0.00E+00	1.13E-05	4.52E-07	6.79E-07	9.50E-05	6.79E-07	4.52E-06	4.52E-06	4.98E-05	2.26E-07
Caribou	mg/kg-d	0.00E+00	1.47E-04	3.67E-05	3.67E-05	2.57E-02	7.34E-05	1.47E-04	2.20E-04	1.39E-03	7.34E-06
Berry	mg/kg-d	0.00E+00	1.94E-06	3.89E-07	2.33E-06	1.32E-04	7.77E-07	1.09E-05	3.34E-05	1.94E-06	3.89E-07
Grouse	mg/kg-d	0.00E+00	6.84E-07	2.05E-07	2.74E-07	1.44E-04	1.03E-05	1.37E-06	1.37E-06	1.78E-05	6.84E-08
Hare	mg/kg-d	0.00E+00	8.74E-08	8.74E-08	6.99E-08	1.84E-05	5.24E-08	8.74E-08	2.62E-07	1.22E-06	8.74E-09
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	2.16E-04	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	5.56E-04	3.56E-04	3.16E-04	4.78E-02	2.12E-04	4.77E-03	3.61E-03	4.98E-03	7.99E-05
Total	mg/kg-d	0.00E+00	5.56E-04	3.56E-04	3.16E-04	4.78E-02	2.12E-04	4.77E-03	3.61E-03	4.98E-03	7.99E-05

Toddler											
Intakes		Incremental									
Pathway	Units	As	As	Cd	Co	Cu	Pb	Mo	Ni	Se	U
Drinking Water	mg/kg-d	0.00E+00	3.64E-06	3.64E-06	3.64E-06	7.27E-06	3.64E-06	3.64E-05	3.64E-06	3.64E-06	3.64E-06
Moose	-	-	-	-	-	-	-	-	-	-	-
Lake Whitefish	mg/kg-d	0.00E+00	3.52E-04	4.40E-06	6.61E-06	4.40E-04	4.40E-06	4.40E-05	2.20E-05	1.08E-03	2.20E-06
Other Fish	mg/kg-d	0.00E+00	2.26E-05	9.02E-07	1.35E-06	1.89E-04	1.35E-06	9.02E-06	9.02E-06	9.92E-05	4.51E-07
Caribou	mg/kg-d	0.00E+00	2.93E-04	7.32E-05	7.32E-05	5.12E-02	1.46E-04	2.93E-04	4.39E-04	2.78E-03	1.46E-05
Berry	mg/kg-d	0.00E+00	3.88E-06	7.75E-07	4.65E-06	2.64E-04	1.55E-06	2.17E-05	6.67E-05	3.88E-06	7.75E-07
Grouse	mg/kg-d	0.00E+00	1.36E-06	4.09E-07	5.45E-07	2.86E-04	2.05E-05	2.73E-06	2.73E-06	3.55E-05	1.36E-07
Hare	mg/kg-d	0.00E+00	1.74E-07	1.74E-07	1.39E-07	3.66E-05	1.05E-07	1.74E-07	5.23E-07	2.44E-06	1.74E-08
Organ	-	-	-	-	-	-	-	-	-	-	-
Supermarket	-	-	3.16E-04	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05
Foods	mg/kg-d										
Total-Ingestion	mg/kg-d	0.00E+00	9.93E-04	4.55E-04	4.76E-04	8.13E-02	3.46E-04	6.87E-03	5.38E-03	8.17E-03	1.20E-04
Total	mg/kg-d	0.00E+00	9.93E-04	4.55E-04	4.76E-04	8.13E-02	3.46E-04	6.87E-03	5.38E-03	8.17E-03	1.20E-04

D.2.2 Radionuclides

D.2.2.1 Camsell Portage

No incremental concentrations (above background), so no incremental radiological dose to Camsell Portage residents.

D.2.2.2 Uranium City

Concentrations		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Bq/L	0.04836	0	0.001	0	0
Moose	Bq/g ww	0.0248	0	0	0	0
Lake Whitefish	Bq/g ww	0	0	0	0	0.0001
Other Fish	Bq/g ww	0	0	0.00002	0	0
Caribou	-	-	-	-	-	-
Berry	Bq/g ww	0	0	0.0006	0.00015	0.00015
Grouse	Bq/g ww	0.0744	0	0.0003	No Data	0.0001
Hare	Bq/g ww	0	0	0	0	0
Organ	-	-	-	-	-	-
Adult						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	2.49E-06	0.00E+00	1.53E-07	0.00E+00	0.00E+00
Moose	Sv/yr	2.88E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E-06
Other Fish	Sv/yr	0.00E+00	0.00E+00	1.68E-07	0.00E+00	0.00E+00
Caribou	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	1.10E-06	6.80E-07	1.18E-06
Grouse	Sv/yr	5.12E-05	0.00E+00	6.16E-07	0.00E+00	8.79E-07
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	8.25E-05	0.00E+00	2.04E-06	6.80E-07	3.11E-06
Total	Sv/yr	8.25E-05	0.00E+00	2.04E-06	6.80E-07	3.11E-06

Teen						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	2.49E-06	0.00E+00	5.48E-07	0.00E+00	0.00E+00
Moose	Sv/yr	3.88E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E-06
Other Fish	Sv/yr	0.00E+00	0.00E+00	8.11E-07	0.00E+00	0.00E+00
Caribou	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	5.32E-06	1.69E-06	1.42E-06
Grouse	Sv/yr	6.92E-05	0.00E+00	2.97E-06	0.00E+00	1.06E-06
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	1.10E-04	0.00E+00	9.65E-06	1.69E-06	3.73E-06
Total	Sv/yr	1.10E-04	0.00E+00	9.65E-06	1.69E-06	3.73E-06
Child						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	2.40E-06	0.00E+00	1.81E-07	0.00E+00	0.00E+00
Moose	Sv/yr	3.64E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.69E-06
Other Fish	Sv/yr	0.00E+00	0.00E+00	2.61E-07	0.00E+00	0.00E+00
Caribou	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	1.71E-06	1.52E-06	3.04E-06
Grouse	Sv/yr	6.49E-05	0.00E+00	9.54E-07	0.00E+00	2.26E-06
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	1.04E-04	0.00E+00	3.11E-06	1.52E-06	7.98E-06
Total	Sv/yr	1.04E-04	0.00E+00	3.11E-06	1.52E-06	7.98E-06

Toddler		Incremental	Incremental	Incremental	Incremental	Incremental
Intakes		U-238	Th-230	Ra-226	Pb-210	Po-210
Pathway	Units					
Drinking Water	Sv/yr	2.65E-06	0.00E+00	2.10E-07	0.00E+00	0.00E+00
Moose	Sv/yr	3.82E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.84E-06
Other Fish	Sv/yr	0.00E+00	0.00E+00	2.88E-07	0.00E+00	0.00E+00
Caribou	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	1.89E-06	1.77E-06	4.34E-06
Grouse	Sv/yr	6.81E-05	0.00E+00	1.06E-06	0.00E+00	3.22E-06
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	1.09E-04	0.00E+00	3.45E-06	1.77E-06	1.14E-05
Total	Sv/yr	1.09E-04	0.00E+00	3.45E-06	1.77E-06	1.14E-05

D.2.2.3 Uranium City Crackingstone River

Concentrations		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Bq/L	0.04836	0	0.001	0	0
Moose	Bq/g ww	0.0248	0	0	0	0
Lake Whitefish	Bq/g ww	0.0744	0	0	0	0.0001
Other Fish	Bq/g ww	0.0248	0	0.00003	0	0.0007
Caribou	-	-	-	-	-	-
Berry	Bq/g ww	0	0	0.0006	0.00015	0.00015
Grouse	Bq/g ww	0.0744	0	0.0003	No data	0.0001
Hare	Bq/g ww	0	0	0	0	0
Organ	-	-	-	-	-	-
Adult						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	2.49E-06	0.00E+00	1.53E-07	0.00E+00	0.00E+00
Moose	Sv/yr	2.88E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	6.11E-05	0.00E+00	0.00E+00	0.00E+00	1.05E-06
Other Fish	Sv/yr	7.00E-05	0.00E+00	2.52E-07	0.00E+00	2.52E-05
Caribou	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	1.10E-06	6.80E-07	1.18E-06
Grouse	Sv/yr	5.12E-05	0.00E+00	6.16E-07	0.00E+00	8.79E-07
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	2.14E-04	0.00E+00	2.13E-06	6.80E-07	2.83E-05
Total	Sv/yr	2.14E-04	0.00E+00	2.13E-06	6.80E-07	2.83E-05

Teen						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	2.49E-06	0.00E+00	5.48E-07	0.00E+00	0.00E+00
Moose	Sv/yr	3.88E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	8.24E-05	0.00E+00	0.00E+00	0.00E+00	1.26E-06
Other Fish	Sv/yr	9.46E-05	0.00E+00	1.22E-06	0.00E+00	3.03E-05
Caribou	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	5.32E-06	1.69E-06	1.42E-06
Grouse	Sv/yr	6.92E-05	0.00E+00	2.97E-06	0.00E+00	1.06E-06
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	2.87E-04	0.00E+00	1.01E-05	1.69E-06	3.40E-05
Total	Sv/yr	2.87E-04	0.00E+00	1.01E-05	1.69E-06	3.40E-05
Child						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	2.40E-06	0.00E+00	1.81E-07	0.00E+00	0.00E+00
Moose	Sv/yr	3.64E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	7.73E-05	0.00E+00	0.00E+00	0.00E+00	2.69E-06
Other Fish	Sv/yr	8.87E-05	0.00E+00	3.91E-07	0.00E+00	6.48E-05
Caribou	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	1.71E-06	1.52E-06	3.04E-06
Grouse	Sv/yr	6.49E-05	0.00E+00	9.54E-07	0.00E+00	2.26E-06
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	2.70E-04	0.00E+00	3.24E-06	1.52E-06	7.28E-05
Total	Sv/yr	2.70E-04	0.00E+00	3.24E-06	1.52E-06	7.28E-05

Toddler		Incremental	Incremental	Incremental	Incremental	Incremental
Intakes		U-238	Th-230	Ra-226	Pb-210	Po-210
Pathway	Units					
Drinking Water	Sv/yr	2.65E-06	0.00E+00	2.10E-07	0.00E+00	0.00E+00
Moose	Sv/yr	3.82E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	8.12E-05	0.00E+00	0.00E+00	0.00E+00	3.84E-06
Other Fish	Sv/yr	9.31E-05	0.00E+00	4.33E-07	0.00E+00	9.25E-05
Caribou	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	1.89E-06	1.77E-06	4.34E-06
Grouse	Sv/yr	6.81E-05	0.00E+00	1.06E-06	0.00E+00	3.22E-06
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	2.83E-04	0.00E+00	3.59E-06	1.77E-06	1.04E-04
Total	Sv/yr	2.83E-04	0.00E+00	3.59E-06	1.77E-06	1.04E-04

D.2.2.4 Fond du Lac

Concentrations		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Bq/L	0	0	0	0	0
Moose	-	-	-	-	-	-
Lake Whitefish	Bq/g ww	0	0	0.0002	0	0
Other Fish	Bq/g ww	0	0	1E-05	0.001	0
Caribou	Bq/g ww	0	0	0.0006	0	0
Berry	Bq/g ww	0	0	0	0	0
Grouse	Bq/g ww	0	0	0	No data	0.0006
Hare	Bq/g ww	0	0	0.0001	0.001	0
Organ	-	-	-	-	-	-

Adult Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	1.19E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	1.22E-08	3.00E-06	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	2.22E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-06
Hare	Sv/yr	0.00E+00	0.00E+00	2.69E-08	6.64E-07	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	2.34E-05	3.66E-06	1.09E-06
Total	Sv/yr	0.00E+00	0.00E+00	2.34E-05	3.66E-06	1.09E-06

Teen						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	2.95E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	3.02E-08	3.83E-06	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	9.38E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-06
Hare	Sv/yr	0.00E+00	0.00E+00	8.55E-08	1.08E-06	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	9.68E-05	4.91E-06	2.30E-06
Total	Sv/yr	0.00E+00	0.00E+00	9.68E-05	4.91E-06	2.30E-06
Child						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	1.64E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	1.68E-08	5.98E-06	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	3.28E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.17E-06
Hare	Sv/yr	0.00E+00	0.00E+00	6.51E-09	2.31E-07	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	3.45E-05	6.21E-06	2.17E-06
Total	Sv/yr	0.00E+00	0.00E+00	3.45E-05	6.21E-06	2.17E-06

Toddler		Incremental	Incremental	Incremental	Incremental	Incremental
Intakes		U-238	Th-230	Ra-226	Pb-210	Po-210
Pathway	Units					
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	2.55E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	2.61E-08	9.78E-06	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	5.08E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.34E-06
Hare	Sv/yr	0.00E+00	0.00E+00	1.01E-08	3.78E-07	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	5.34E-05	1.02E-05	4.34E-06
Total	Sv/yr	0.00E+00	0.00E+00	5.34E-05	1.02E-05	4.34E-06

D.2.2.5 Stony Rapids

Concentrations		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Bq/L	0	0	0.001	0	0
Moose	-	-	-	-	-	-
Lake Whitefish	Bq/g ww	0	0	0.0002	0	0
Other Fish	Bq/g ww	0	0	0.00004	0	0
Caribou	Bq/g ww	0	0	0.0006	0	0
Berry	Bq/g ww	0	0	0.00075	0	0
Grouse	Bq/g ww	0	0	0.0001	No data	0.0001
Hare	Bq/g ww	0	0	0	0	0
Organ	-	-	-	-	-	-

Adult Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	1.53E-07	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	1.19E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	4.87E-08	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	2.22E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	1.35E-07	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	4.23E-08	0.00E+00	1.81E-07
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	2.37E-05	0.00E+00	1.81E-07
Total	Sv/yr	0.00E+00	0.00E+00	2.37E-05	0.00E+00	1.81E-07

Teen			Incremental	Incremental	Incremental	Incremental	Incremental
Intakes			U-238	Th-230	Ra-226	Pb-210	Po-210
Pathway	Units						
Drinking Water	Sv/yr		0.00E+00	0.00E+00	5.48E-07	0.00E+00	0.00E+00
Moose	-		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr		0.00E+00	0.00E+00	2.95E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr		0.00E+00	0.00E+00	1.21E-07	0.00E+00	0.00E+00
Caribou	Sv/yr		0.00E+00	0.00E+00	9.38E-05	0.00E+00	0.00E+00
Berry	Sv/yr		0.00E+00	0.00E+00	2.96E-06	0.00E+00	0.00E+00
Grouse	Sv/yr		0.00E+00	0.00E+00	3.59E-07	0.00E+00	3.83E-07
Hare	Sv/yr		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr		0.00E+00	0.00E+00	1.01E-04	0.00E+00	3.83E-07
Total	Sv/yr		0.00E+00	0.00E+00	1.01E-04	0.00E+00	3.83E-07
Child			Incremental	Incremental	Incremental	Incremental	Incremental
Intakes			U-238	Th-230	Ra-226	Pb-210	Po-210
Pathway	Units						
Drinking Water	Sv/yr		0.00E+00	0.00E+00	1.81E-07	0.00E+00	0.00E+00
Moose	-		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr		0.00E+00	0.00E+00	1.64E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr		0.00E+00	0.00E+00	6.74E-08	0.00E+00	0.00E+00
Caribou	Sv/yr		0.00E+00	0.00E+00	3.28E-05	0.00E+00	0.00E+00
Berry	Sv/yr		0.00E+00	0.00E+00	1.45E-06	0.00E+00	0.00E+00
Grouse	Sv/yr		0.00E+00	0.00E+00	5.09E-08	0.00E+00	3.61E-07
Hare	Sv/yr		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr		0.00E+00	0.00E+00	3.62E-05	0.00E+00	3.61E-07
Total	Sv/yr		0.00E+00	0.00E+00	3.62E-05	0.00E+00	3.61E-07

Toddler		Incremental	Incremental	Incremental	Incremental	Incremental
Intakes		U-238	Th-230	Ra-226	Pb-210	Po-210
Pathway	Units					
Drinking Water	Sv/yr	0.00E+00	0.00E+00	2.10E-07	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	2.55E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	1.04E-07	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	5.08E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	2.24E-06	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	7.88E-08	0.00E+00	7.23E-07
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	5.60E-05	0.00E+00	7.23E-07
Total	Sv/yr	0.00E+00	0.00E+00	5.60E-05	0.00E+00	7.23E-07

D.2.2.6 Black Lake

Concentrations		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Bq/L	0	0	0	0	0
Moose	-	-	-	-	-	-
Lake Whitefish	Bq/g ww	0	0	0.0003	0	0
Other Fish	Bq/g ww	0	0	0.00034	0	0
Caribou	Bq/g ww	0	0	0.0006	0	0
Berry	Bq/g ww	0	0	0.00015	0	0
Grouse	Bq/g ww	0	0	0	NO data	0.0001
Hare	Bq/g ww	0	0	0.0001	0	0
Organ	-	-	-	-	-	-

Adult Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	1.78E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	4.14E-07	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	2.22E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	2.71E-08	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-07
Hare	Sv/yr	0.00E+00	0.00E+00	2.69E-08	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	2.44E-05	0.00E+00	1.81E-07
Total	Sv/yr	0.00E+00	0.00E+00	2.44E-05	0.00E+00	1.81E-07

Teen						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	4.43E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	1.03E-06	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	9.38E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	5.92E-07	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.83E-07
Hare	Sv/yr	0.00E+00	0.00E+00	8.55E-08	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	9.99E-05	0.00E+00	3.83E-07
Total	Sv/yr	0.00E+00	0.00E+00	9.99E-05	0.00E+00	3.83E-07
Child						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	2.47E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	5.73E-07	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	3.28E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	2.89E-07	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.61E-07
Hare	Sv/yr	0.00E+00	0.00E+00	6.51E-09	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	3.61E-05	0.00E+00	3.61E-07
Total	Sv/yr	0.00E+00	0.00E+00	3.61E-05	0.00E+00	3.61E-07

Toddler						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	3.82E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	8.87E-07	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	5.08E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	4.48E-07	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.23E-07
Hare	Sv/yr	0.00E+00	0.00E+00	1.01E-08	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	5.59E-05	0.00E+00	7.23E-07
Total	Sv/yr	0.00E+00	0.00E+00	5.59E-05	0.00E+00	7.23E-07

D.2.2.7 Wollaston Lake

Concentrations		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Bq/L	0	0	0	0	0
Moose	-	-	-	-	-	-
Lake Whitefish	Bq/g ww	0	0	0.0007	0	0
Other Fish	Bq/g ww	0	0	0.00003	0	0
Caribou	Bq/g ww	0	0	0.0006	0	0
Berry	Bq/g ww	0	0	0.0003	0	0
Grouse	Bq/g ww	0	0	0.0001	No data	0.0001
Hare	Bq/g ww	0	0	0	0	0
Organ	-	-	-	-	-	-

Adult Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	4.16E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	3.65E-08	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	2.22E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	5.42E-08	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	4.23E-08	0.00E+00	1.81E-07
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	2.64E-05	0.00E+00	1.81E-07
Total	Sv/yr	0.00E+00	0.00E+00	2.64E-05	0.00E+00	1.81E-07

Teen						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	1.03E-05	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	9.07E-08	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	9.38E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	1.18E-06	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	3.59E-07	0.00E+00	3.83E-07
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	1.06E-04	0.00E+00	3.83E-07
Total	Sv/yr	0.00E+00	0.00E+00	1.06E-04	0.00E+00	3.83E-07
Child						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	5.76E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	5.05E-08	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	3.28E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	5.79E-07	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	5.09E-08	0.00E+00	3.61E-07
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	3.92E-05	0.00E+00	3.61E-07
Total	Sv/yr	0.00E+00	0.00E+00	3.92E-05	0.00E+00	3.61E-07

Toddler						
Intakes		Incremental	Incremental	Incremental	Incremental	Incremental
Pathway	Units	U-238	Th-230	Ra-226	Pb-210	Po-210
Drinking Water	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Moose	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lake Whitefish	Sv/yr	0.00E+00	0.00E+00	8.91E-06	0.00E+00	0.00E+00
Other Fish	Sv/yr	0.00E+00	0.00E+00	7.82E-08	0.00E+00	0.00E+00
Caribou	Sv/yr	0.00E+00	0.00E+00	5.08E-05	0.00E+00	0.00E+00
Berry	Sv/yr	0.00E+00	0.00E+00	8.96E-07	0.00E+00	0.00E+00
Grouse	Sv/yr	0.00E+00	0.00E+00	7.88E-08	0.00E+00	7.23E-07
Hare	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total-Ingestion	Sv/yr	0.00E+00	0.00E+00	6.07E-05	0.00E+00	7.23E-07
Total	Sv/yr	0.00E+00	0.00E+00	6.07E-05	0.00E+00	7.23E-07

D.2.3 Sensitivity Analysis – Organ Consumption for Adults and Teens

The calculated intakes are presented herein for exposure of adults and teens to lead and cadmium in moose organs for residents of Camsell Portage and Uranium City, and for exposure to cadmium in caribou organ meat for residents of Camsell Portage (caribou consumption scenario), Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake. The intakes for all other COPC are the same as those presented in Section D.2.1.

D.2.3.1 Camsell Portage

Concentrations						
Pathway	Units	Cd	Pb			
Drinking Water	mg/L	0.00001	0.0001			
Moose	mg/kg ww	0.03	0.02			
Lake Whitefish	mg/kg ww	0.002	0.004			
Other Fish	mg/kg ww	0.002	0.002			
Caribou	-	-	-			
Berry	mg/kg ww	0.0015	0.003			
Grouse	mg/kg ww	0.008	0.02			
Hare	mg/kg ww	0.004	0.002			
Organ	mg/kg ww	4	0.002			
Intakes		Adult		Teen		
Pathway	Units	Cd	Pb	Cd	Pb	
Drinking Water	mg/kg-d	2.12E-07	2.12E-06	1.68E-07	1.68E-06	
Moose	mg/kg-d	1.43E-05	9.56E-06	1.53E-05	1.02E-05	
Lake Whitefish	mg/kg-d	6.77E-07	1.35E-06	7.21E-07	1.44E-06	
Other Fish	mg/kg-d	2.33E-06	2.33E-06	2.48E-06	2.48E-06	
Caribou	-	-	-	-	-	
Berry	mg/kg-d	3.82E-07	7.64E-07	4.07E-07	8.14E-07	
Grouse	mg/kg-d	2.27E-06	5.68E-06	2.42E-06	6.05E-06	
Hare	mg/kg-d	7.93E-07	3.96E-07	8.45E-07	4.22E-07	
Organ	mg/kg-d	1.59E-04	7.95E-08	1.52E-04	7.60E-08	
Supermarket						
Foods	mg/kg-d	1.41E-04	9.75E-05	2.01E-04	8.36E-05	
Total-Ingestion	mg/kg-d	3.21E-04	1.20E-04	3.75E-04	1.07E-04	
Total	mg/kg-d	3.21E-04	1.20E-04	3.75E-04	1.07E-04	

D.2.3.2 Uranium City

Concentrations					
Pathway	Units	Cd	Pb		
Drinking Water	mg/L	0.00002	0.0002		
Moose	mg/kg ww	0.02	0.02		
Lake Whitefish	mg/kg ww	0.002	0.004		
Other Fish	mg/kg ww	0.002	0.003		
Caribou	-	-	-		
Berry	mg/kg ww	0.003	0.0075		
Grouse	mg/kg ww	0.005	0.09		
Hare	mg/kg ww	0.003	0.002		
Organ	mg/kg ww	6.3	0.007		
Intakes					
Pathway	Units	Adult		Teen	
		Cd	Pb	Cd	Pb
Drinking Water	mg/kg-d	4.24E-07	4.24E-06	3.35E-07	3.35E-06
Moose	mg/kg-d	9.56E-06	9.56E-06	1.02E-05	1.02E-05
Lake Whitefish	mg/kg-d	6.77E-07	1.35E-06	7.21E-07	1.44E-06
Other Fish	mg/kg-d	2.33E-06	3.49E-06	2.48E-06	3.72E-06
Caribou	-	-	-	-	-
Berry	mg/kg-d	7.64E-07	1.91E-06	8.14E-07	2.04E-06
Grouse	mg/kg-d	1.42E-06	2.56E-05	1.51E-06	2.72E-05
Hare	mg/kg-d	5.94E-07	3.96E-07	6.34E-07	4.22E-07
Organ	mg/kg-d	2.50E-04	2.78E-07	2.40E-04	2.66E-07
Supermarket					
Foods	mg/kg-d	1.41E-04	9.75E-05	2.01E-04	8.36E-05
Total-Ingestion	mg/kg-d	4.07E-04	1.44E-04	4.57E-04	1.32E-04
Total	mg/kg-d	4.07E-04	1.44E-04	4.57E-04	1.32E-04

D.2.3.3 Uranium City (Crackingstone)

Concentrations			
Pathway	Units	Cd	Pb
Drinking Water	mg/L	0.00002	0.0002
Moose	mg/kg ww	0.02	0.02
Lake Whitefish	mg/kg ww	0.003	0.004
Other Fish	mg/kg ww	0.007	0.003
Caribou	-	-	-
Berry	mg/kg ww	0.003	0.0075
Grouse	mg/kg ww	0.005	0.09
Hare	mg/kg ww	0.003	0.002
Organ	mg/kg ww	6.3	0.007

Intakes					
Pathway	Units	Adult		Teen	
		Cd	Pb	Cd	Pb
Drinking Water	mg/kg-d	4.24E-07	4.24E-06	3.35E-07	3.35E-06
Moose	mg/kg-d	9.56E-06	9.56E-06	1.02E-05	1.02E-05
Lake Whitefish	mg/kg-d	1.02E-06	1.35E-06	1.08E-06	1.44E-06
Other Fish	mg/kg-d	8.15E-06	3.49E-06	8.69E-06	3.72E-06
Caribou	-	-	-	-	-
Berry	mg/kg-d	7.64E-07	1.91E-06	8.14E-07	2.04E-06
Grouse	mg/kg-d	1.42E-06	2.56E-05	1.51E-06	2.72E-05
Hare	mg/kg-d	5.94E-07	3.96E-07	6.34E-07	4.22E-07
Organ	mg/kg-d	2.50E-04	2.78E-07	2.40E-04	2.66E-07
Supermarket					
Foods	mg/kg-d	1.41E-04	9.75E-05	2.01E-04	8.36E-05
Total-Ingestion	mg/kg-d	4.13E-04	1.44E-04	4.64E-04	1.32E-04
Total	mg/kg-d	4.13E-04	1.44E-04	4.64E-04	1.32E-04

D.2.3.4 Camsell Portage – Caribou Consumption Scenario

Concentrations			
Pathway	Units	Cd	
Drinking Water	mg/L	0.00001	
Moose	-	-	
Lake Whitefish	mg/kg ww	0.002	
Other Fish	mg/kg ww	0.002	
Caribou	mg/kg ww	0.01	
Berry	mg/kg ww	0.0015	
Grouse	mg/kg ww	0.008	
Hare	mg/kg ww	0.004	
Organ	mg/kg ww	1.9	
Intakes			
Pathway	Units	Adult	Teen
		Cd	Cd
Drinking Water	mg/kg-d	2.12E-07	1.68E-07
Moose	-	-	-
Lake Whitefish	mg/kg-d	1.64E-06	9.03E-07
Other Fish	mg/kg-d	3.37E-07	1.85E-07
Caribou	mg/kg-d	5.11E-05	4.78E-05
Berry	mg/kg-d	3.75E-08	1.81E-07
Grouse	mg/kg-d	4.69E-07	8.79E-07
Hare	mg/kg-d	1.49E-07	1.05E-07
Organ	mg/kg-d	1.61E-04	1.51E-04
Supermarket			
Foods	mg/kg-d	1.41E-04	2.01E-04
Total-Ingestion	mg/kg-d	3.56E-04	4.02E-04
Total	mg/kg-d	3.56E-04	4.02E-04

D.2.3.5 Fond du Lac

Concentrations			
Pathway	Units	Cd	
Drinking Water	mg/L	0.00003	
Moose	-	-	
Lake Whitefish	mg/kg ww	0.003	
Other Fish	mg/kg ww	0.002	
Caribou	mg/kg ww	0.005	
Berry	mg/kg ww	0.0015	
Grouse	mg/kg ww	0.02	
Hare	mg/kg ww	0.007	
Organ	mg/kg ww	4.2	
Intakes			
Pathway	Units	Adult	Teen
		Cd	
Drinking Water	mg/kg-d	6.36E-07	5.03E-07
Moose	-	-	-
Lake Whitefish	mg/kg-d	2.47E-06	1.36E-06
Other Fish	mg/kg-d	3.37E-07	1.85E-07
Caribou	mg/kg-d	2.56E-05	2.39E-05
Berry	mg/kg-d	3.75E-08	1.81E-07
Grouse	mg/kg-d	1.17E-06	2.20E-06
Hare	mg/kg-d	2.61E-07	1.83E-07
Organ	mg/kg-d	3.56E-04	3.33E-04
Supermarket			
Foods	mg/kg-d	1.41E-04	2.01E-04
Total-Ingestion	mg/kg-d	5.28E-04	5.63E-04
Total	mg/kg-d	5.28E-04	5.63E-04

D.2.3.6 Stony Rapids

Concentrations			
Pathway	Units	Cd	
Drinking Water	mg/L	0.00002	
Moose	-	-	
Lake Whitefish	mg/kg ww	0.002	
Other Fish	mg/kg ww	0.002	
Caribou	mg/kg ww	0.005	
Berry	mg/kg ww	0.003	
Grouse	mg/kg ww	0.01	
Hare	mg/kg ww	0.05	
Organ	-	4.2	
Intakes			
Pathway	Units	Adult	Teen
		Cd	Cd
Drinking Water	mg/kg-d	4.24E-07	3.35E-07
Moose	-	-	-
Lake Whitefish	mg/kg-d	1.64E-06	9.03E-07
Other Fish	mg/kg-d	3.37E-07	1.85E-07
Caribou	mg/kg-d	2.56E-05	2.39E-05
Berry	mg/kg-d	7.50E-08	3.62E-07
Grouse	mg/kg-d	5.86E-07	1.10E-06
Hare	mg/kg-d	1.86E-06	1.31E-06
Organ	-	3.56E-04	3.33E-04
Supermarket			
Foods	mg/kg-d	1.41E-04	2.01E-04
Total-Ingestion	mg/kg-d	5.28E-04	5.62E-04
Total	mg/kg-d	5.28E-04	5.62E-04

D.2.3.7 Black Lake

Concentrations			
Pathway	Units	Cd	
Drinking Water	mg/L	0.00001	
Moose	-	-	
Lake Whitefish	mg/kg ww	0.002	
Other Fish	mg/kg ww	0.002	
Caribou	mg/kg ww	0.005	
Berry	mg/kg ww	0.0015	
Grouse	mg/kg ww	0.007	
Hare	mg/kg ww	0.01	
Organ	mg/kg ww	4.2	
Intakes			
Pathway	Units	Adult	Teen
		Cd	Cd
Drinking Water	mg/kg-d	2.12E-07	1.68E-07
Moose	-	-	-
Lake Whitefish	mg/kg-d	1.64E-06	9.03E-07
Other Fish	mg/kg-d	3.37E-07	1.85E-07
Caribou	mg/kg-d	2.56E-05	2.39E-05
Berry	mg/kg-d	3.75E-08	1.81E-07
Grouse	mg/kg-d	4.10E-07	7.69E-07
Hare	mg/kg-d	3.73E-07	2.62E-07
Organ	mg/kg-d	3.56E-04	3.33E-04
Supermarket			
Foods	mg/kg-d	1.41E-04	2.01E-04
Total-Ingestion	mg/kg-d	5.26E-04	5.61E-04
Total	mg/kg-d	5.26E-04	5.61E-04

D.2.3.8 Wollaston Lake

Concentrations			
Pathway	Units	Cd	
Drinking Water	mg/L	0.0001	
Moose	-	-	
Lake Whitefish	mg/kg ww	0.002	
Other Fish	mg/kg ww	0.002	
Caribou	mg/kg ww	0.005	
Berry	mg/kg ww	0.0015	
Grouse	mg/kg ww	0.003	
Hare	mg/kg ww	0.01	
Organ	mg/kg ww	4.2	
Intakes			
Pathway	Units	Adult	Teen
		Cd	
Drinking Water	mg/kg-d	2.12E-06	1.68E-06
Moose	-	-	-
Lake Whitefish	mg/kg-d	1.64E-06	9.03E-07
Other Fish	mg/kg-d	3.37E-07	1.85E-07
Caribou	mg/kg-d	2.56E-05	2.39E-05
Berry	mg/kg-d	3.75E-08	1.81E-07
Grouse	mg/kg-d	1.76E-07	3.30E-07
Hare	mg/kg-d	3.73E-07	2.62E-07
Organ	mg/kg-d	3.56E-04	3.33E-04
Supermarket			
Foods	mg/kg-d	1.41E-04	2.01E-04
Total-Ingestion	mg/kg-d	5.28E-04	5.62E-04
Total	mg/kg-d	5.28E-04	5.62E-04

D.2.4 Sensitivity Analysis – Caribou Intakes

The calculated intakes are presented herein for exposure to selenium for residents of Camsell Portage (caribou consumption scenario), Fond du Lac, Stony Rapids, Black Lake, and Wollaston Lake. The intakes for all other COPC are the same as those presented in Section D.2.1.

D.2.4.1 Camsell Portage – Caribou Consumption Scenario

Concentrations			
Pathway	Units	Se	
Drinking Water	mg/L	0.0001	
Moose	-	-	
Lake Whitefish	mg/kg ww	0.27	
Other Fish	mg/kg ww	0.18	
Caribou	mg/kg ww	0.17	
Berry	mg/kg ww	0.0075	
Grouse	mg/kg ww	0.2	
Hare	mg/kg ww	0.07	

Organ	-	-	-	-	-
Intakes		Adult	Teen	Child	Toddler
Pathway	Units	Se	Se	Se	Se
Drinking Water	mg/kg-d	2.12E-06	1.68E-06	2.43E-06	3.64E-06
Moose	-	-	-	-	-
Lake Whitefish	mg/kg-d	2.22E-04	1.22E-04	2.98E-04	5.95E-04
Other Fish	mg/kg-d	3.03E-05	1.67E-05	4.07E-05	8.12E-05
Caribou	mg/kg-d	5.65E-04	4.98E-04	6.46E-04	8.76E-04
Berry	mg/kg-d	1.87E-07	9.05E-07	1.94E-06	3.88E-06
Grouse	mg/kg-d	1.17E-05	2.20E-05	1.37E-05	2.73E-05
Hare	mg/kg-d	2.61E-06	1.83E-06	6.12E-07	1.22E-06
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Supermarket					
Foods	mg/kg-d	1.17E-03	1.70E-03	2.97E-03	4.17E-03
Total-Ingestion	mg/kg-d	2.00E-03	2.36E-03	3.97E-03	5.75E-03
Total	mg/kg-d	2.00E-03	2.36E-03	3.97E-03	5.75E-03

D.2.4.2Fond du Lac

Concentrations		Units	Se			
Pathway		Units	Se			
Drinking Water		mg/L	0.0001			
Moose		-	-			
Lake Whitefish		mg/kg ww	0.23			
Other Fish		mg/kg ww	0.16			
Caribou		mg/kg ww	0.19			
Berry		mg/kg ww	0.009			
Grouse		mg/kg ww	0.3			
Hare		mg/kg ww	0.22			
Organ		-	0			
Intakes			Adult	Teen	Child	Toddler
Pathway		Units	Se	Se	Se	Se
Drinking Water		mg/kg-d	2.12E-06	1.68E-06	2.43E-06	3.64E-06
Moose		-	-	-	-	-
Lake Whitefish		mg/kg-d	1.89E-04	1.04E-04	2.54E-04	5.06E-04
Other Fish		mg/kg-d	2.69E-05	1.48E-05	3.62E-05	7.22E-05
Caribou		mg/kg-d	6.32E-04	5.57E-04	7.22E-04	9.79E-04
Berry		mg/kg-d	2.25E-07	1.09E-06	2.33E-06	4.65E-06
Grouse		mg/kg-d	1.76E-05	3.30E-05	2.05E-05	4.09E-05
Hare		mg/kg-d	8.20E-06	5.76E-06	1.92E-06	3.83E-06
Organ		-	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Supermarket						
Foods		mg/kg-d	1.17E-03	1.70E-03	2.97E-03	4.17E-03
Total-Ingestion		mg/kg-d	2.05E-03	2.42E-03	4.01E-03	5.78E-03
Total		mg/kg-d	2.05E-03	2.42E-03	4.01E-03	5.78E-03

D.2.4.3 Stony Rapids

Concentrations					
Pathway	Units	Se			
Drinking Water	mg/L	0.0001			
Moose	-	-			
Lake Whitefish	mg/kg ww	0.15			
Other Fish	mg/kg ww	0.16			
Caribou	mg/kg ww	0.19			
Berry	mg/kg ww	0.0075			
Grouse	mg/kg ww	0.18			
Hare	mg/kg ww	0.19			
Organ	-	-			
Intakes		Adult	Teen	Child	Toddler
Pathway	Units	Se	Se	Se	Se
Drinking Water	mg/kg-d	2.12E-06	1.68E-06	2.43E-06	3.64E-06
Moose	-	-	-	-	-
Lake Whitefish	mg/kg-d	1.23E-04	6.78E-05	1.66E-04	3.30E-04
Other Fish	mg/kg-d	2.69E-05	1.48E-05	3.62E-05	7.22E-05
Caribou	mg/kg-d	6.32E-04	5.57E-04	7.22E-04	9.79E-04
Berry	mg/kg-d	1.87E-07	9.05E-07	1.94E-06	3.88E-06
Grouse	mg/kg-d	1.05E-05	1.98E-05	1.23E-05	2.45E-05
Hare	mg/kg-d	7.09E-06	4.97E-06	1.66E-06	3.31E-06
Organ	-	-	-	-	-
Supermarket					
Foods	mg/kg-d	1.17E-03	1.70E-03	2.97E-03	4.17E-03
Total-Ingestion	mg/kg-d	1.97E-03	2.37E-03	3.91E-03	5.58E-03
Total	mg/kg-d	1.97E-03	2.37E-03	3.91E-03	5.58E-03

D.2.4.4 Black Lake

Concentrations		Units	Se			
Pathway		Units	Se			
Drinking Water		mg/L	0.0001			
Moose		-	-			
Lake Whitefish		mg/kg ww	0.31			
Other Fish		mg/kg ww	0.16			
Caribou		mg/kg ww	0.19			
Berry		mg/kg ww	0.0075			
Grouse		mg/kg ww	0.26			
Hare		mg/kg ww	0.32			
Organ		-	0			
Intakes			Adult	Teen	Child	Toddler
Pathway		Units	Se	Se	Se	Se
Drinking Water		mg/kg-d	2.12E-06	1.68E-06	2.43E-06	3.64E-06
Moose		-	-	-	-	-
Lake Whitefish		mg/kg-d	2.55E-04	1.40E-04	3.42E-04	6.83E-04
Other Fish		mg/kg-d	2.69E-05	1.48E-05	3.62E-05	7.22E-05
Caribou		mg/kg-d	6.32E-04	5.57E-04	7.22E-04	9.79E-04
Berry		mg/kg-d	1.87E-07	9.05E-07	1.94E-06	3.88E-06
Grouse		mg/kg-d	1.52E-05	2.86E-05	1.78E-05	3.55E-05
Hare		mg/kg-d	1.19E-05	8.37E-06	2.80E-06	5.58E-06
Organ		-	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Supermarket						
Foods		mg/kg-d	1.17E-03	1.70E-03	2.97E-03	4.17E-03
Total-Ingestion		mg/kg-d	2.11E-03	2.45E-03	4.09E-03	5.95E-03
Total		mg/kg-d	2.11E-03	2.45E-03	4.09E-03	5.95E-03

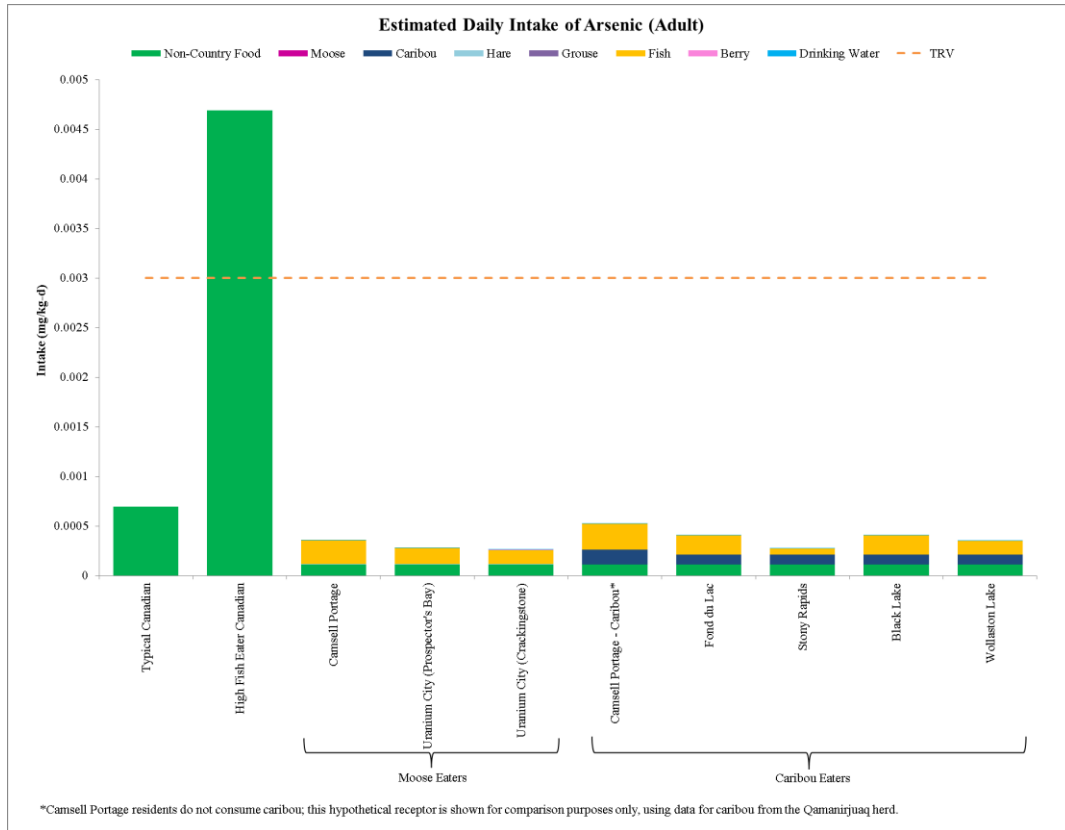
D.2.4.5 Wollaston Lake

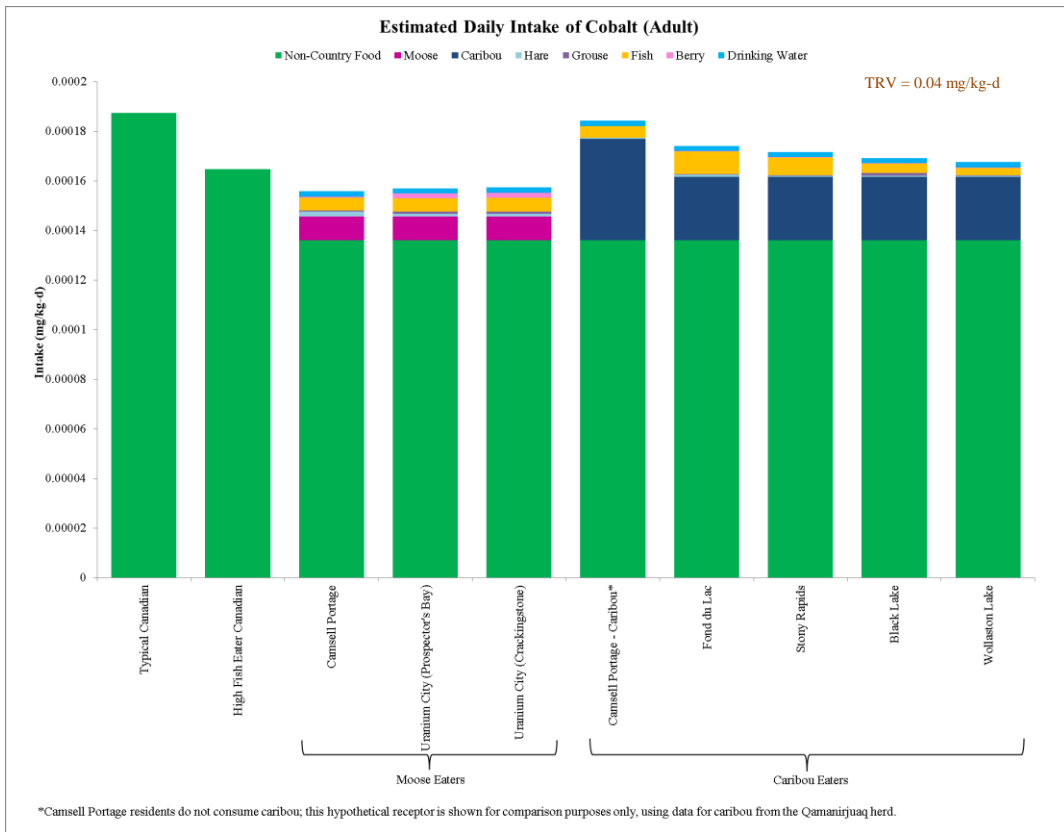
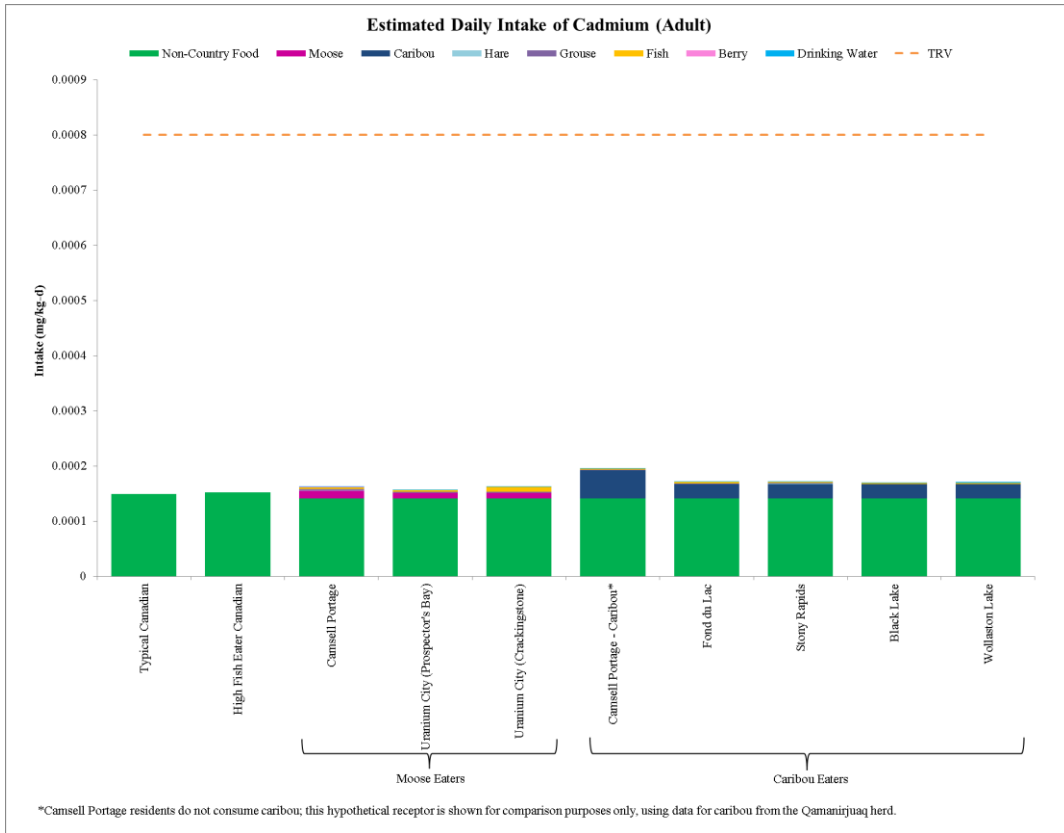
Concentrations					
Pathway	Units	Se			
Drinking Water	mg/L	0.0001			
Moose	-	-			
Lake Whitefish	mg/kg ww	0.49			
Other Fish	mg/kg ww	0.22			
Caribou	mg/kg ww	0.19			
Berry	mg/kg ww	0.0075			
Grouse	mg/kg ww	0.26			
Hare	mg/kg ww	0.14			
Organ	-	0			
Intakes		Adult	Teen	Child	Toddler
Pathway	Units	Se	Se	Se	Se
Drinking Water	mg/kg-d	2.12E-06	1.68E-06	2.43E-06	3.64E-06
Moose	-	-	-	-	-
Lake Whitefish	mg/kg-d	4.03E-04	2.21E-04	5.41E-04	1.08E-03
Other Fish	mg/kg-d	3.71E-05	2.04E-05	4.98E-05	9.92E-05
Caribou	mg/kg-d	6.32E-04	5.57E-04	7.22E-04	9.79E-04
Berry	mg/kg-d	1.87E-07	9.05E-07	1.94E-06	3.88E-06
Grouse	mg/kg-d	1.52E-05	2.86E-05	1.78E-05	3.55E-05
Hare	mg/kg-d	5.22E-06	3.66E-06	1.22E-06	2.44E-06
Organ	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Supermarket					
Foods	mg/kg-d	1.17E-03	1.70E-03	2.97E-03	4.17E-03
Total-Ingestion	mg/kg-d	2.26E-03	2.54E-03	4.30E-03	6.37E-03
Total	mg/kg-d	2.26E-03	2.54E-03	4.30E-03	6.37E-03

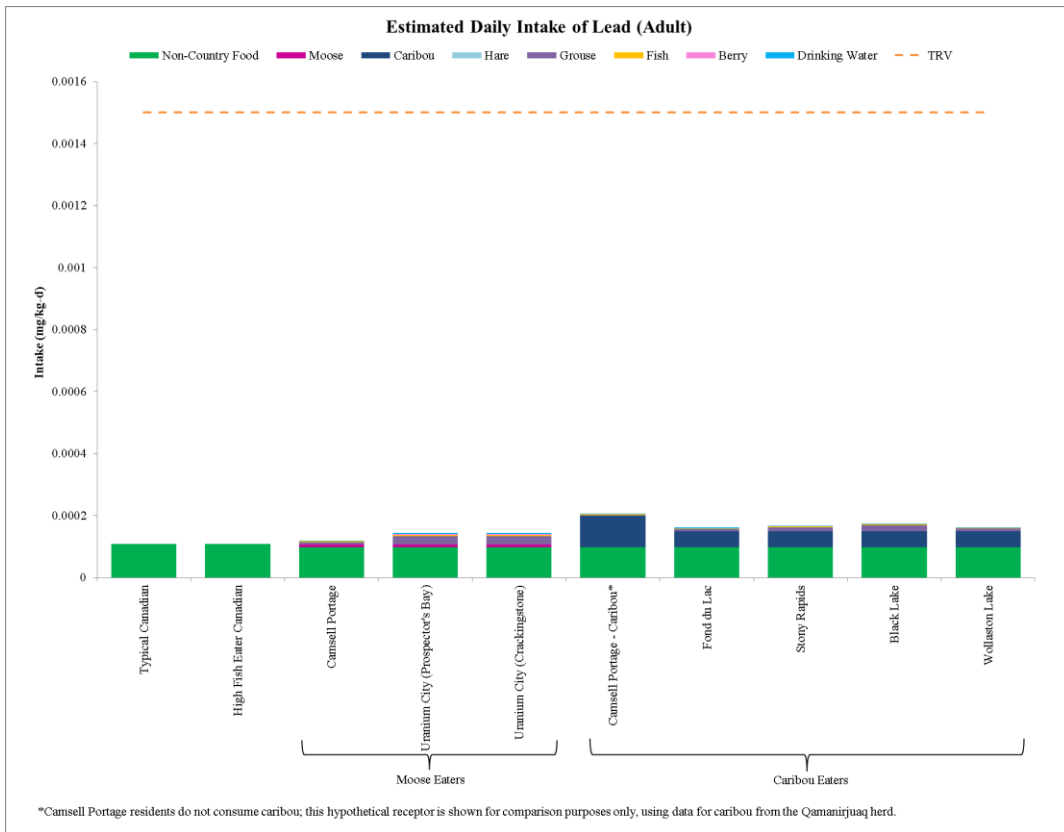
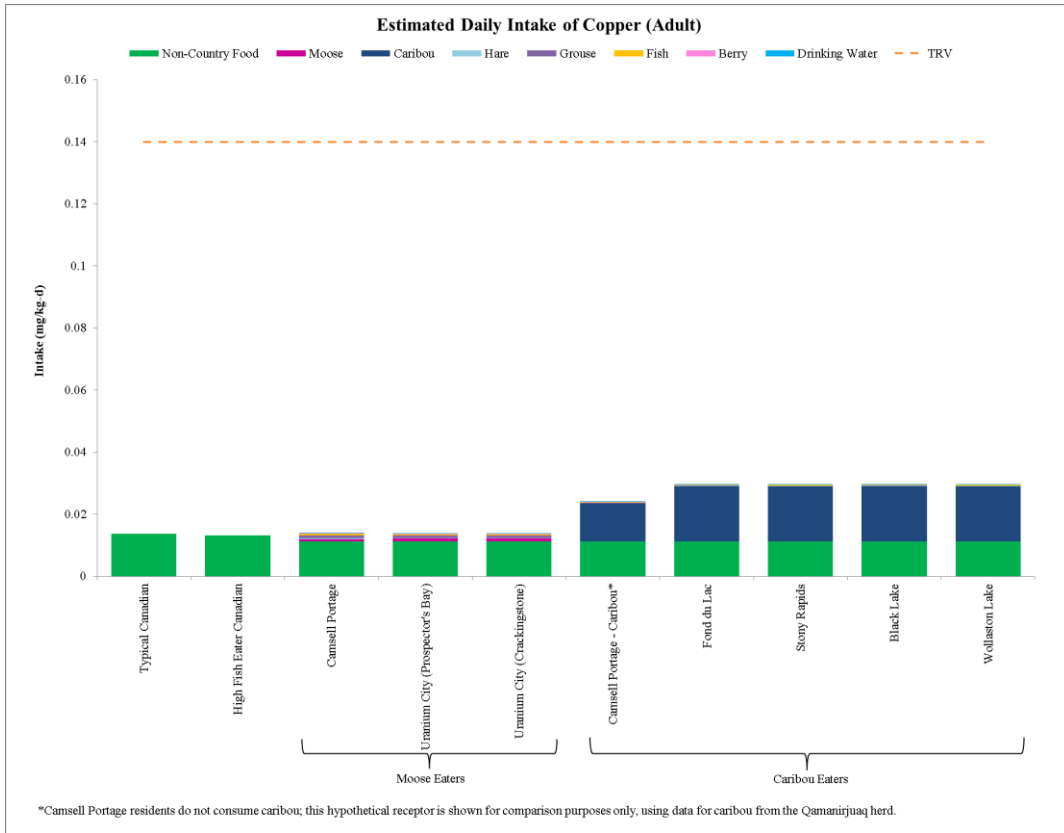
D.3 Risks

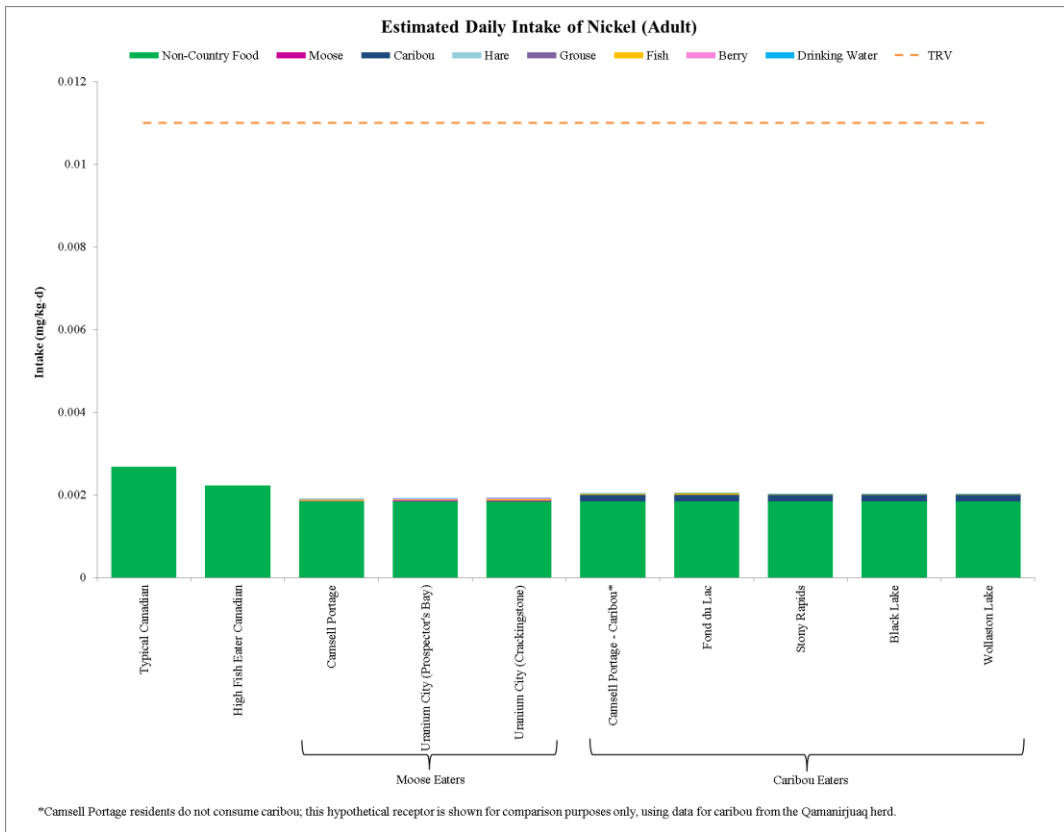
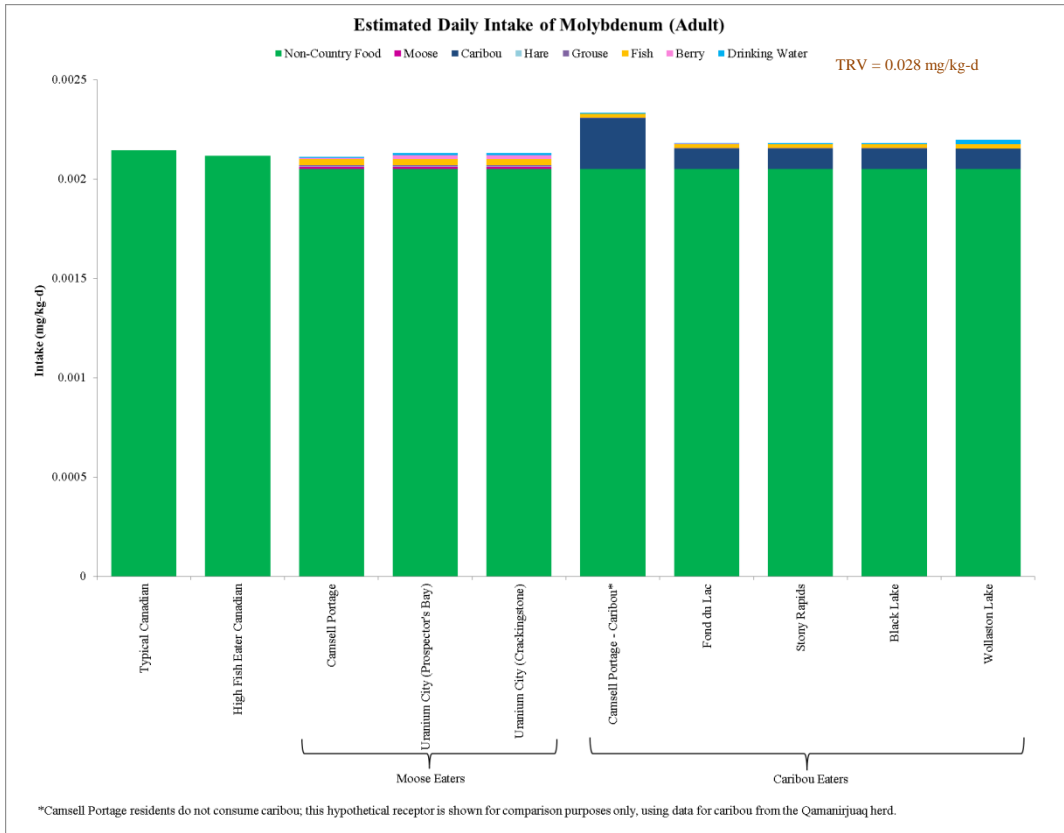
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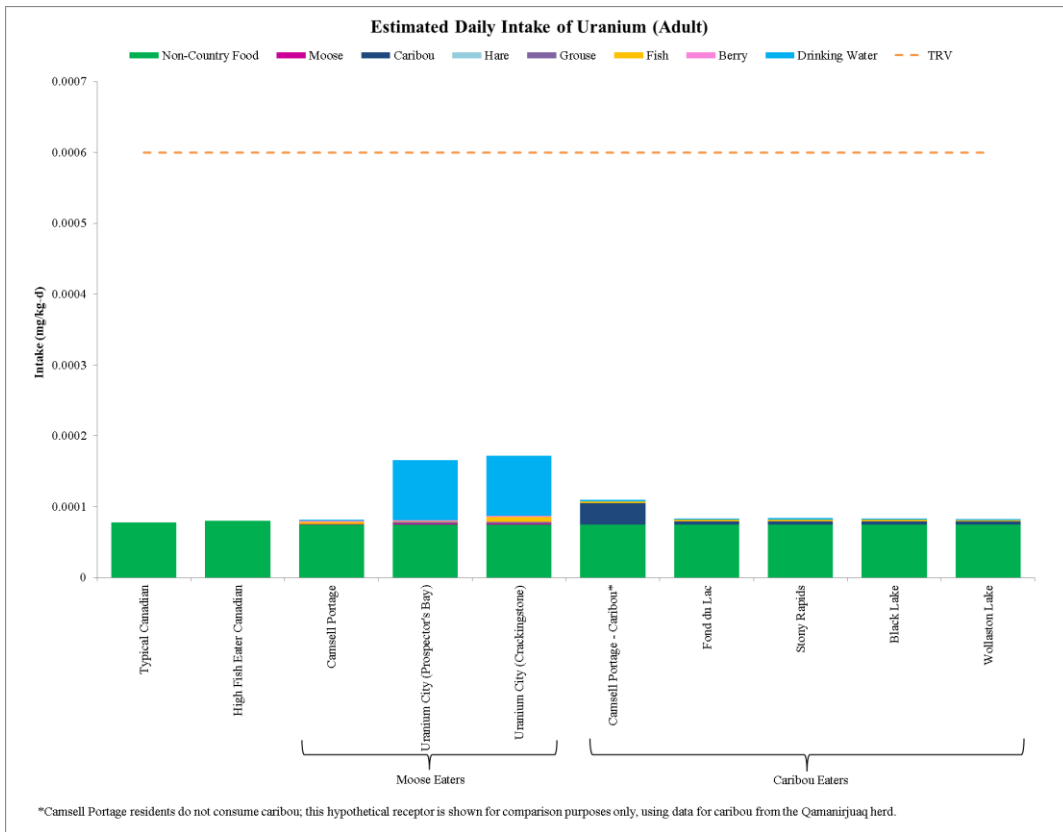
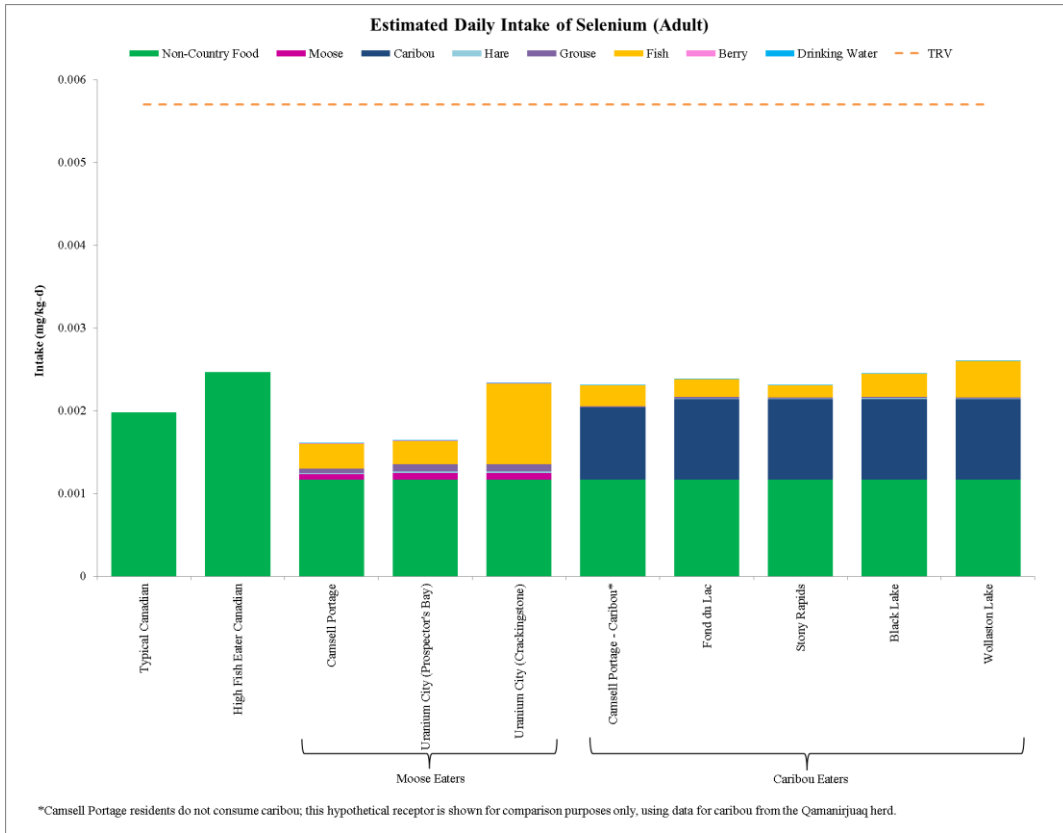
D.3.1.1 Adult



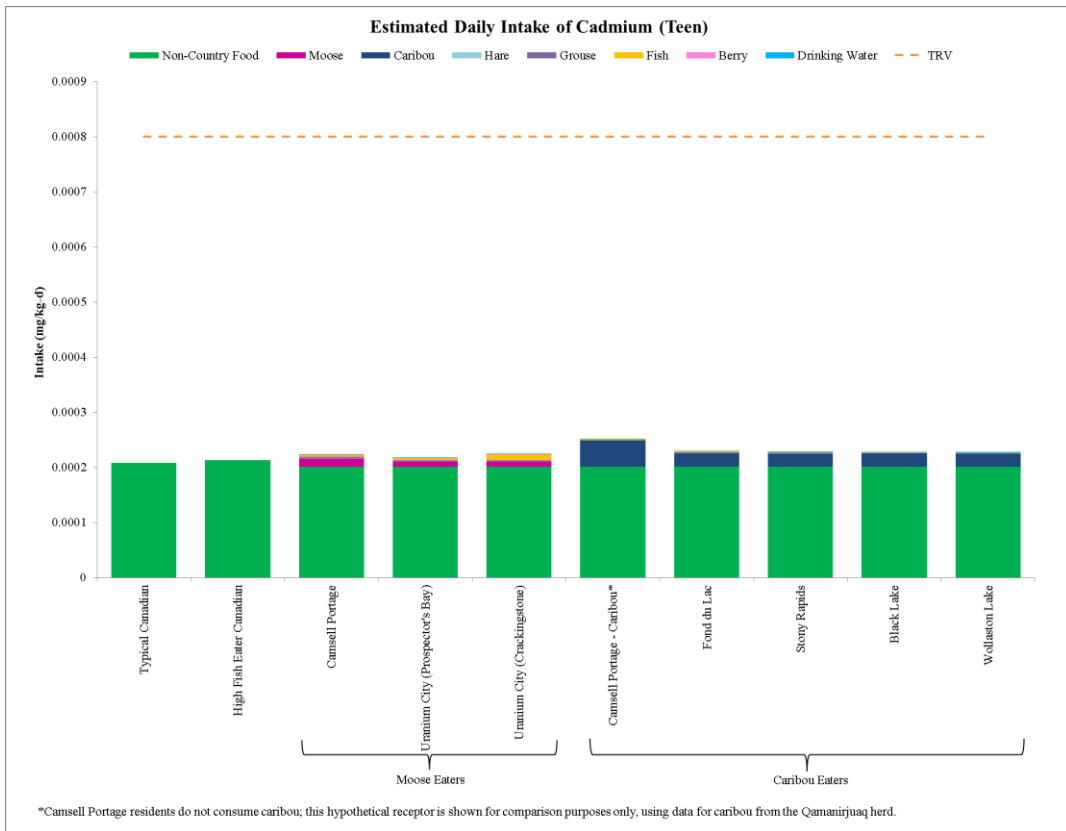
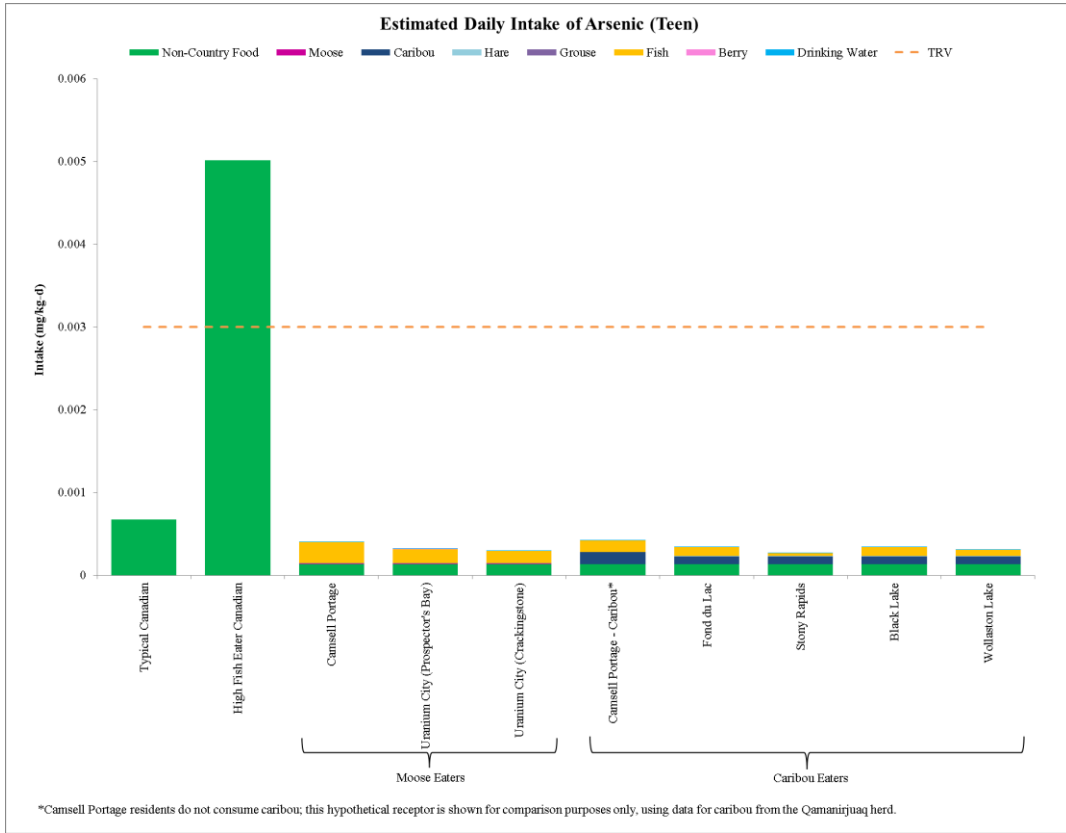


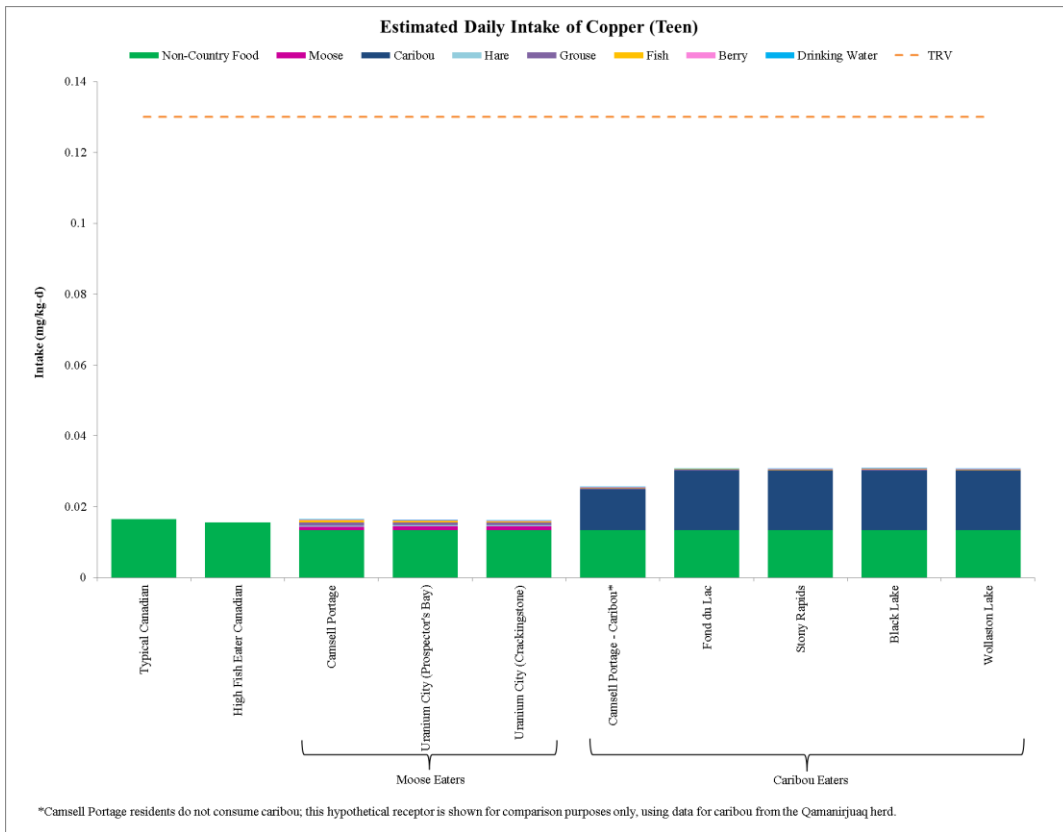
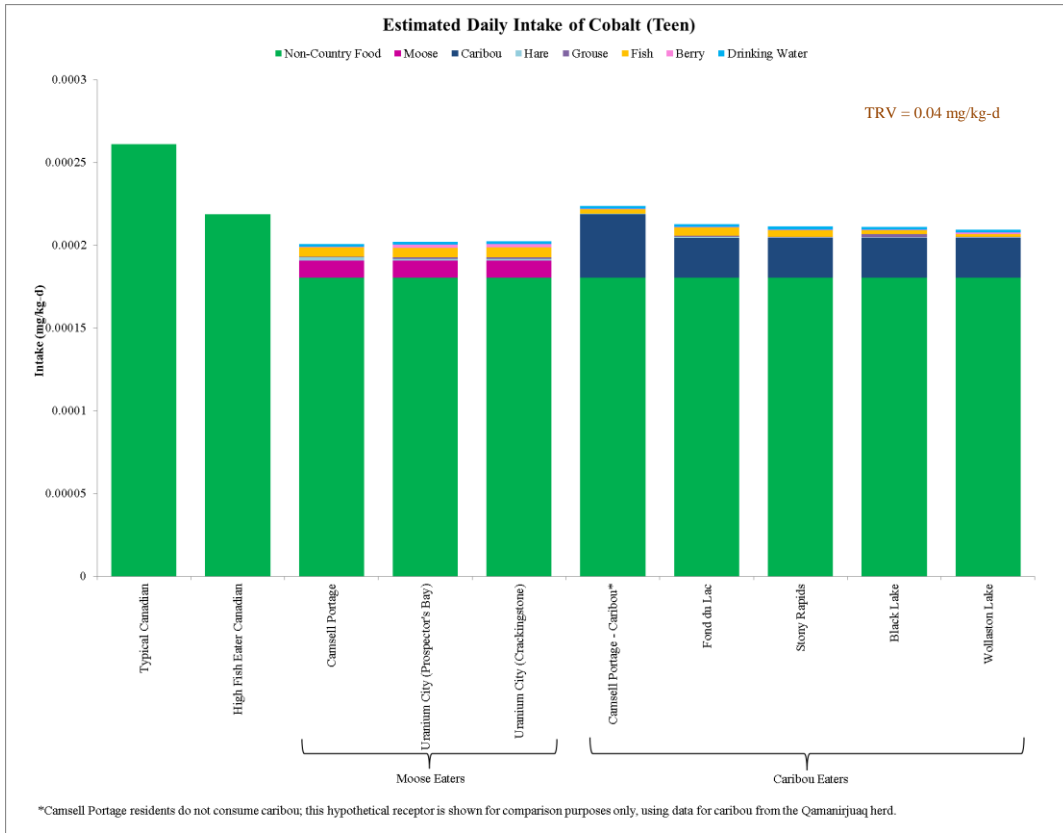


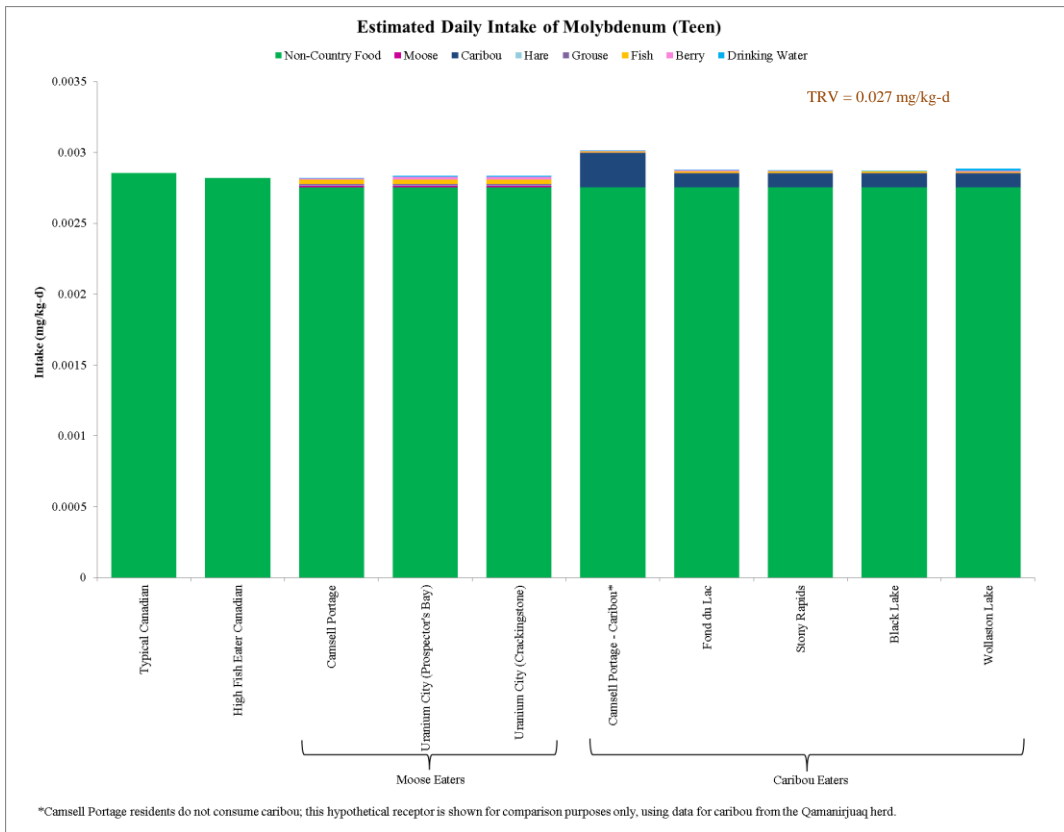
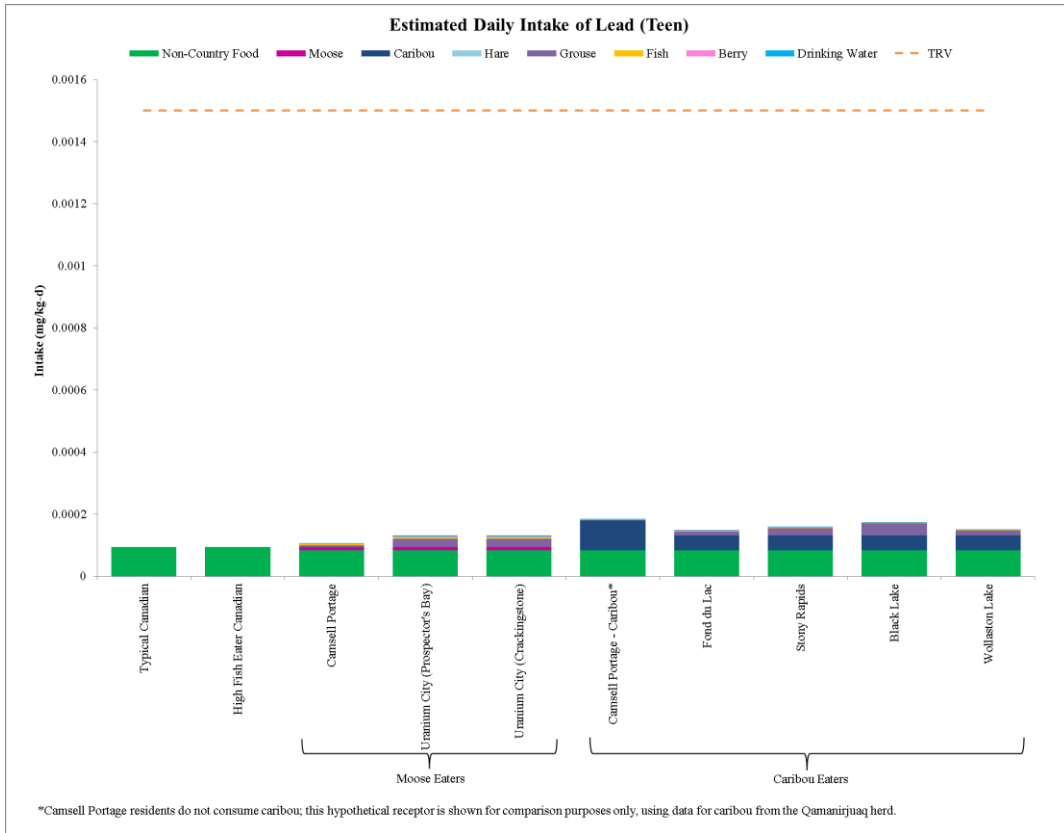


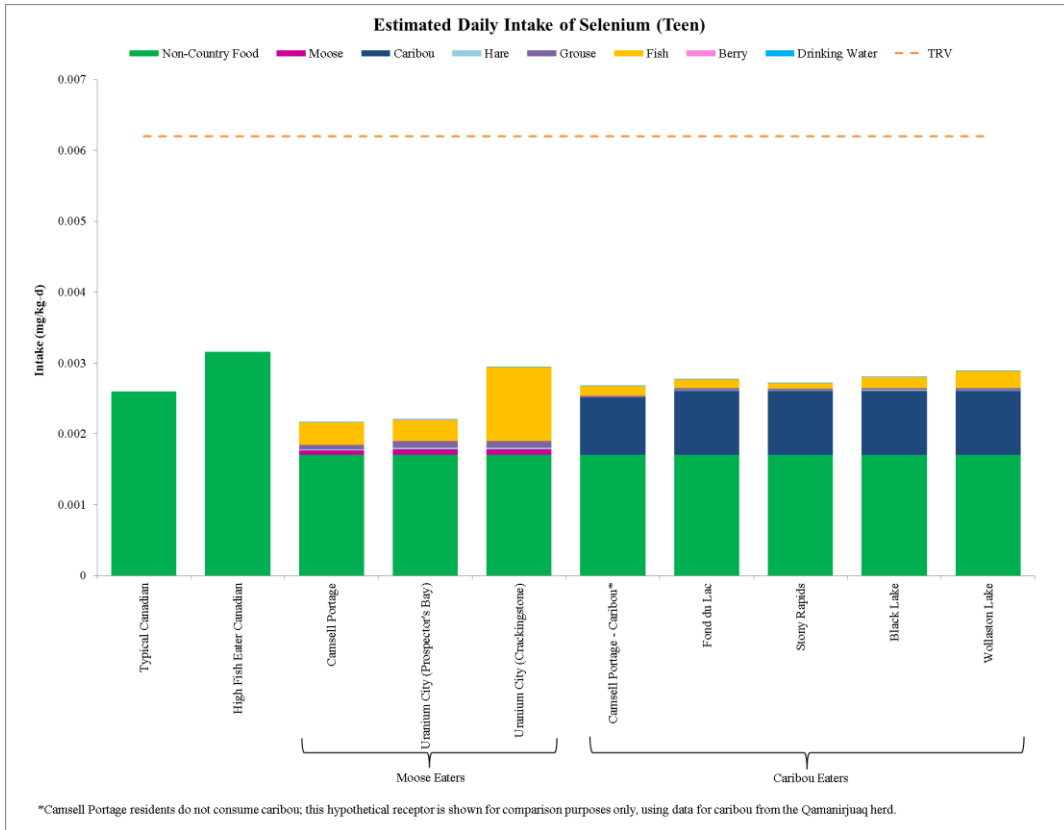
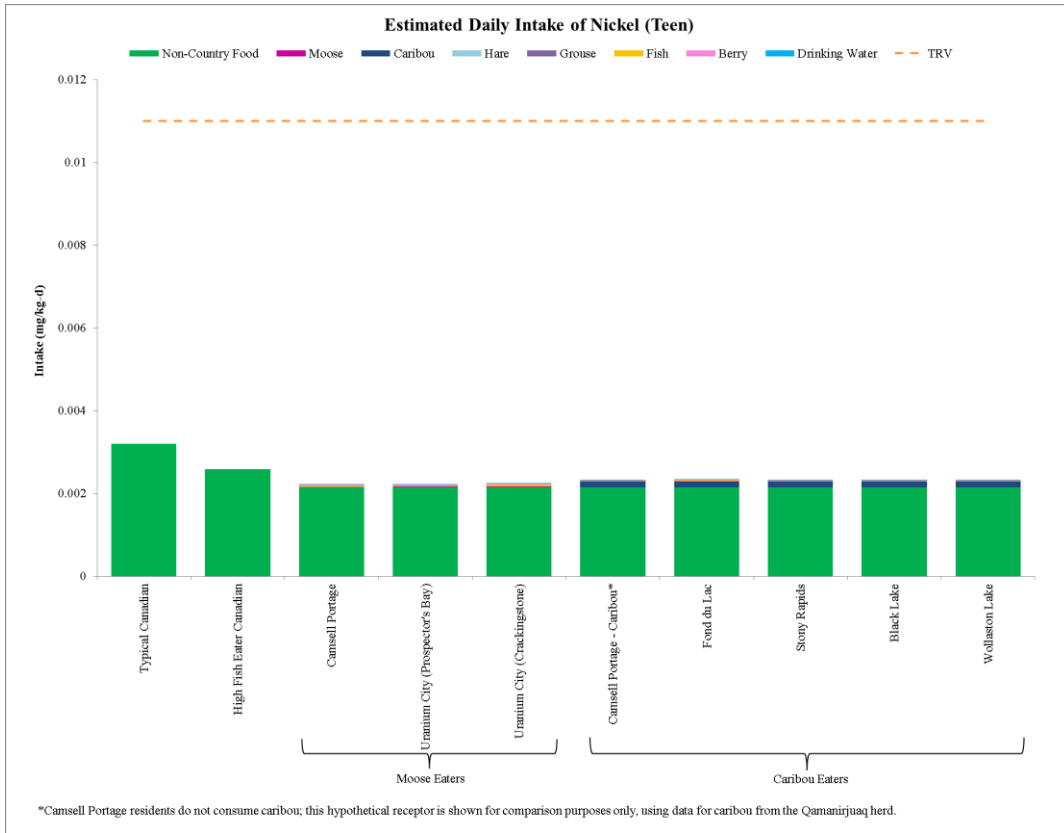


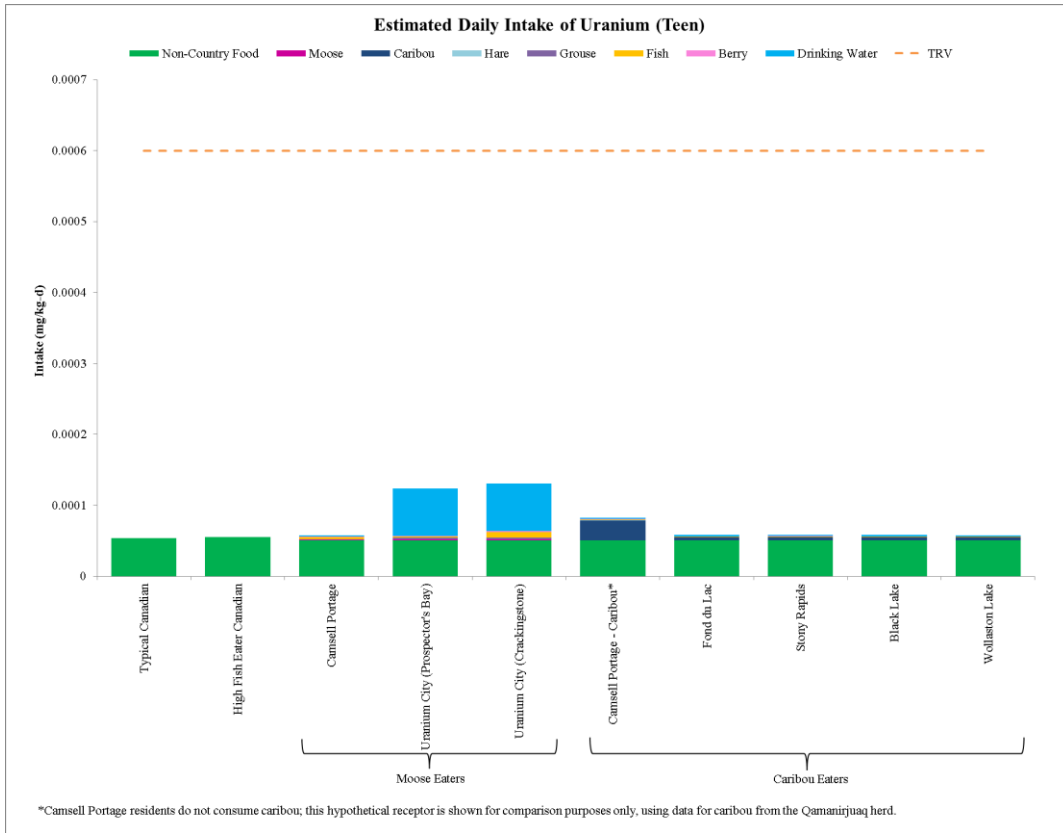
D.3.1.2 Teen



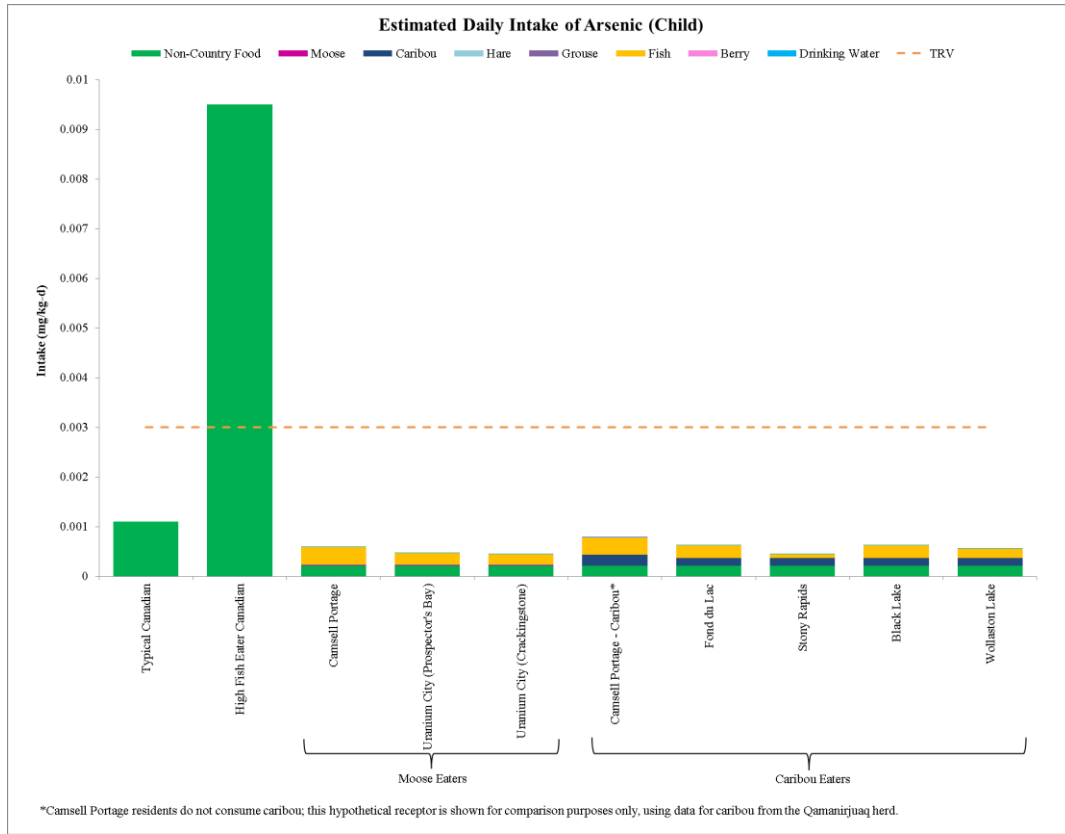


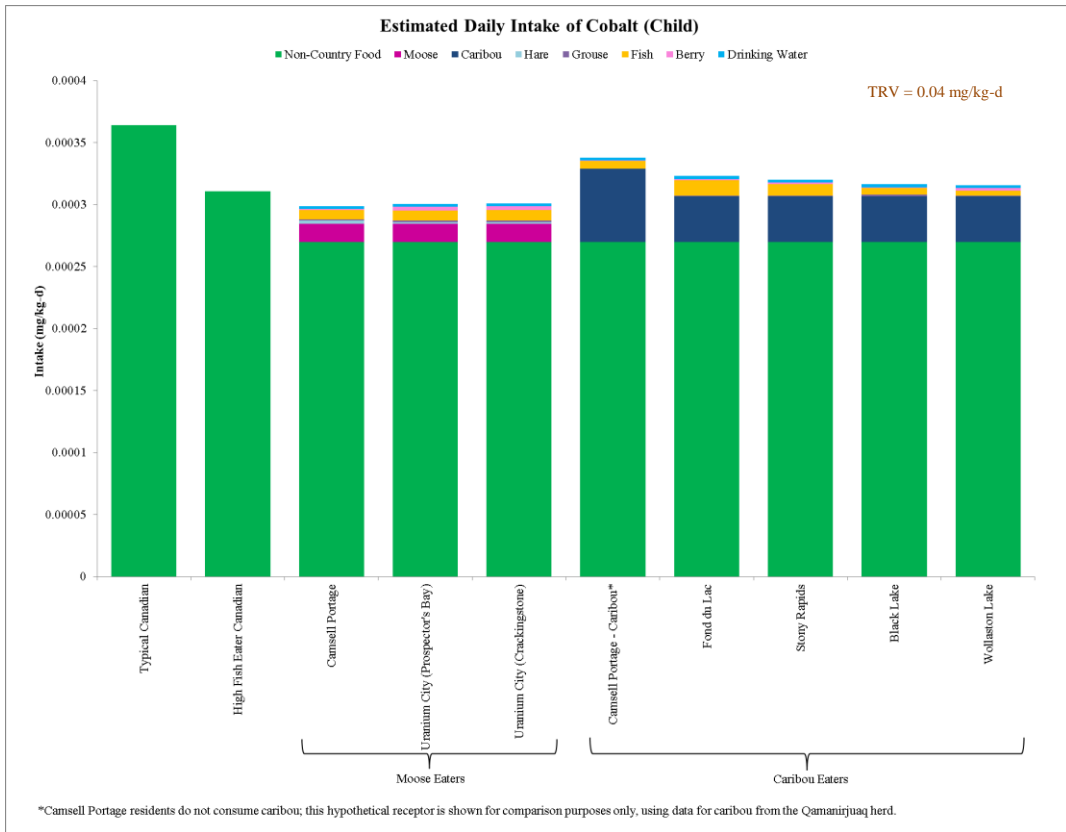
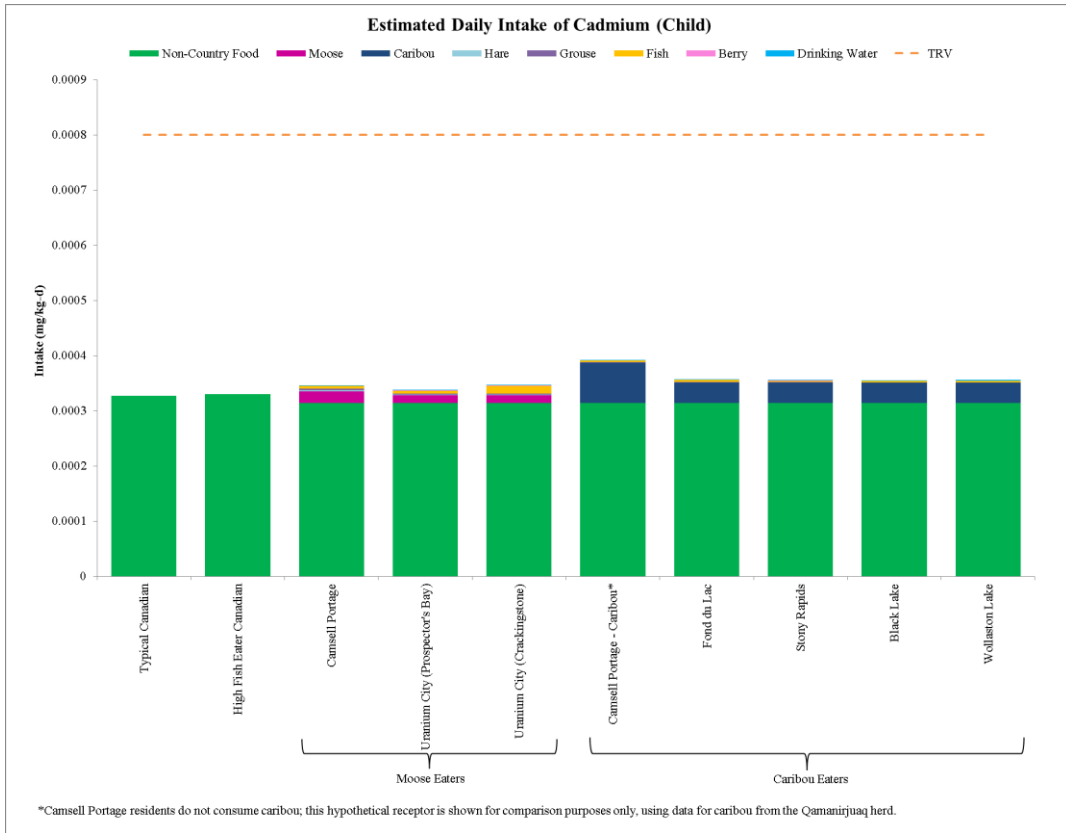


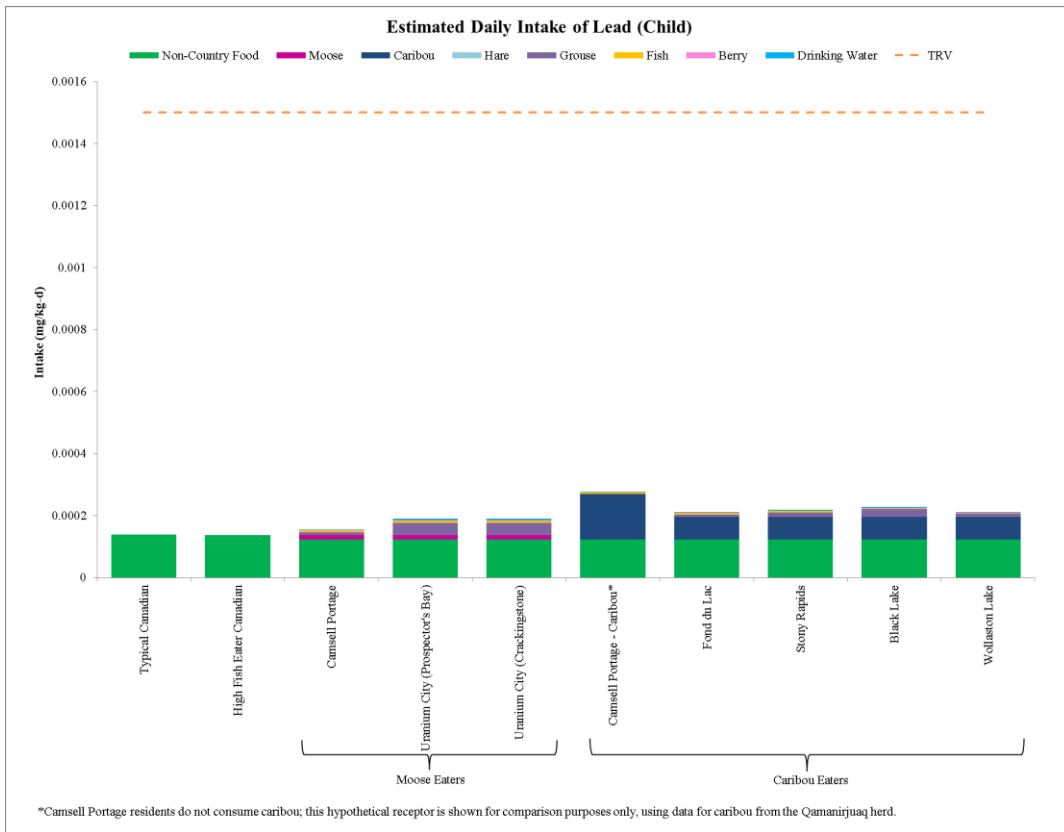
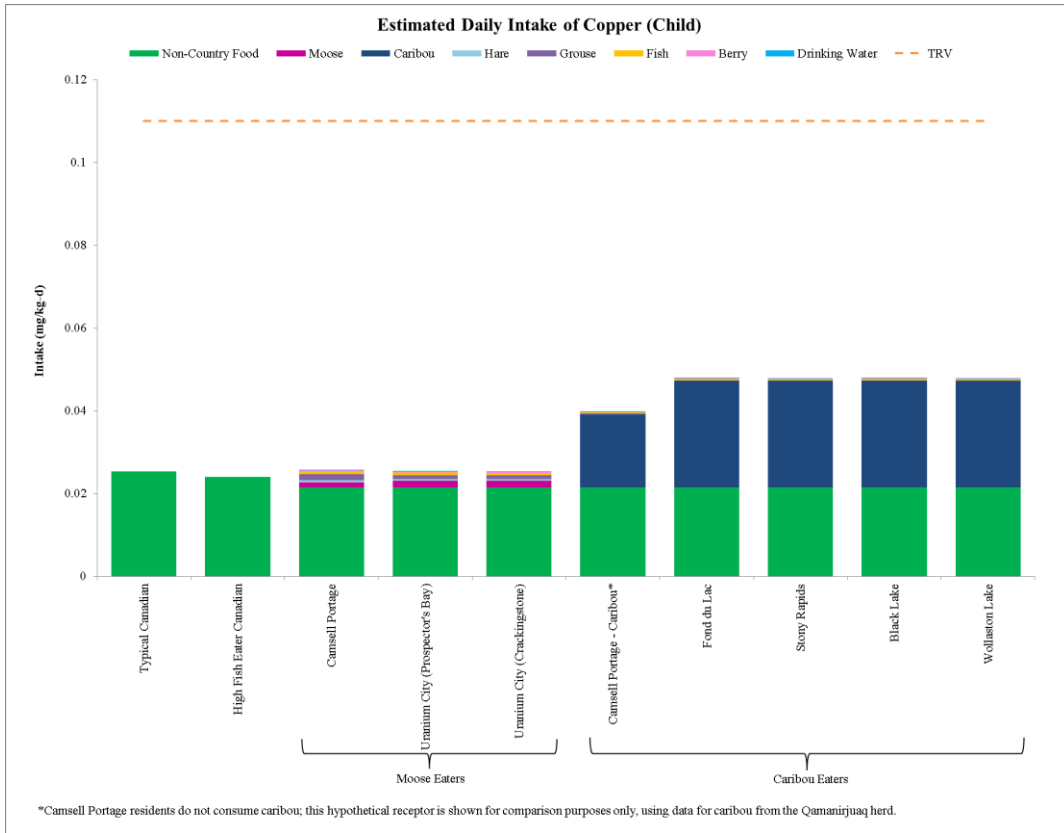


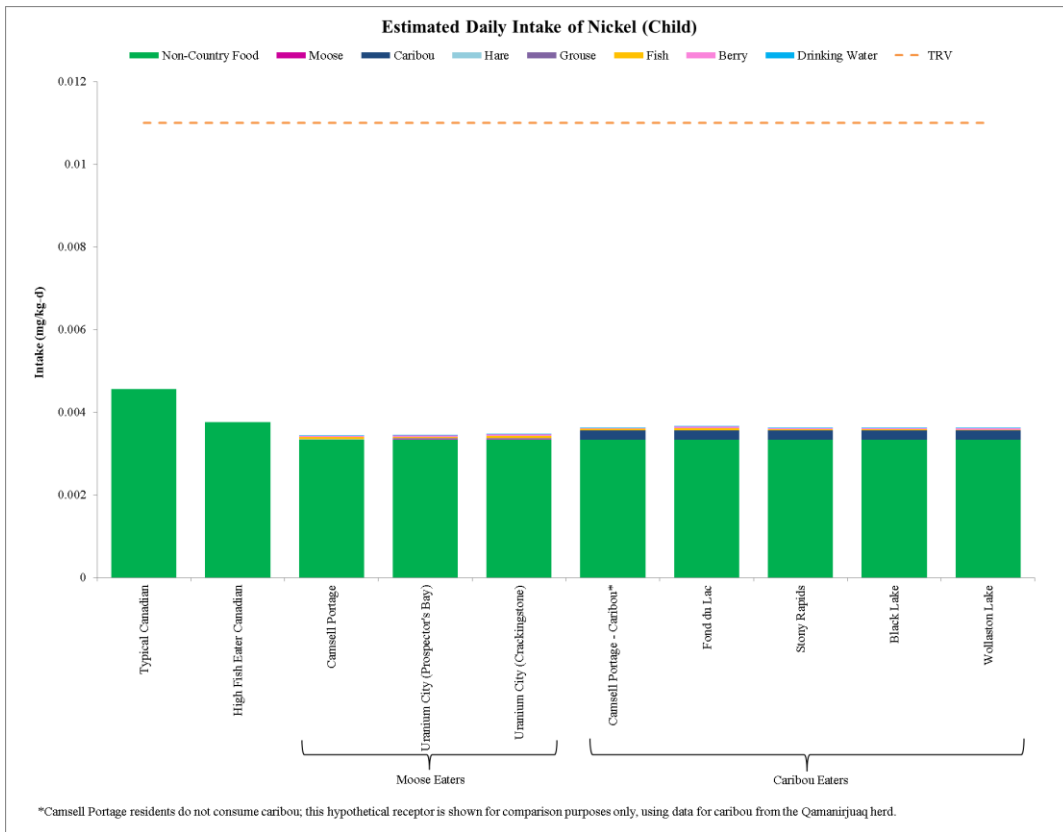
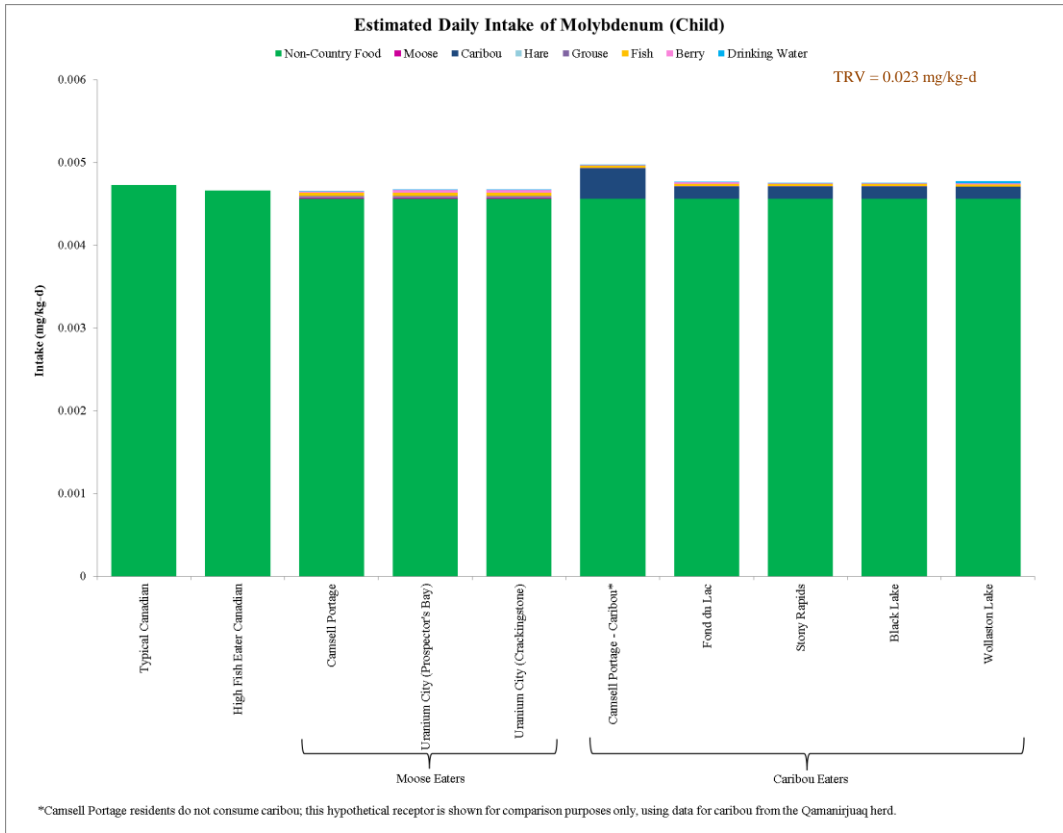


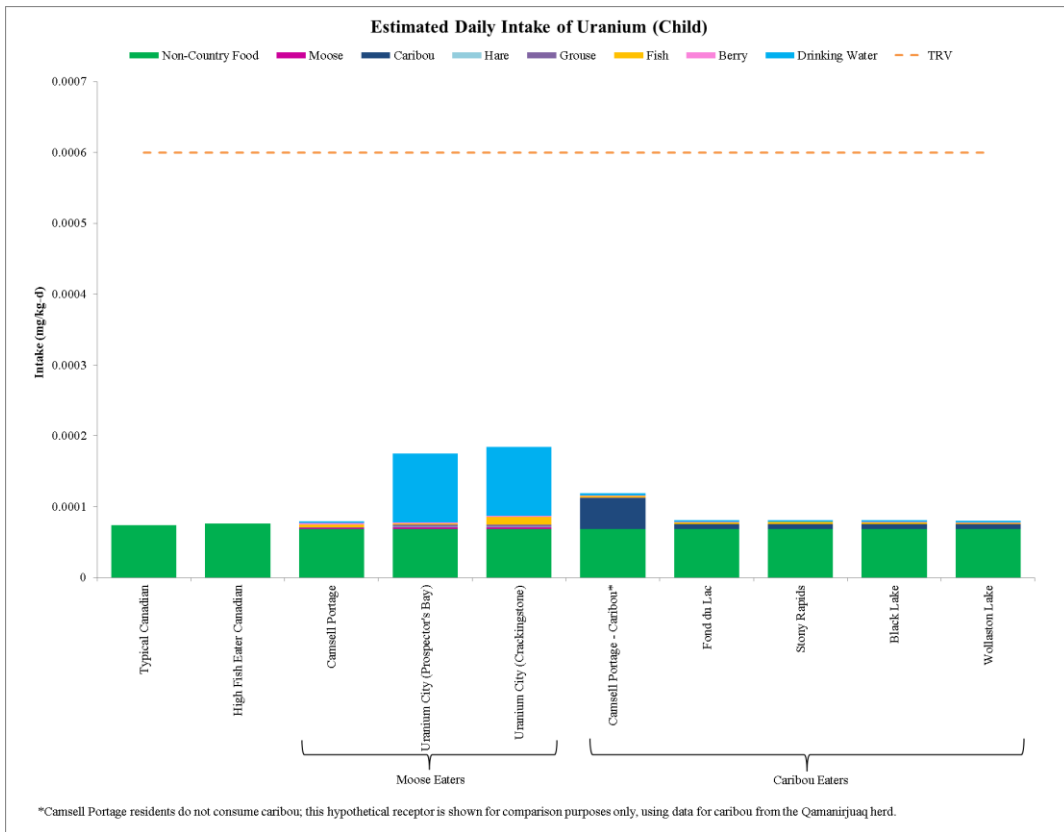
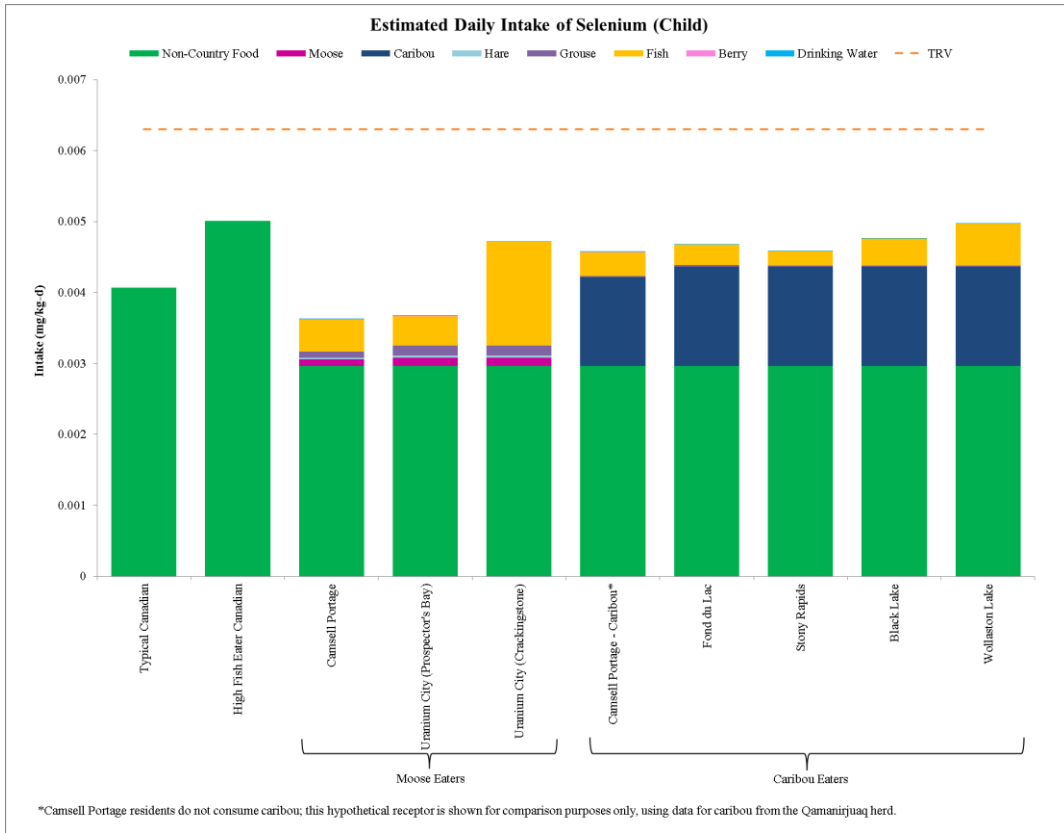
D.3.1.3 Child



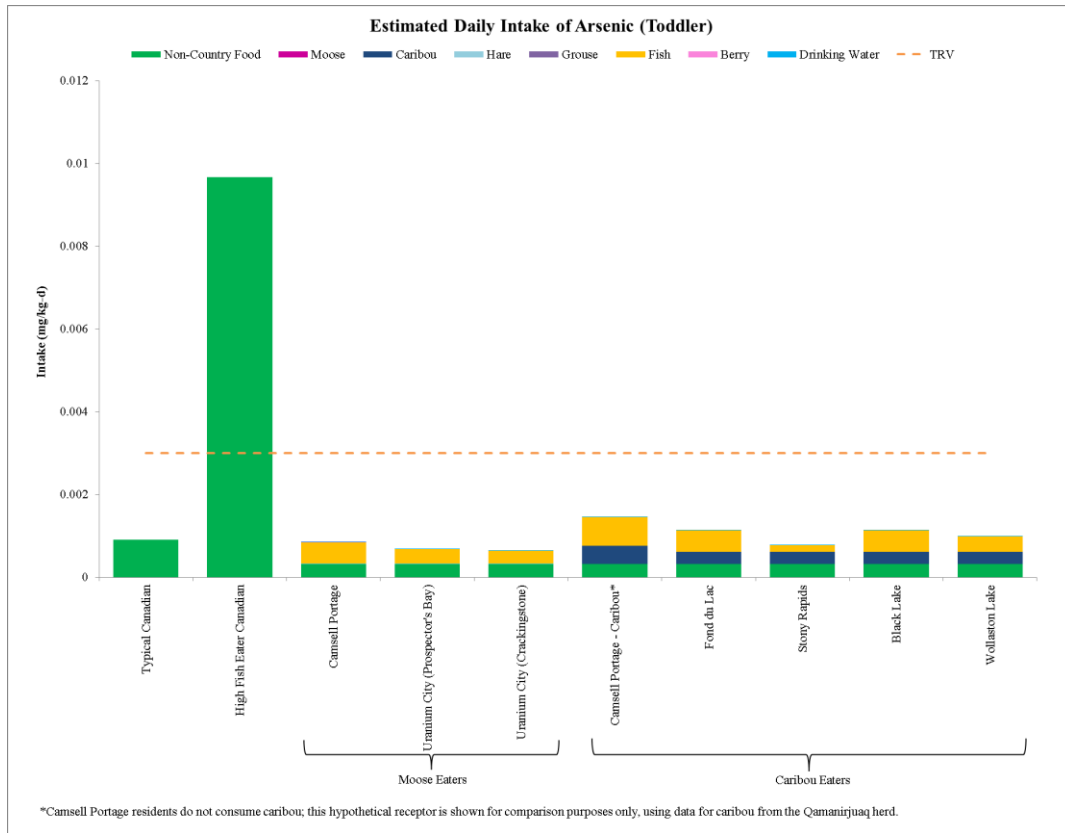


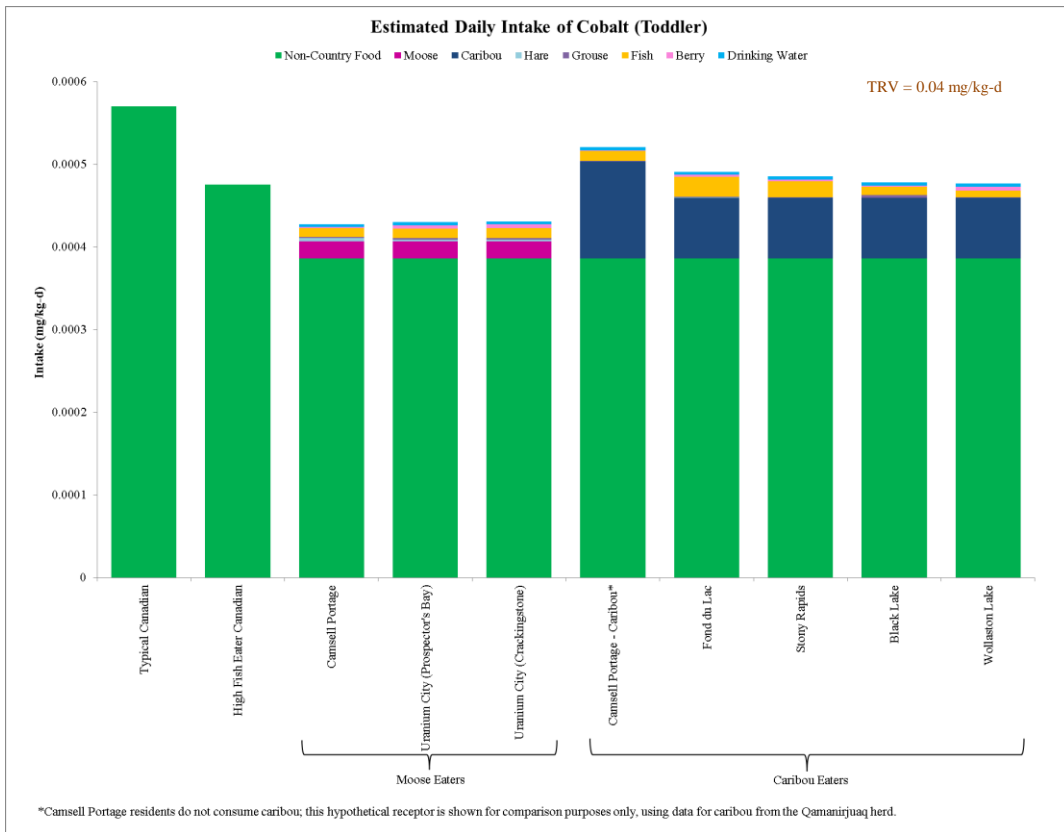
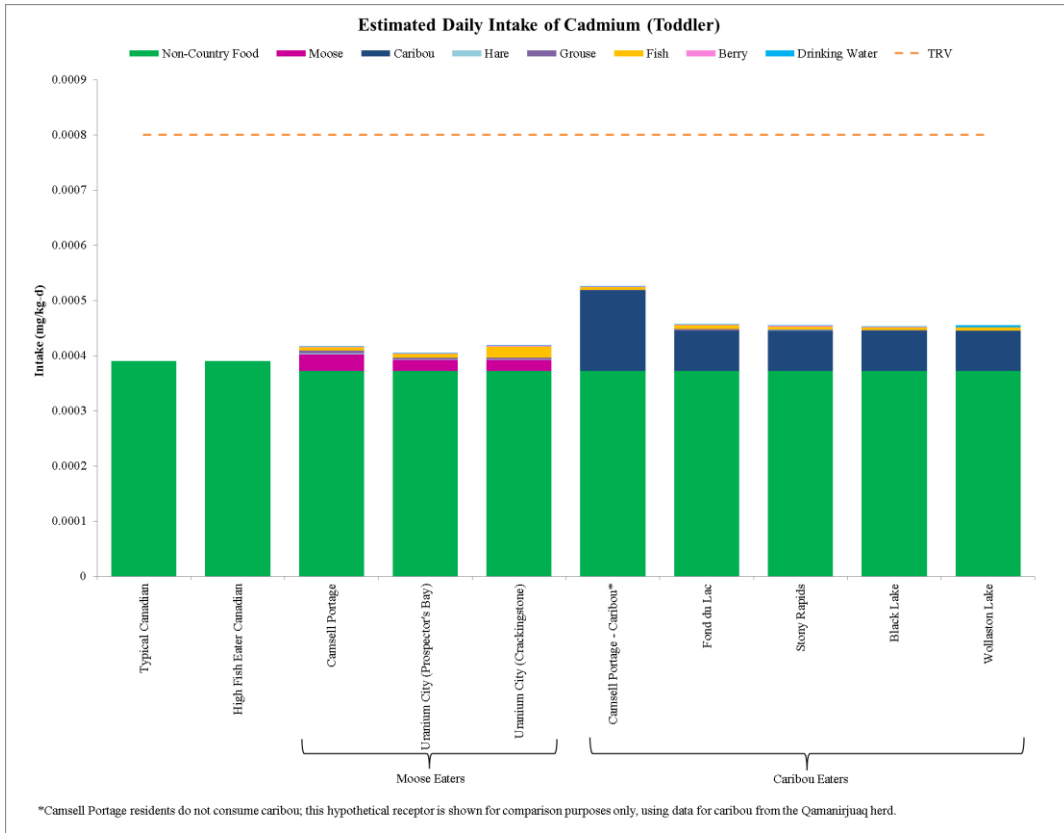


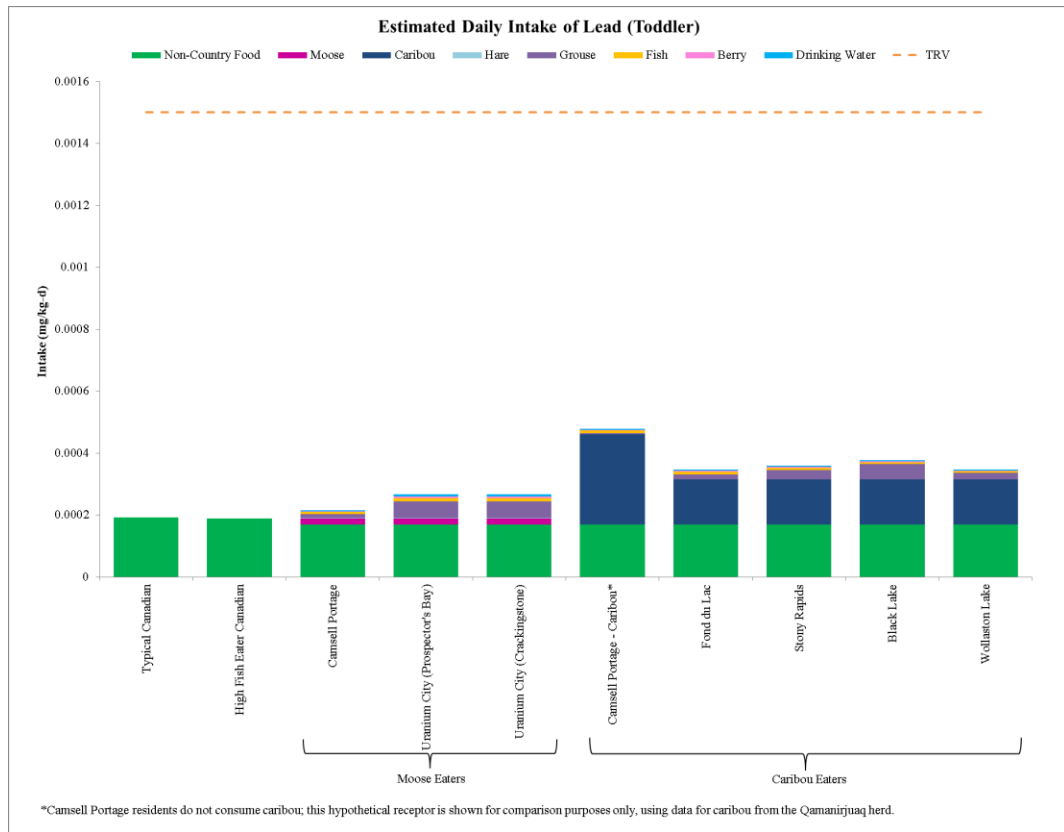
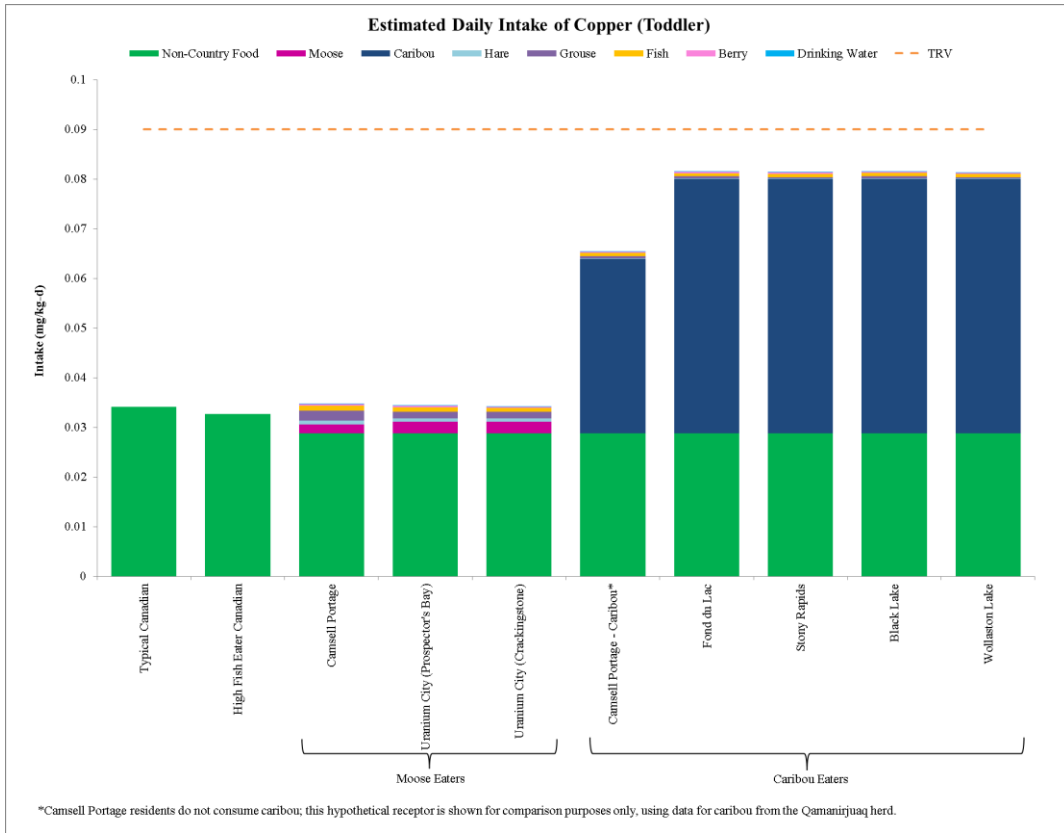


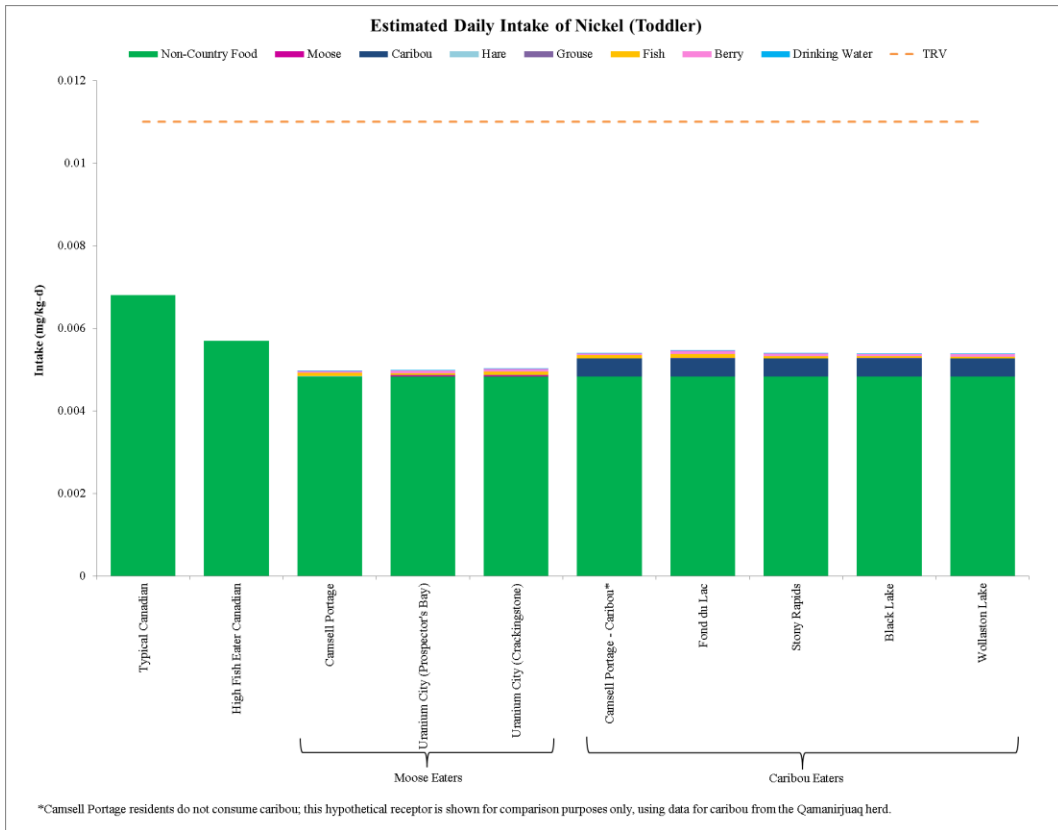
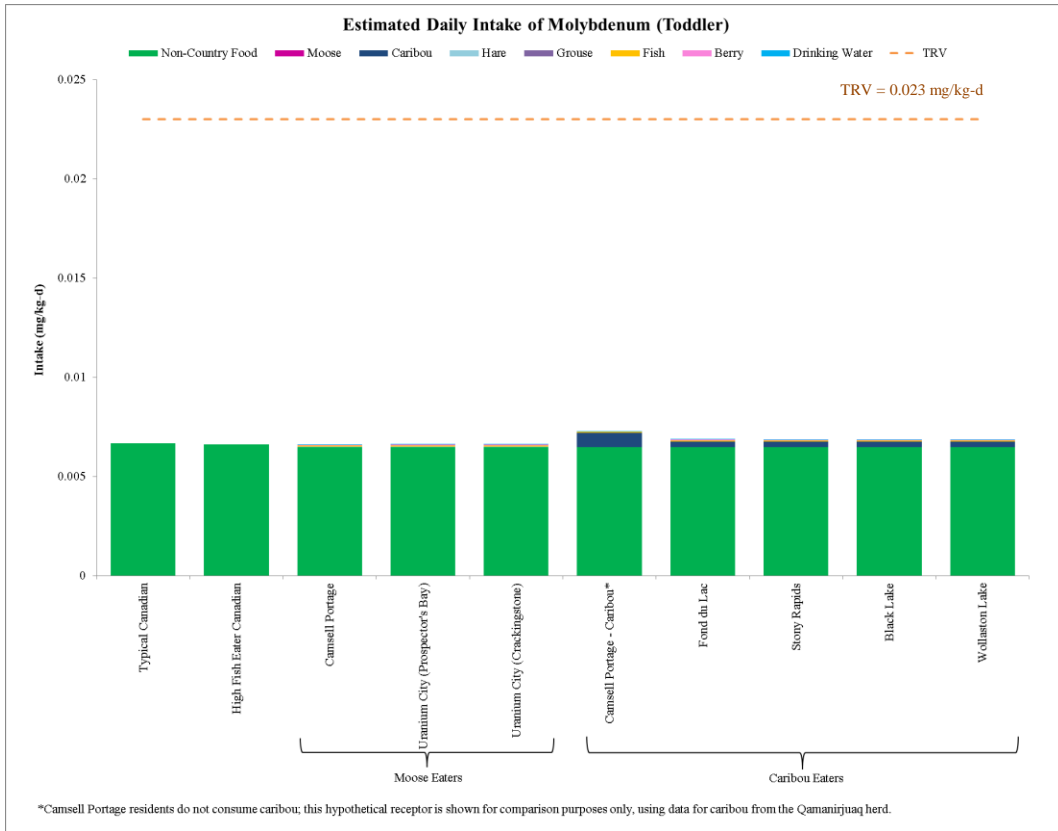


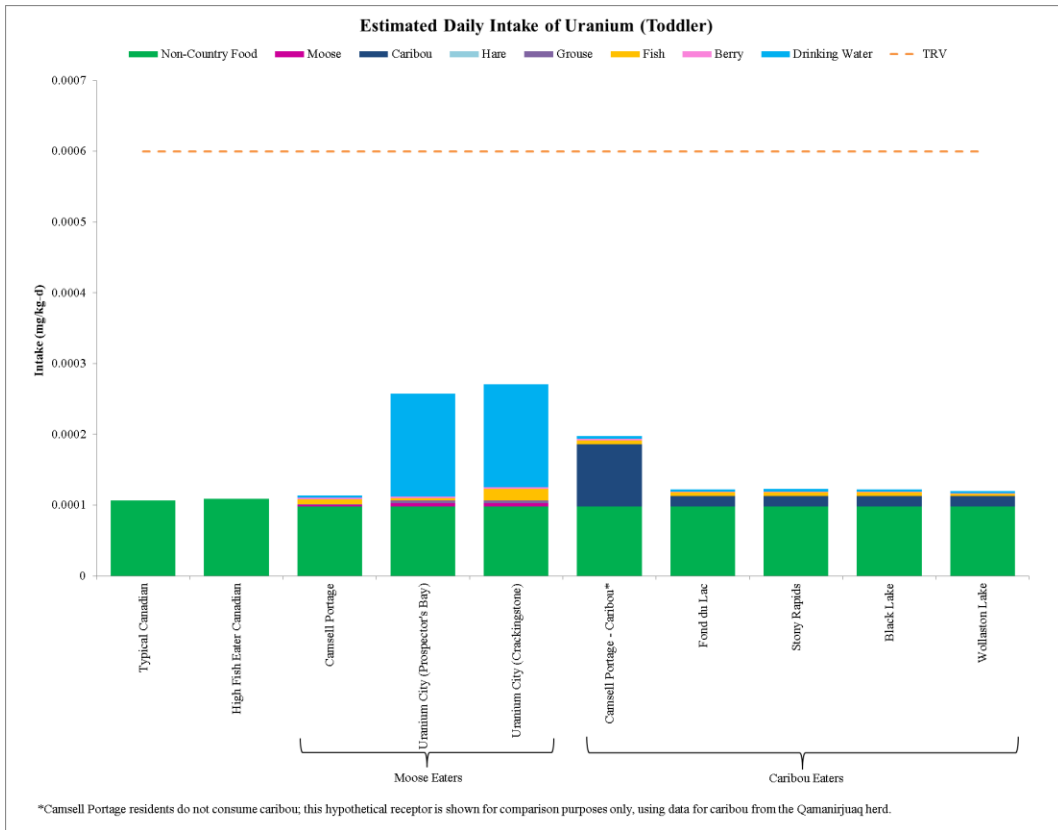
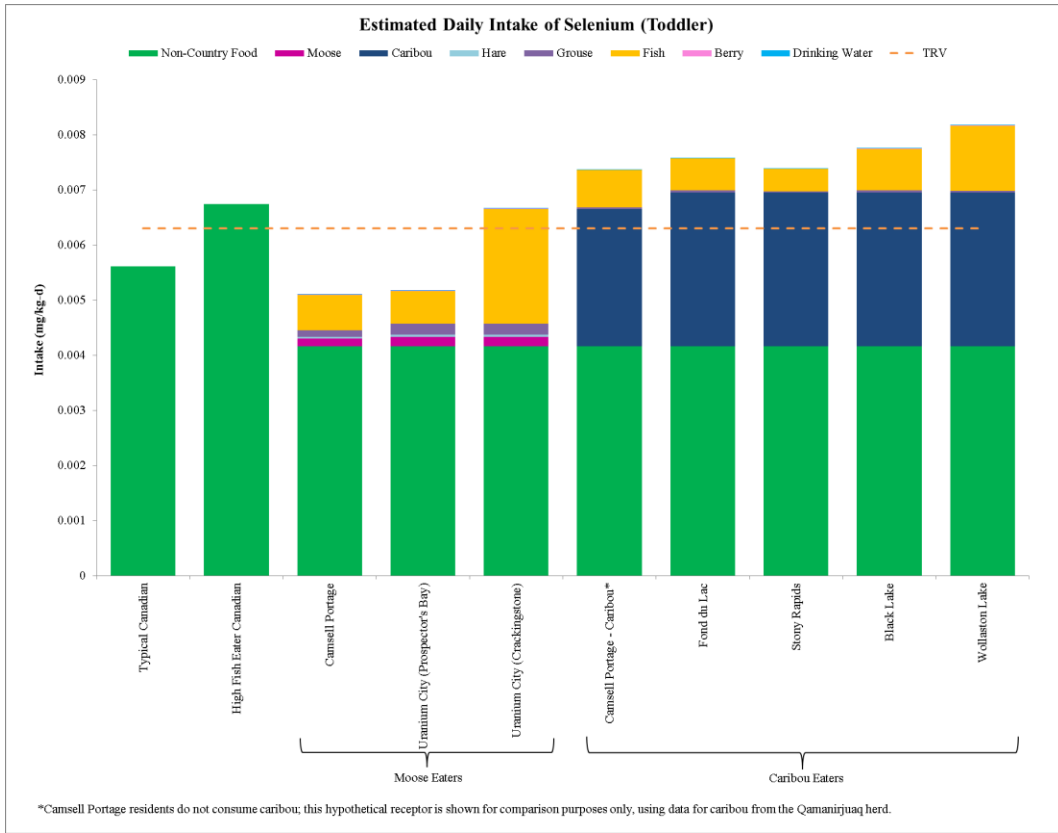
D.3.1.4 Toddler



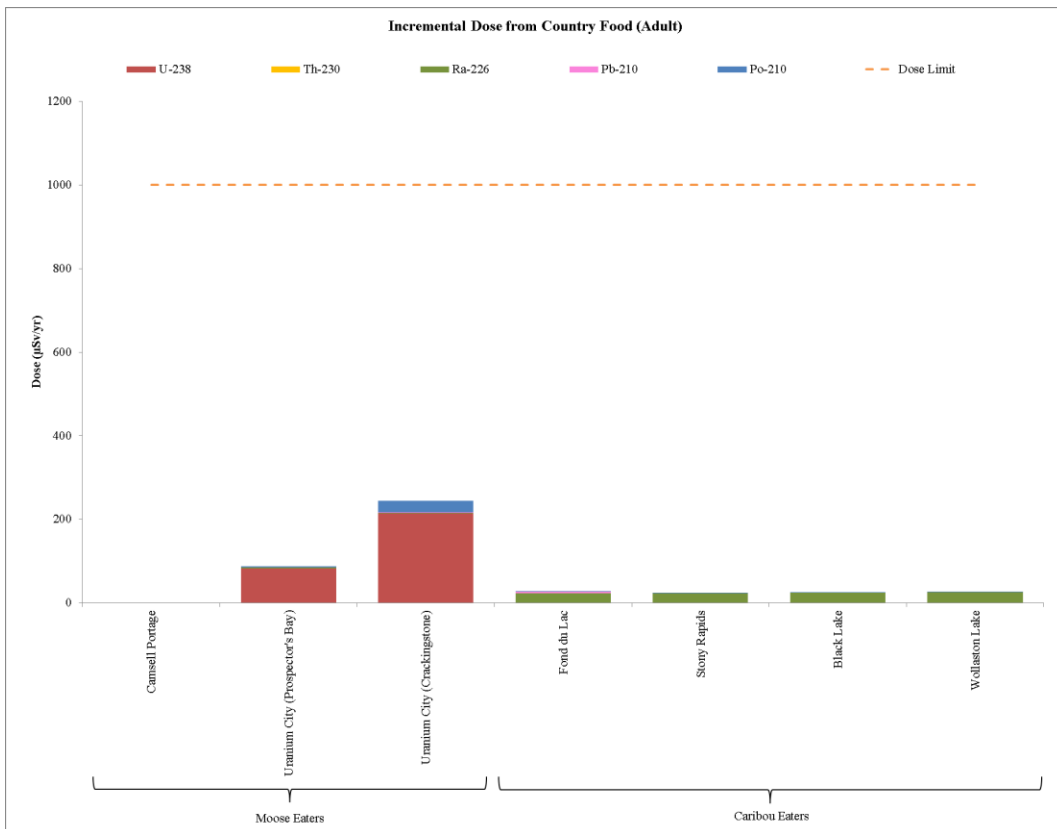
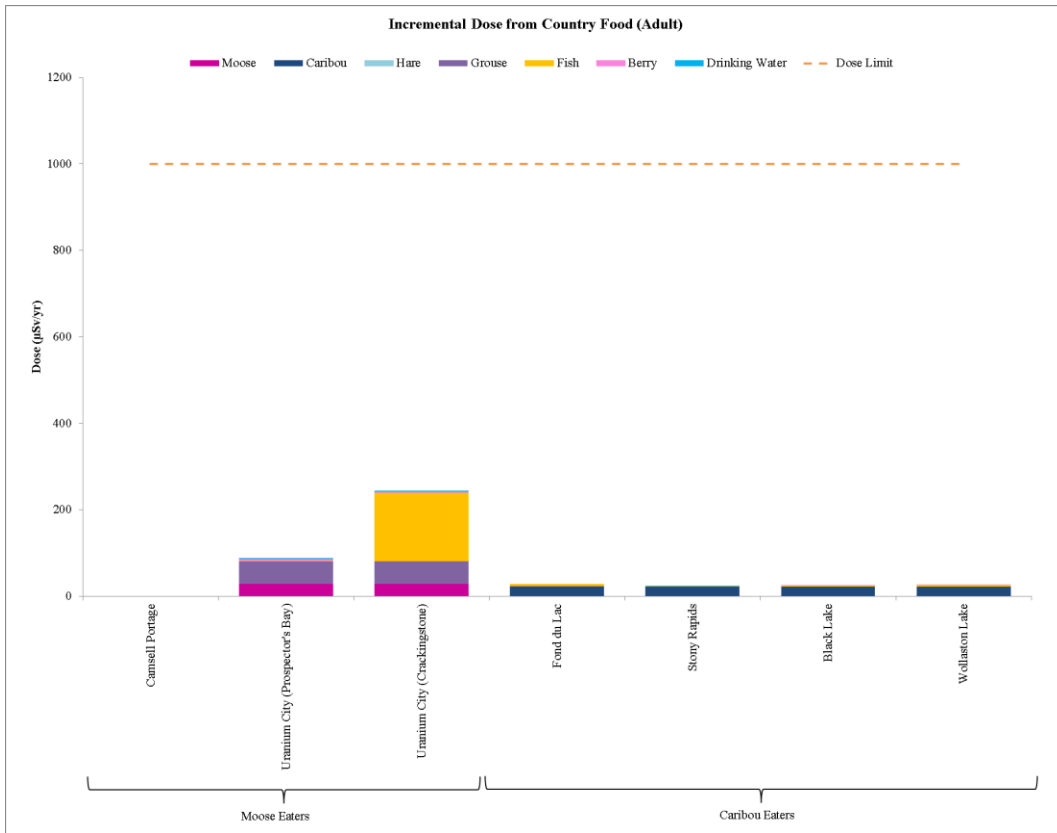


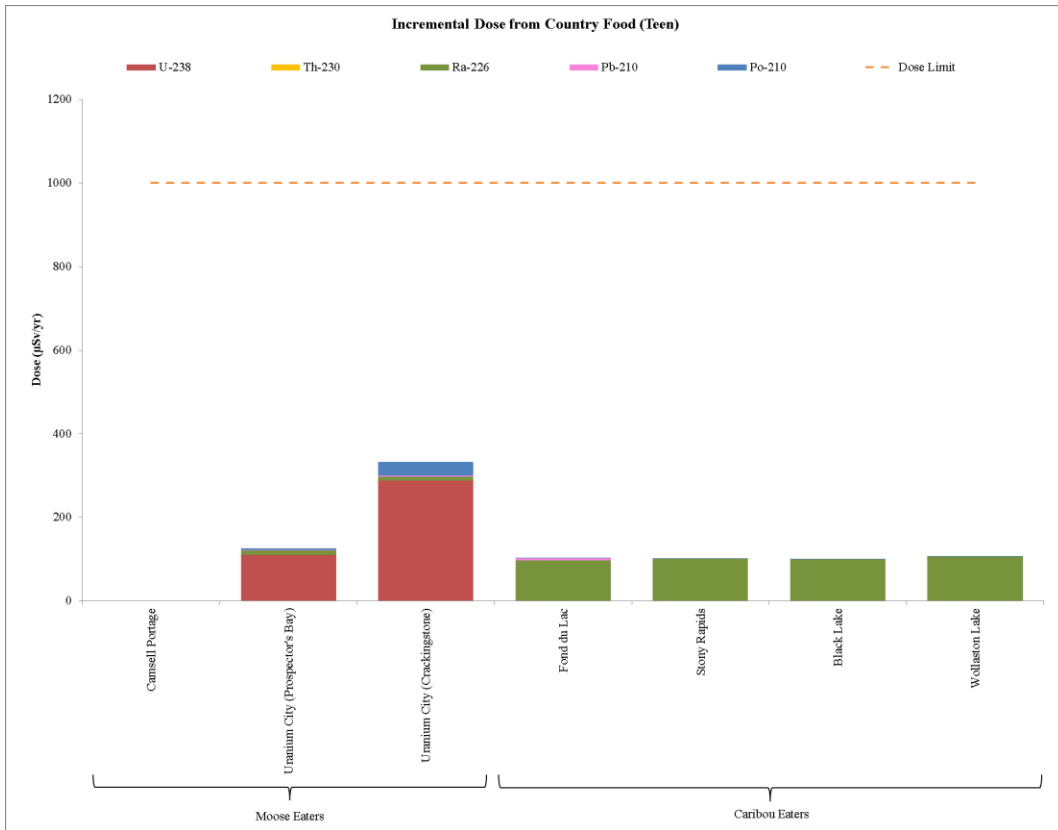
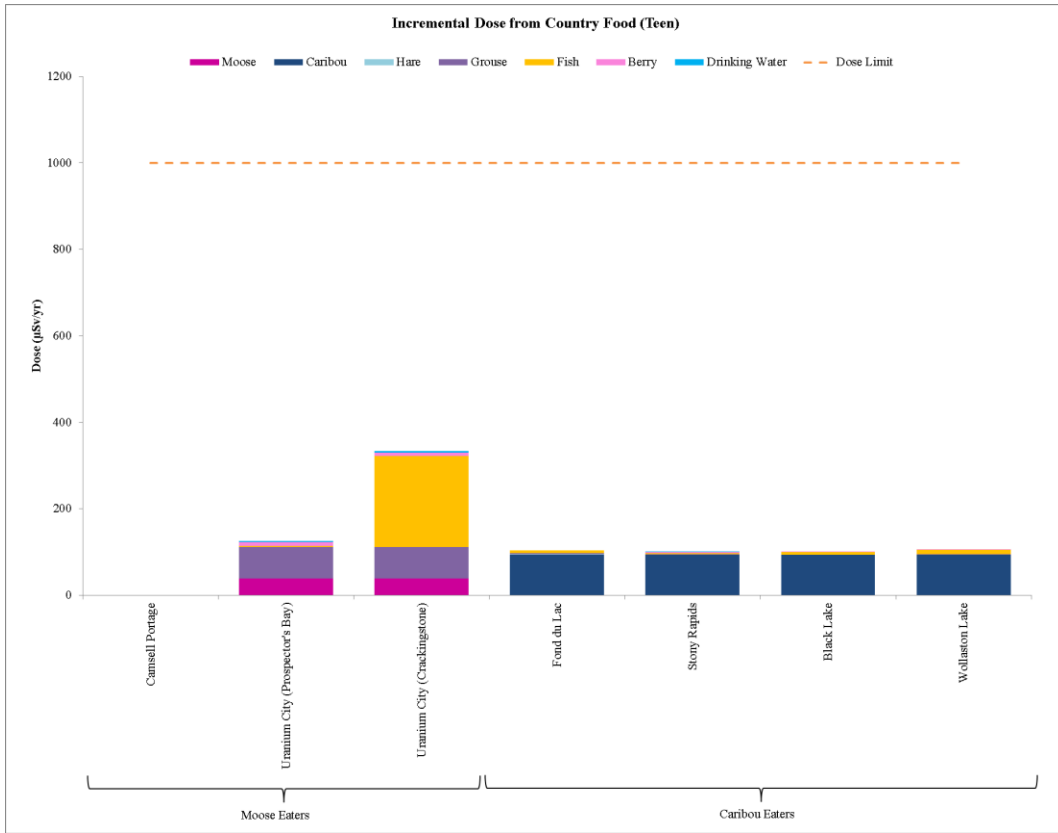


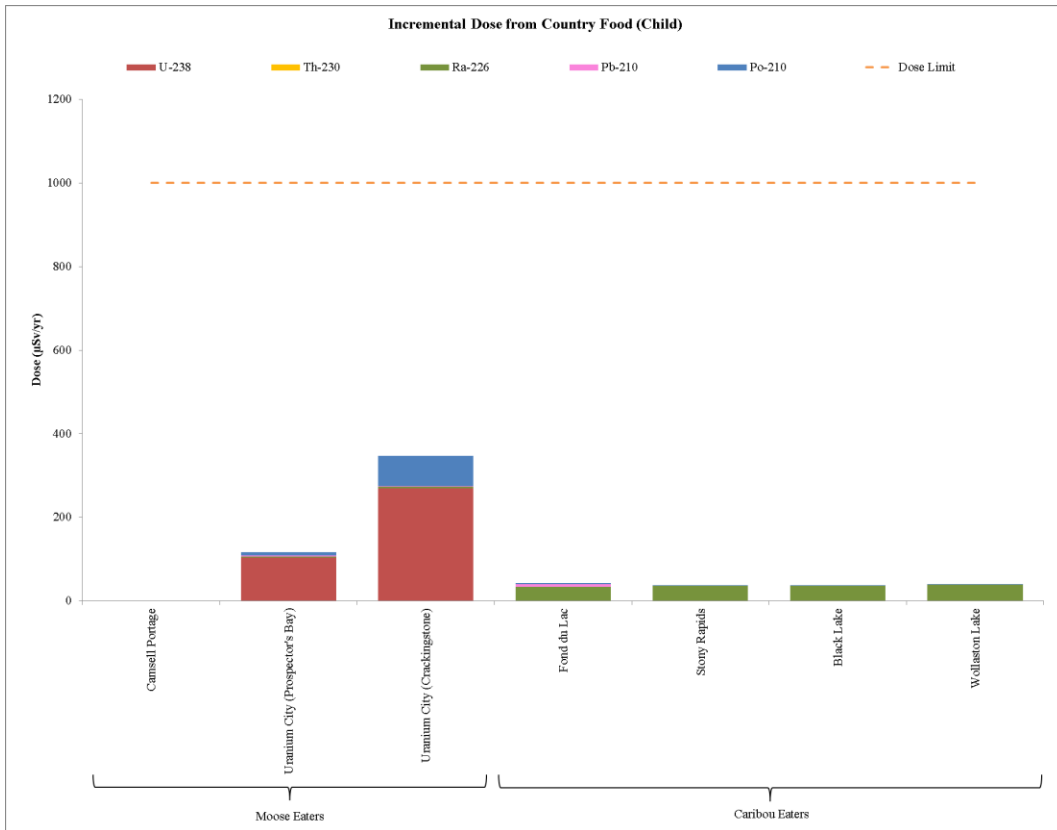
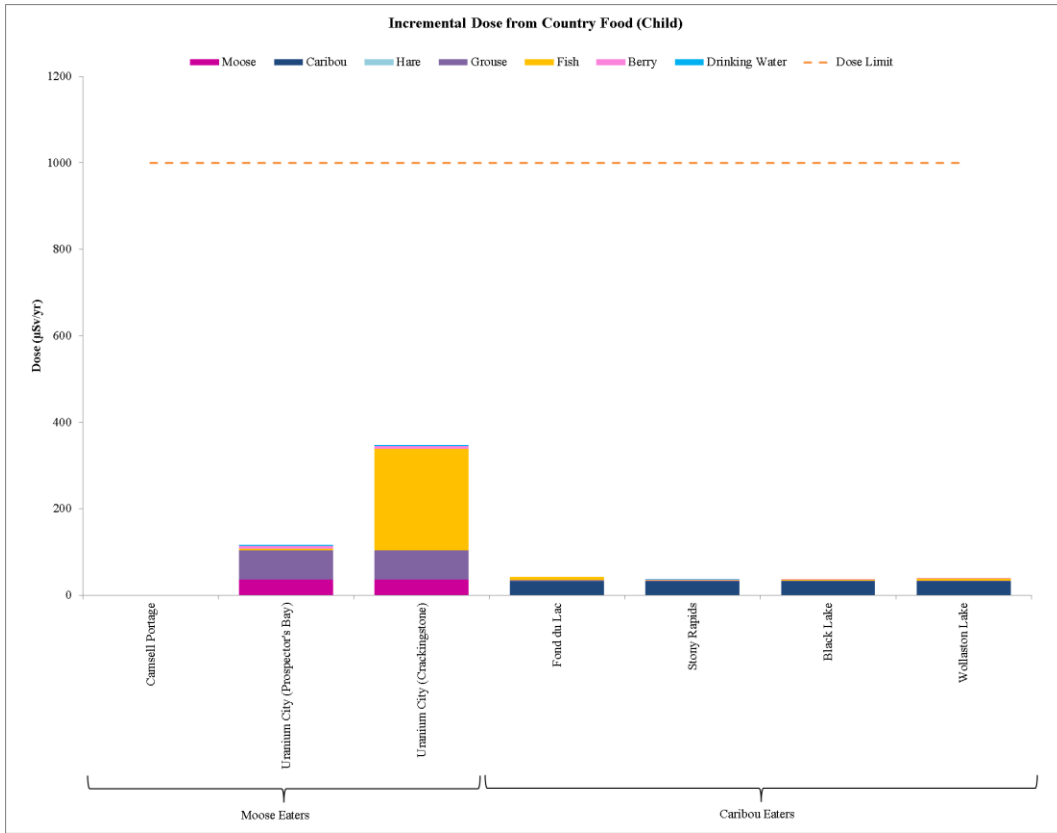


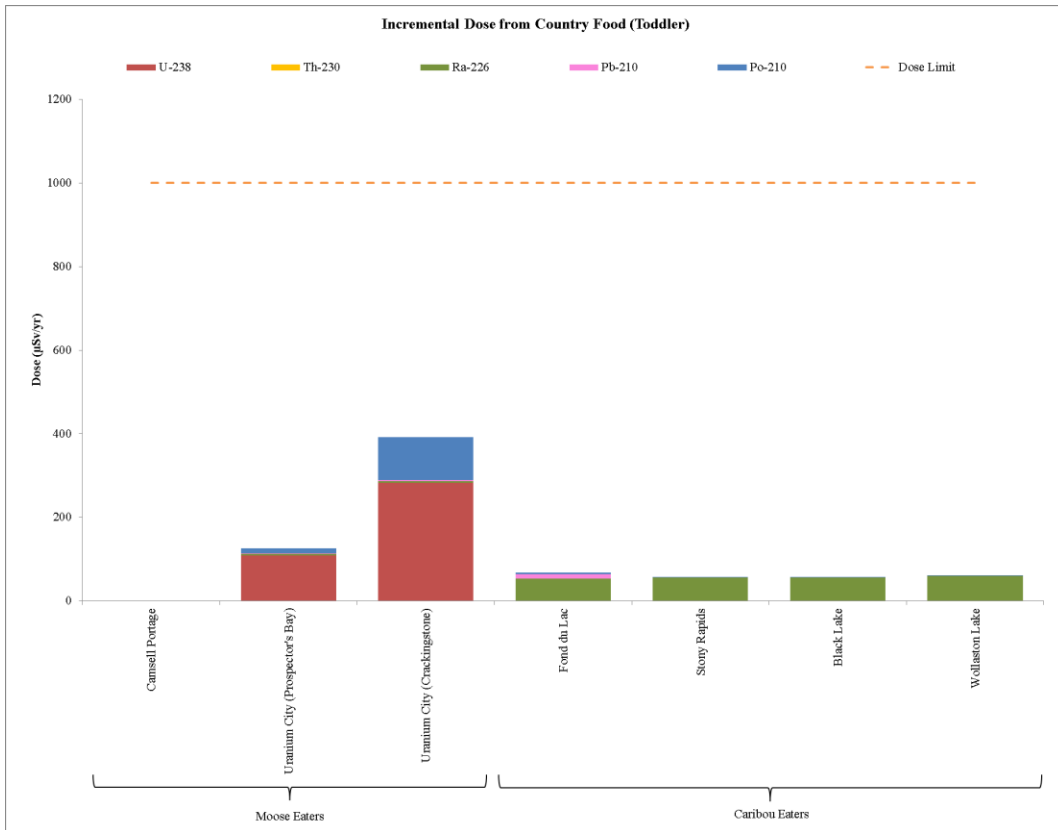
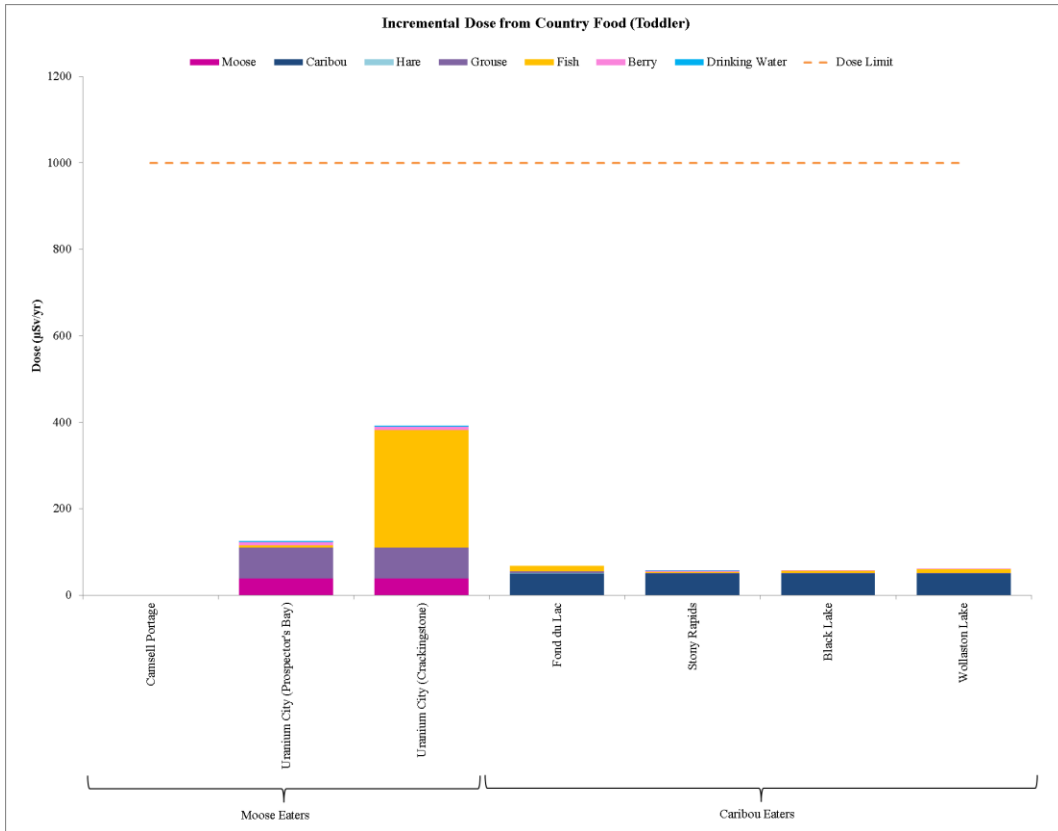


D.3.2 Radionuclides



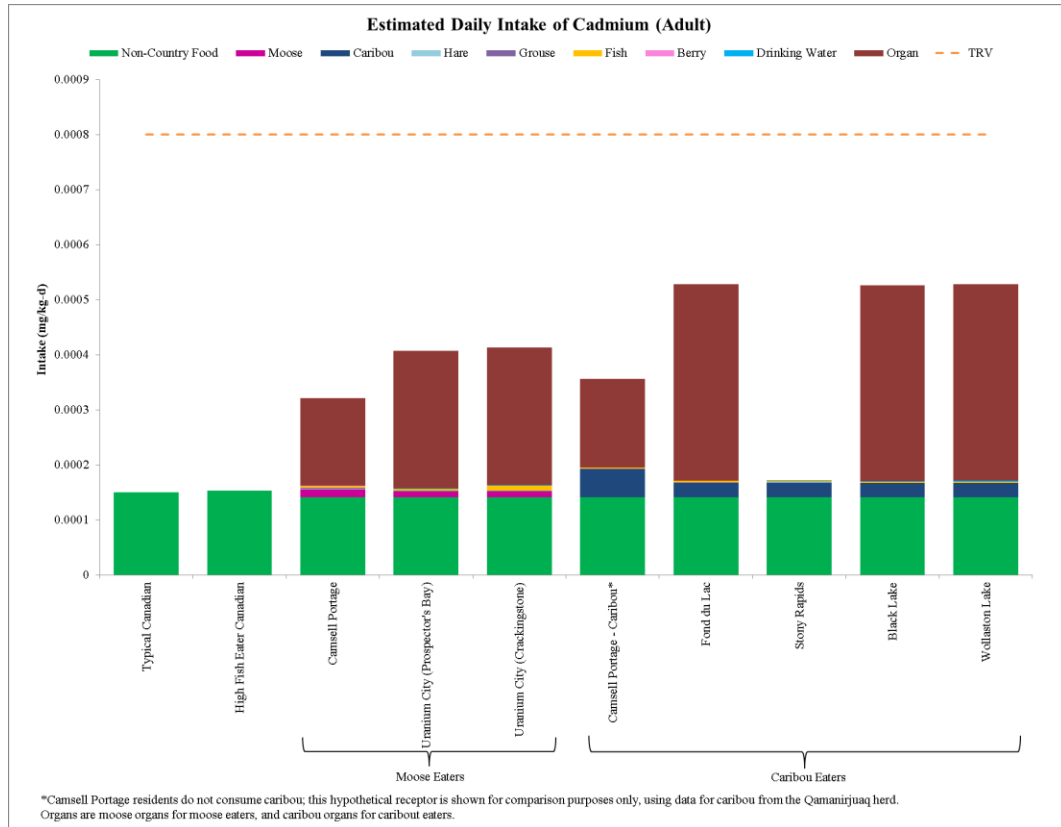


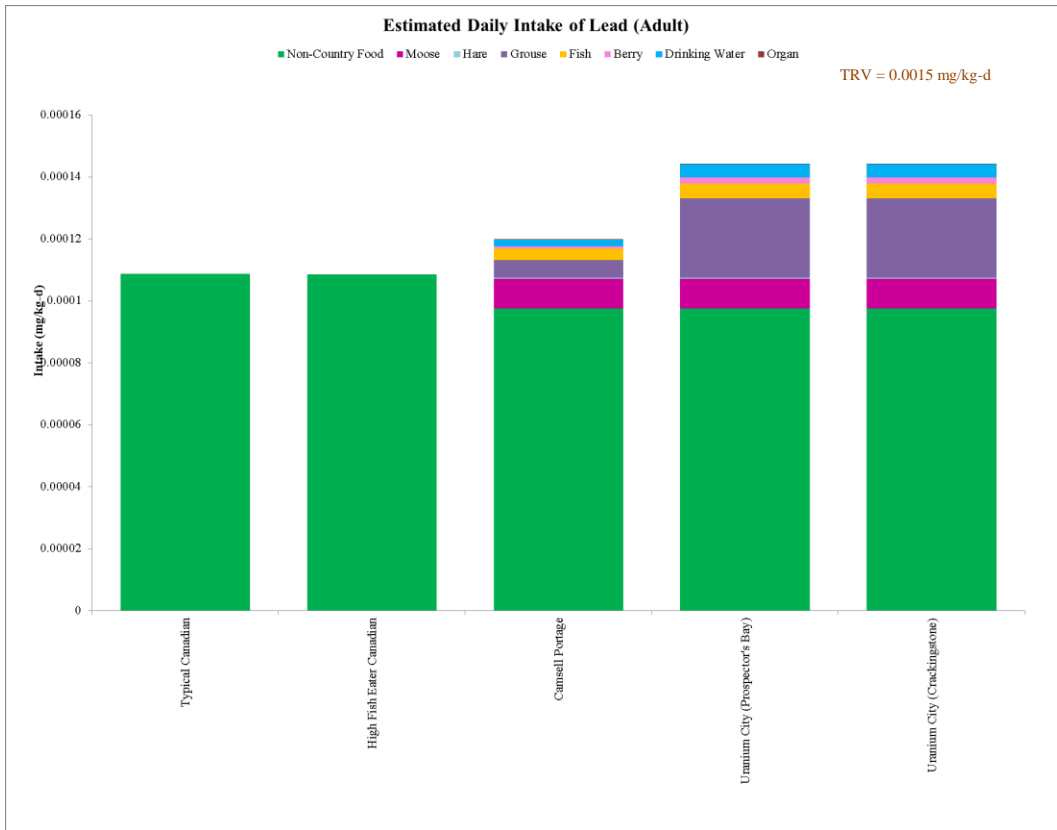
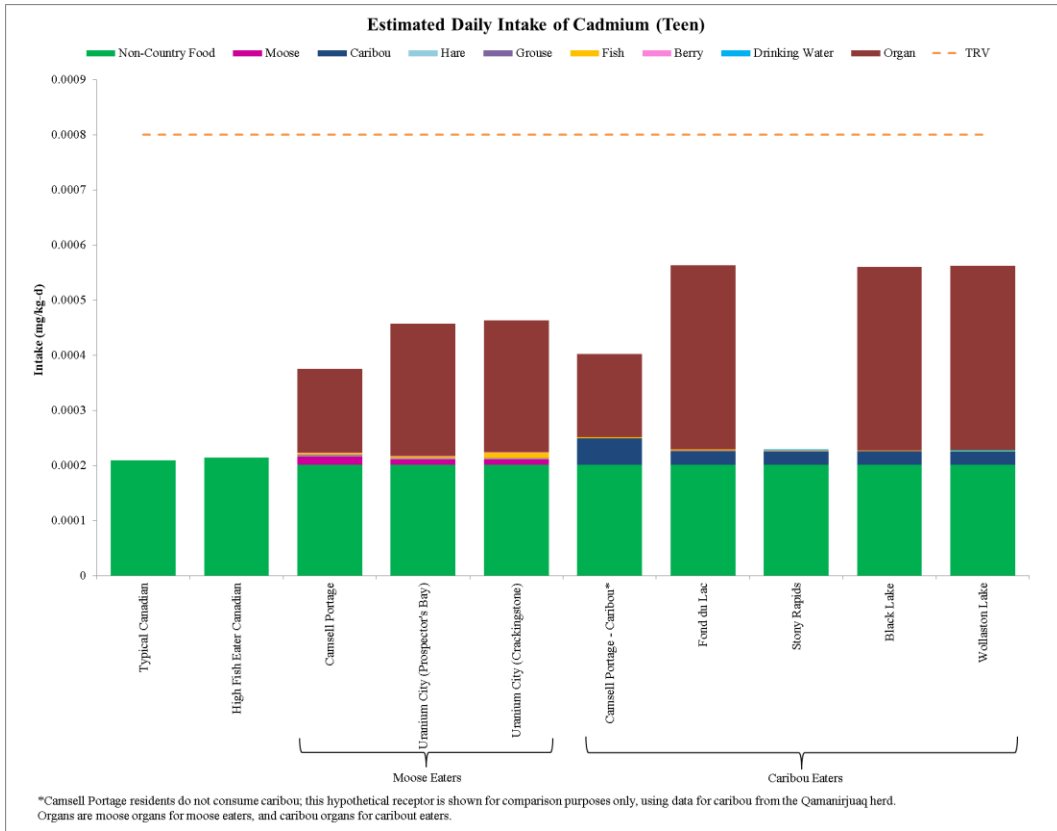


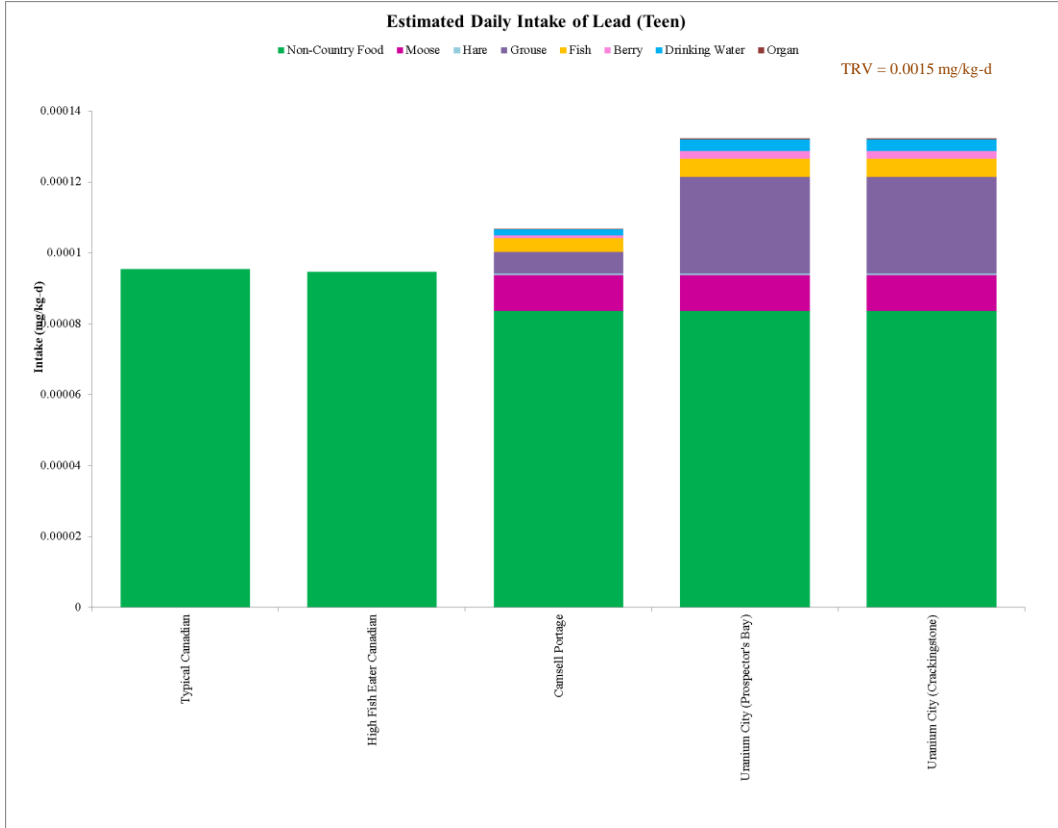


D.3.3 Sensitivity Analysis – Organ Consumption

The results are presented for adult and teen residents of all communities for cadmium since cadmium was evaluated in both moose and caribou organs, while the results for lead in moose organs are provided only for communities that consume moose (i.e., Camsell Portage and Uranium City).

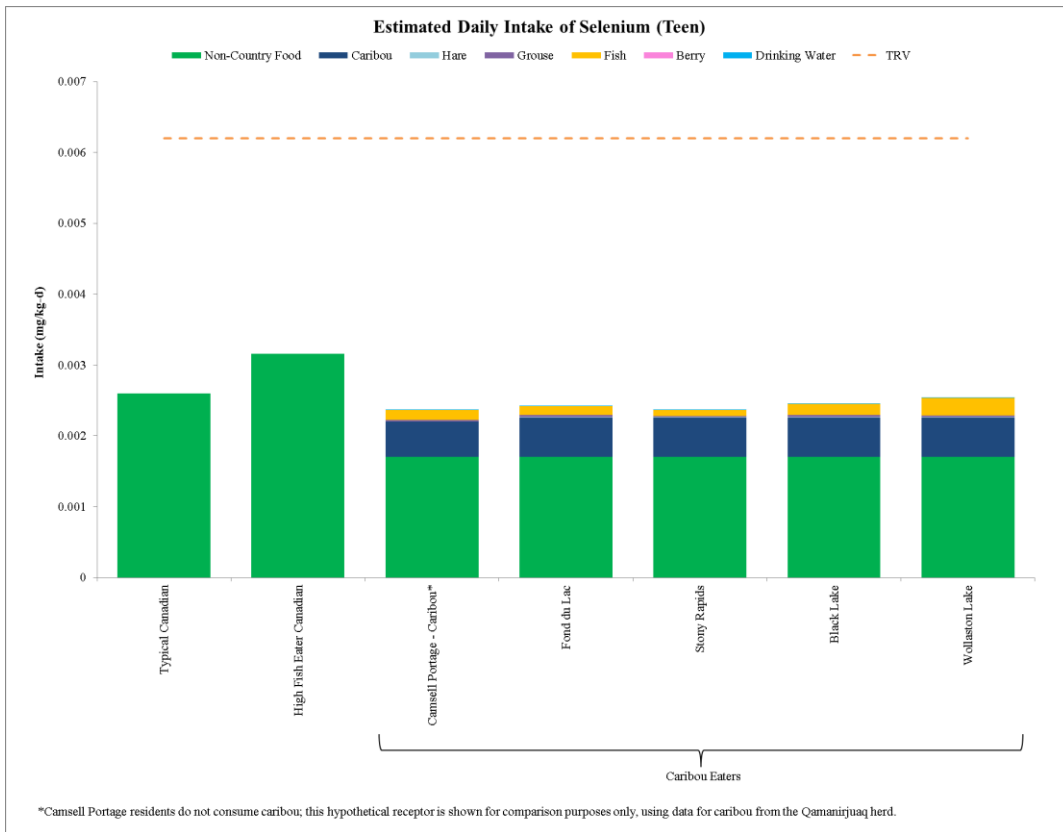
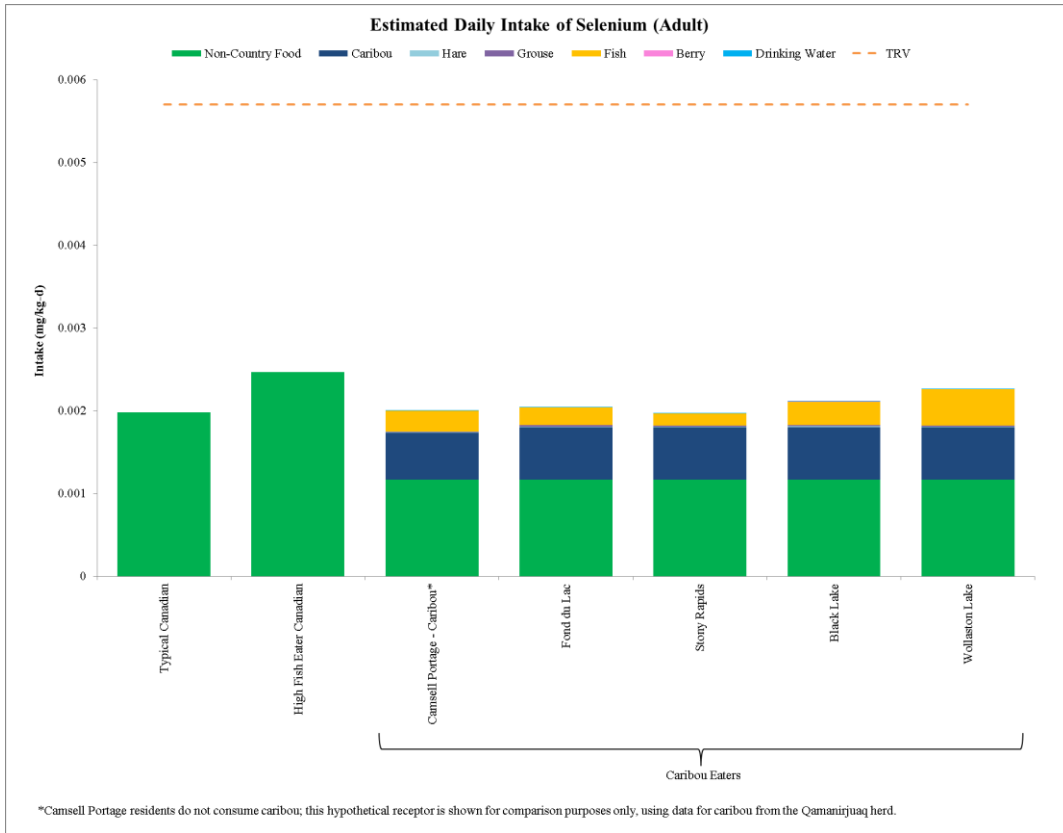


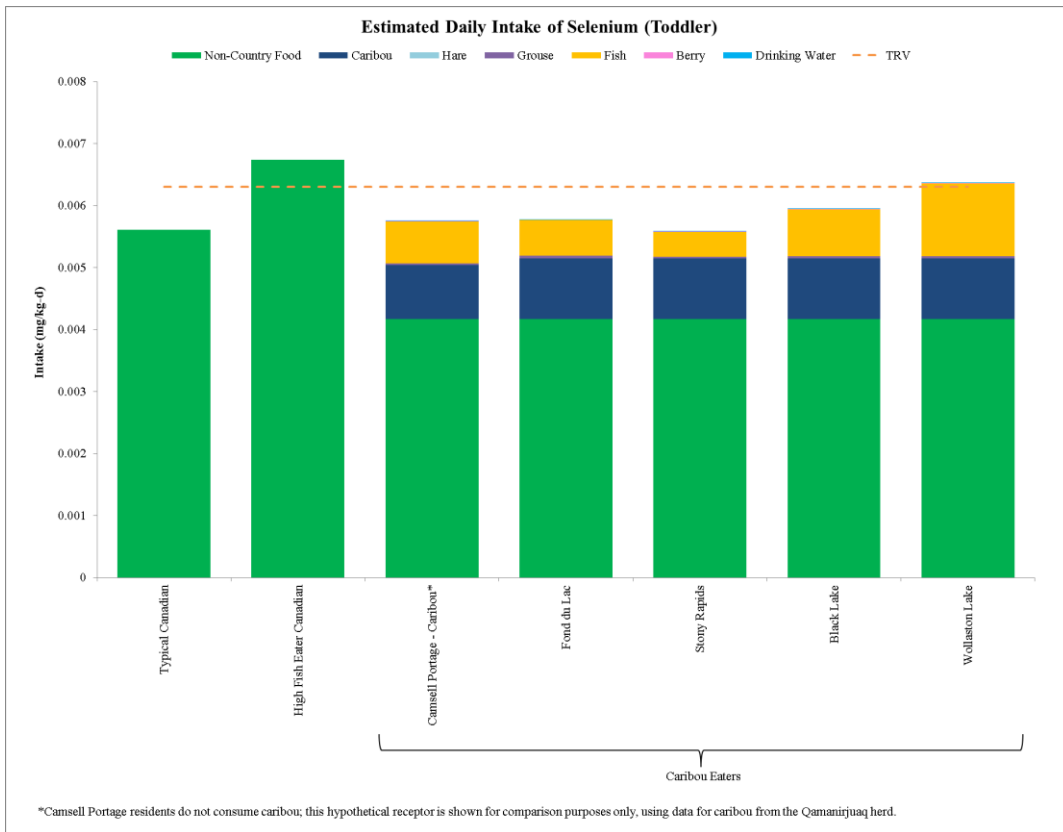
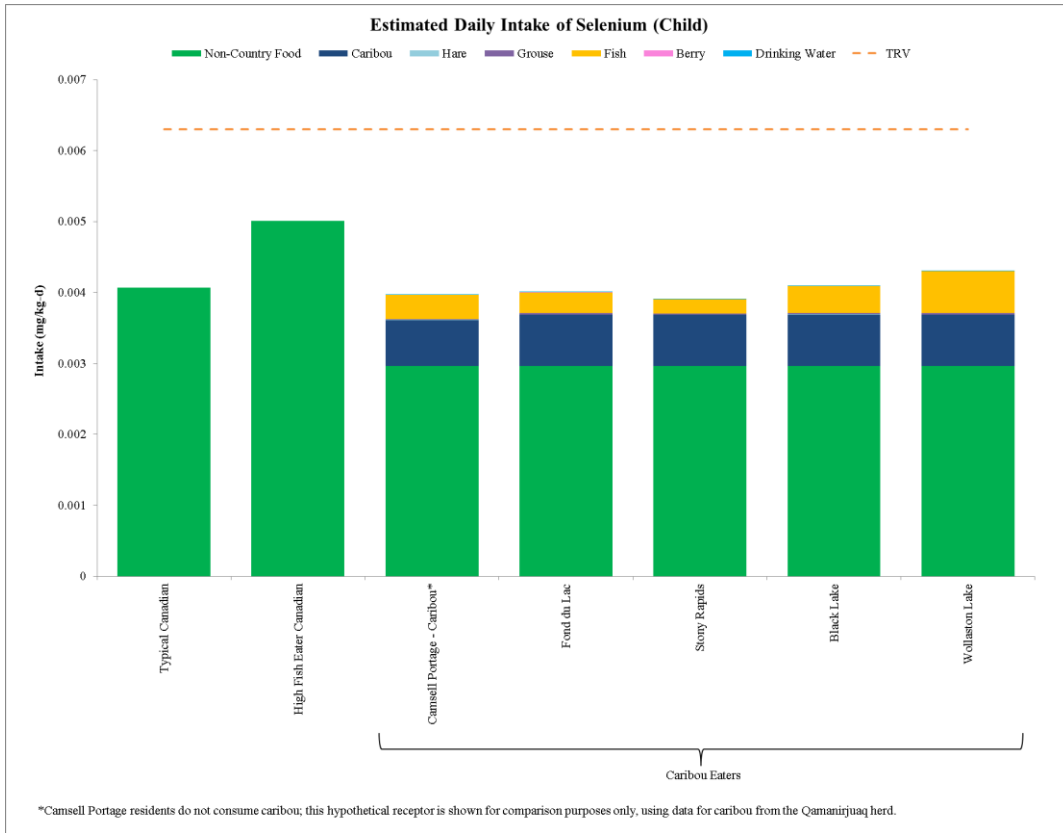




D.3.4 Sensitivity Analysis – Caribou Intakes

The results are presented for selenium for residents of communities that consume caribou to assess the use of intake rates from Richardson (1997).





ATTACHMENT E

SAMPLE CALCULATIONS

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ATTACHMENT E: DETAILED RESULTS

E.1 Uranium City (Moose Eater)

E.1.1 Non-Radionuclides

Sample Calculation		Incremental										
INGESTION PATHWAYS		As	Cd	Co	Cu	Pb	Mo	Ni	Se	U		
Drinking Water		<u>Units</u>										
	Concentration	mg/L	0.0000	0.0000	0.0001	0.0006	0.0002	0.0005	0.0002	0.0001	0.0040	
Adult	Ingestion Rate	L/d									1.5	
Teen	Ingestion Rate	L/d									1	
Child	Ingestion Rate	L/d									0.8	
Toddler	Ingestion Rate	L/d									0.6	
Adult	Intake	mg/d	0.00E+00	3.00E-05	1.50E-04	9.00E-04	3.00E-04	7.50E-04	3.00E-04	1.50E-04	6.00E-03	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	2.00E-05	1.00E-04	6.00E-04	2.00E-04	5.00E-04	2.00E-04	1.00E-04	4.00E-03	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.60E-05	8.00E-05	4.80E-04	1.60E-04	4.00E-04	1.60E-04	8.00E-05	3.20E-03	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.20E-05	6.00E-05	3.60E-04	1.20E-04	3.00E-04	1.20E-04	6.00E-05	2.40E-03	=Concentration x Ingestion Rate
Adult	Body weight	kg										70.7
Teen	Body weight	kg										59.7
Child	Body weight	kg										32.9
Toddler	Body weight	kg										16.5
	Exposure Duration - days per week	d/wk										7
	Exposure Duration - weeks per year	wk/yr										52
	Averaging Period - weeks per year	wk/yr										52
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.24E-07	2.12E-06	1.27E-05	4.24E-06	1.06E-05	4.24E-06	2.12E-06	8.49E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.35E-07	1.68E-06	1.01E-05	3.35E-06	8.38E-06	3.35E-06	1.68E-06	6.70E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.86E-07	2.43E-06	1.46E-05	4.86E-06	1.22E-05	4.86E-06	2.43E-06	9.73E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.27E-07	3.64E-06	2.18E-05	7.27E-06	1.82E-05	7.27E-06	3.64E-06	1.45E-04	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Lake Whitefish												
	Concentration	mg/kg	0.0000	0.0020	0.0090	0.2700	0.0040	0.0200	0.0200	0.2700	0.0008	
Adult	Ingestion Rate	kg/d										0.023924286
Teen	Ingestion Rate	kg/d										0.021531857
Child	Ingestion Rate	kg/d										0.016747
Toddler	Ingestion Rate	kg/d										0.011962143
Adult	Intake	mg/d	0.00E+00	4.78E-05	2.15E-04	6.46E-03	9.57E-05	4.78E-04	4.78E-04	6.46E-03	1.91E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	4.31E-05	1.94E-04	5.81E-03	8.61E-05	4.31E-04	4.31E-04	5.81E-03	1.72E-05	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	3.35E-05	1.51E-04	4.52E-03	6.70E-05	3.35E-04	3.35E-04	4.52E-03	1.34E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	2.39E-05	1.08E-04	3.23E-03	4.78E-05	2.39E-04	2.39E-04	3.23E-03	9.57E-06	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.77E-07	3.05E-06	9.14E-05	1.35E-06	6.77E-06	6.77E-06	9.14E-05	2.71E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.21E-07	3.25E-06	9.74E-05	1.44E-06	7.21E-06	7.21E-06	9.74E-05	2.89E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.02E-06	4.58E-06	1.37E-04	2.04E-06	1.02E-05	1.02E-05	1.37E-04	4.07E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.45E-06	6.52E-06	1.96E-04	2.90E-06	1.45E-05	1.45E-05	1.96E-04	5.80E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Other Fish												
	Concentration	mg/kg	0.0000	0.0020	0.0020	0.3100	0.0030	0.0200	0.0100	0.1600	0.0008	
Adult	Ingestion Rate	kg/d										0.08231477
Teen	Ingestion Rate	kg/d										0.074083293
Child	Ingestion Rate	kg/d										0.057620339

Toddler	Ingestion Rate	kg/d											0.041157385
Adult	Intake	mg/d	0.00E+00	1.65E-04	1.65E-04	2.55E-02	2.47E-04	1.65E-03	8.23E-04	1.32E-02	6.59E-05		=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.48E-04	1.48E-04	2.30E-02	2.22E-04	1.48E-03	7.41E-04	1.19E-02	5.93E-05		=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.15E-04	1.15E-04	1.79E-02	1.73E-04	1.15E-03	5.76E-04	9.22E-03	4.61E-05		=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	8.23E-05	8.23E-05	1.28E-02	1.23E-04	8.23E-04	4.12E-04	6.59E-03	3.29E-05		=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.33E-06	2.33E-06	3.61E-04	3.49E-06	2.33E-05	1.16E-05	1.86E-04	9.31E-07		=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.48E-06	2.48E-06	3.85E-04	3.72E-06	2.48E-05	1.24E-05	1.99E-04	9.93E-07		=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.50E-06	3.50E-06	5.43E-04	5.25E-06	3.50E-05	1.75E-05	2.80E-04	1.40E-06		=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.99E-06	4.99E-06	7.73E-04	7.48E-06	4.99E-05	2.49E-05	3.99E-04	2.00E-06		=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Moose													
	Concentration	mg/kg	0.0000	0.0200	0.0200	2.2000	0.0200	0.0200	0.0200	0.1600	0.0040		
Adult	Ingestion Rate	kg/d											0.033794688
Teen	Ingestion Rate	kg/d											0.03041522
Child	Ingestion Rate	kg/d											0.023656282
Toddler	Ingestion Rate	kg/d											0.016897344
Adult	Intake	mg/d	0.00E+00	6.76E-04	6.76E-04	7.43E-02	6.76E-04	6.76E-04	6.76E-04	5.41E-03	1.35E-04		=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	6.08E-04	6.08E-04	6.69E-02	6.08E-04	6.08E-04	6.08E-04	4.87E-03	1.22E-04		=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	4.73E-04	4.73E-04	5.20E-02	4.73E-04	4.73E-04	4.73E-04	3.79E-03	9.46E-05		=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	3.38E-04	3.38E-04	3.72E-02	3.38E-04	3.38E-04	3.38E-04	2.70E-03	6.76E-05		=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.56E-06	9.56E-06	1.05E-03	9.56E-06	9.56E-06	9.56E-06	7.65E-05	1.91E-06		=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.02E-05	1.02E-05	1.12E-03	1.02E-05	1.02E-05	1.02E-05	8.15E-05	2.04E-06		=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.44E-05	1.44E-05	1.58E-03	1.44E-05	1.44E-05	1.44E-05	1.15E-04	2.88E-06		=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.05E-05	2.05E-05	2.25E-03	2.05E-05	2.05E-05	2.05E-05	1.64E-04	4.10E-06		=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Caribou													
	Concentration	mg/kg	-	-	-	-	-	-	-	-	-		Not an exposure pathway
Adult	Ingestion Rate	kg/d											0
Teen	Ingestion Rate	kg/d											0
Child	Ingestion Rate	kg/d											0
Toddler	Ingestion Rate	kg/d											0
Adult	Intake	mg/d	-	-	-	-	-	-	-	-	-		=Concentration x Ingestion Rate
Teen	Intake	mg/d	-	-	-	-	-	-	-	-	-		=Concentration x Ingestion Rate
Child	Intake	mg/d	-	-	-	-	-	-	-	-	-		=Concentration x Ingestion Rate
Toddler	Intake	mg/d	-	-	-	-	-	-	-	-	-		=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-		=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-		=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-		=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-		=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Berry													
	Concentration	mg/kg	0.0000	0.0030	0.0075	0.5850	0.0075	0.0750	0.1140	0.0120	0.0045		
Adult	Ingestion Rate	kg/hr											0.018006651
Teen	Ingestion Rate	kg/hr											0.016205986
Child	Ingestion Rate	kg/hr											0.012604656
Toddler	Ingestion Rate	kg/hr											0.009003326
Adult	Intake	mg/hr	0.00E+00	5.40E-05	1.35E-04	1.05E-02	1.35E-04	1.35E-03	2.05E-03	2.16E-04	8.10E-05		=Concentration x Ingestion Rate

Teen	Intake	mg/hr	0.00E+00	4.86E-05	1.22E-04	9.48E-03	1.22E-04	1.22E-03	1.85E-03	1.94E-04	7.29E-05	=Concentration x Ingestion Rate
Child	Intake	mg/hr	0.00E+00	3.78E-05	9.45E-05	7.37E-03	9.45E-05	9.45E-04	1.44E-03	1.51E-04	5.67E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	0.00E+00	2.70E-05	6.75E-05	5.27E-03	6.75E-05	6.75E-04	1.03E-03	1.08E-04	4.05E-05	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.64E-07	1.91E-06	1.49E-04	1.91E-06	1.91E-05	2.90E-05	3.06E-06	1.15E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.14E-07	2.04E-06	1.59E-04	2.04E-06	2.04E-05	3.09E-05	3.26E-06	1.22E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.15E-06	2.87E-06	2.24E-04	2.87E-06	2.87E-05	4.37E-05	4.60E-06	1.72E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.64E-06	4.09E-06	3.19E-04	4.09E-06	4.09E-05	6.22E-05	6.55E-06	2.46E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Grouse												
Adult	Concentration	mg/kg	0.0000	0.0050	0.0030	2.2000	0.0900	0.0200	0.0200	0.3200	0.0070	
Teen	Ingestion Rate	kg/hr										0.020075401
Child	Ingestion Rate	kg/hr										0.018067861
Toddler	Ingestion Rate	kg/hr										0.01405278
Adult	Intake	mg/hr	0.00E+00	1.00E-04	6.02E-05	4.42E-02	1.81E-03	4.02E-04	4.02E-04	6.42E-03	1.41E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	9.03E-05	5.42E-05	3.97E-02	1.63E-03	3.61E-04	3.61E-04	5.78E-03	1.26E-04	=Concentration x Ingestion Rate
Child	Intake	mg/hr	0.00E+00	7.03E-05	4.22E-05	3.09E-02	1.26E-03	2.81E-04	2.81E-04	4.50E-03	9.84E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	0.00E+00	5.02E-05	3.01E-05	2.21E-02	9.03E-04	2.01E-04	2.01E-04	3.21E-03	7.03E-05	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-06	8.52E-07	6.25E-04	2.56E-05	5.68E-06	5.68E-06	9.09E-05	1.99E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.51E-06	9.08E-07	6.66E-04	2.72E-05	6.05E-06	6.05E-06	9.68E-05	2.12E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.14E-06	1.28E-06	9.40E-04	3.84E-05	8.54E-06	8.54E-06	1.37E-04	2.99E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.04E-06	1.83E-06	1.34E-03	5.48E-05	1.22E-05	1.22E-05	1.95E-04	4.26E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Hare												
Adult	Concentration	mg/kg	0.0000	0.0030	0.0050	1.6000	0.0020	0.0200	0.0200	0.1000	0.0007	
Teen	Ingestion Rate	kg/hr										0.014008495
Child	Ingestion Rate	kg/hr										0.012607646
Toddler	Ingestion Rate	kg/hr										0.009805947
Adult	Intake	mg/hr	0.00E+00	4.20E-05	7.00E-05	2.24E-02	2.80E-05	2.80E-04	2.80E-04	1.40E-03	9.81E-06	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	3.78E-05	6.30E-05	2.02E-02	2.52E-05	2.52E-04	2.52E-04	1.26E-03	8.83E-06	=Concentration x Ingestion Rate
Child	Intake	mg/hr	0.00E+00	2.94E-05	4.90E-05	1.57E-02	1.96E-05	1.96E-04	1.96E-04	9.81E-04	6.86E-06	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	0.00E+00	2.10E-05	3.50E-05	1.12E-02	1.40E-05	1.40E-04	1.40E-04	7.00E-04	4.90E-06	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.94E-07	9.91E-07	3.17E-04	3.96E-07	3.96E-06	3.96E-06	1.98E-05	1.39E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.34E-07	1.06E-06	3.38E-04	4.22E-07	4.22E-06	4.22E-06	2.11E-05	1.48E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.94E-07	1.49E-06	4.77E-04	5.96E-07	5.96E-06	5.96E-06	2.98E-05	2.09E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.27E-06	2.12E-06	6.79E-04	8.49E-07	8.49E-06	8.49E-06	4.24E-05	2.97E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Organ												
Adult	Concentration	mg/kg	-	-	-	-	-	-	-	-	-	Not an exposure pathway
	Ingestion Rate	kg/hr										0.00281

Teen	Ingestion Rate	kg/hr											0.00227
Child	Ingestion Rate	kg/hr											0
Toddler	Ingestion Rate	kg/hr											0
Adult	Intake	mg/hr	-	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	-	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Child	Intake	mg/hr	-	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	-	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Supermarket Foods													
Adult	Total Intake by body weight	mg/kg-d	-	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05		
Teen	Total Intake by body weight	mg/kg-d	-	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05		
Child	Total Intake by body weight	mg/kg-d	-	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05		
Toddler	Total Intake by body weight	mg/kg-d	-	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05		
TOTAL INGESTION													
Adult	Total Intake by body weight	mg/kg-d	0.00E+00	1.57E-04	1.57E-04	1.38E-02	1.44E-04	2.13E-03	1.91E-03	1.64E-03	1.66E-04		=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	0.00E+00	2.17E-04	2.02E-04	1.62E-02	1.32E-04	2.84E-03	2.22E-03	2.20E-03	1.24E-04		=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	0.00E+00	3.38E-04	3.01E-04	2.54E-02	1.91E-04	4.68E-03	3.44E-03	3.67E-03	1.75E-04		=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	0.00E+00	4.05E-04	4.30E-04	3.44E-02	2.66E-04	6.63E-03	4.98E-03	5.17E-03	2.57E-04		=SUM(all intake pathways)

E.1.2 Non-Radionuclides, Organ Consumption

Sample Calculation		Incremental									
INGESTION PATHWAYS		As	Cd	Co	Cu	Pb	Mo	Ni	Se	U	
Drinking Water											
	Concentration	0.0000	0.0000	0.0001	0.0006	0.0002	0.0005	0.0002	0.0001	0.0040	
Adult	Ingestion Rate										1.5
Teen	Ingestion Rate										1
Adult	Intake	0.00E+00	3.00E-05	1.50E-04	9.00E-04	3.00E-04	7.50E-04	3.00E-04	1.50E-04	6.00E-03	=Concentration x Ingestion Rate
Teen	Intake	0.00E+00	2.00E-05	1.00E-04	6.00E-04	2.00E-04	5.00E-04	2.00E-04	1.00E-04	4.00E-03	=Concentration x Ingestion Rate
Adult	Body weight										70.7
Teen	Body weight										59.7
	Exposure Duration - days per week										7
	Exposure Duration - weeks per year										52
	Averaging Period - weeks per year										52
Adult	Averaged Intake by body weight	0.00E+00	4.24E-07	2.12E-06	1.27E-05	4.24E-06	1.06E-05	4.24E-06	2.12E-06	8.49E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	0.00E+00	3.35E-07	1.68E-06	1.01E-05	3.35E-06	8.38E-06	3.35E-06	1.68E-06	6.70E-05	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Lake Whitefish											
	Concentration	0.0000	0.0020	0.0090	0.2700	0.0040	0.0200	0.0200	0.2700	0.0008	
Adult	Ingestion Rate										0.023924286
Teen	Ingestion Rate										0.021531857
Adult	Intake	0.00E+00	4.78E-05	2.15E-04	6.46E-03	9.57E-05	4.78E-04	4.78E-04	6.46E-03	1.91E-05	=Concentration x Ingestion Rate
Teen	Intake	0.00E+00	4.31E-05	1.94E-04	5.81E-03	8.61E-05	4.31E-04	4.31E-04	5.81E-03	1.72E-05	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	0.00E+00	6.77E-07	3.05E-06	9.14E-05	1.35E-06	6.77E-06	6.77E-06	9.14E-05	2.71E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	0.00E+00	7.21E-07	3.25E-06	9.74E-05	1.44E-06	7.21E-06	7.21E-06	9.74E-05	2.89E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Other Fish											
	Concentration	0.0000	0.0020	0.0020	0.3100	0.0030	0.0200	0.0100	0.1600	0.0008	
Adult	Ingestion Rate										0.08231477
Teen	Ingestion Rate										0.074083293
Adult	Intake	0.00E+00	1.65E-04	1.65E-04	2.55E-02	2.47E-04	1.65E-03	8.23E-04	1.32E-02	6.59E-05	=Concentration x Ingestion Rate
Teen	Intake	0.00E+00	1.48E-04	1.48E-04	2.30E-02	2.22E-04	1.48E-03	7.41E-04	1.19E-02	5.93E-05	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	0.00E+00	2.33E-06	2.33E-06	3.61E-04	3.49E-06	2.33E-05	1.16E-05	1.86E-04	9.31E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	0.00E+00	2.48E-06	2.48E-06	3.85E-04	3.72E-06	2.48E-05	1.24E-05	1.99E-04	9.93E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Moose											
	Concentration	0.0000	0.0200	0.0200	2.2000	0.0200	0.0200	0.0200	0.1600	0.0040	
Adult	Ingestion Rate										0.033794688
Teen	Ingestion Rate										0.03041522
Adult	Intake	0.00E+00	6.76E-04	6.76E-04	7.43E-02	6.76E-04	6.76E-04	6.76E-04	5.41E-03	1.35E-04	=Concentration x Ingestion Rate
Teen	Intake	0.00E+00	6.08E-04	6.08E-04	6.69E-02	6.08E-04	6.08E-04	6.08E-04	4.87E-03	1.22E-04	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	0.00E+00	9.56E-06	9.56E-06	1.05E-03	9.56E-06	9.56E-06	9.56E-06	7.65E-05	1.91E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	0.00E+00	1.02E-05	1.02E-05	1.12E-03	1.02E-05	1.02E-05	1.02E-05	8.15E-05	2.04E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Caribou											
	Concentration	-	-	-	-	-	-	-	-	-	Not an exposure pathway
Adult	Ingestion Rate										0
Teen	Ingestion Rate										0
Adult	Intake	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Teen	Intake	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7

Teen	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	d/wk =Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
	Berry											
Adult	Concentration	mg/kg	0.0000	0.0030	0.0075	0.5850	0.0075	0.0750	0.1140	0.0120	0.0045	
Adult	Ingestion Rate	kg/hr										0.018006651
Teen	Ingestion Rate	kg/hr										0.016205986
Adult	Intake	mg/hr	0.00E+00	5.40E-05	1.35E-04	1.05E-02	1.35E-04	1.35E-03	2.05E-03	2.16E-04	8.10E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	4.86E-05	1.22E-04	9.48E-03	1.22E-04	1.22E-03	1.85E-03	1.94E-04	7.29E-05	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.64E-07	1.91E-06	1.49E-04	1.91E-06	1.91E-05	2.90E-05	3.06E-06	1.15E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.14E-07	2.04E-06	1.59E-04	2.04E-06	2.04E-05	3.09E-05	3.26E-06	1.22E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
	Grouse											
Adult	Concentration	mg/kg	0.0000	0.0050	0.0030	2.2000	0.0900	0.0200	0.0200	0.3200	0.0070	
Adult	Ingestion Rate	kg/hr										0.020075401
Teen	Ingestion Rate	kg/hr										0.018067861
Adult	Intake	mg/hr	0.00E+00	1.00E-04	6.02E-05	4.42E-02	1.81E-03	4.02E-04	4.02E-04	6.42E-03	1.41E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	9.03E-05	5.42E-05	3.97E-02	1.63E-03	3.61E-04	3.61E-04	5.78E-03	1.26E-04	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.42E-06	8.52E-07	6.25E-04	2.56E-05	5.68E-06	5.68E-06	9.09E-05	1.99E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.51E-06	9.08E-07	6.66E-04	2.72E-05	6.05E-06	6.05E-06	9.68E-05	2.12E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
	Hare											
Adult	Concentration	mg/kg	0.0000	0.0030	0.0050	1.6000	0.0020	0.0200	0.0200	0.1000	0.0007	
Adult	Ingestion Rate	kg/hr										0.014008495
Teen	Ingestion Rate	kg/hr										0.012607646
Adult	Intake	mg/hr	0.00E+00	4.20E-05	7.00E-05	2.24E-02	2.80E-05	2.80E-04	2.80E-04	1.40E-03	9.81E-06	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	3.78E-05	6.30E-05	2.02E-02	2.52E-05	2.52E-04	2.52E-04	1.26E-03	8.83E-06	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	5.94E-07	9.91E-07	3.17E-04	3.96E-07	3.96E-06	3.96E-06	1.98E-05	1.39E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	6.34E-07	1.06E-06	3.38E-04	4.22E-07	4.22E-06	4.22E-06	2.11E-05	1.48E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
	Organ											
Adult	Concentration	mg/kg	0.0000	6.3000	0.0000	0.0000	0.0070	0.0000	0.0000	0.0000	0.0000	
Adult	Ingestion Rate	kg/hr										0.00281
Teen	Ingestion Rate	kg/hr										0.00227
Adult	Intake	mg/hr	0.00E+00	1.77E-02	0.00E+00	0.00E+00	1.97E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	1.43E-02	0.00E+00	0.00E+00	1.59E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.50E-04	0.00E+00	0.00E+00	2.78E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.40E-04	0.00E+00	0.00E+00	2.66E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
	Supermarket Foods											
Adult	Total Intake by body weight	mg/kg-d	-	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05	
Teen	Total Intake by body weight	mg/kg-d	-	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05	
	TOTAL INGESTION											
Adult	Total Intake by body weight	mg/kg-d	0.00E+00	4.07E-04	1.57E-04	1.38E-02	1.44E-04	2.13E-03	1.91E-03	1.64E-03	1.66E-04	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	0.00E+00	4.57E-04	2.02E-04	1.62E-02	1.32E-04	2.84E-03	2.22E-03	2.20E-03	1.24E-04	=SUM(all intake pathways)

E.1.3 Radionuclides

Sample Calculation			Incremental	Incremental	Incremental	Incremental	Incremental	
INGESTION PATHWAYS			U-238	Th-230	Ra-226	Pb-210	Po-210	
Drinking Water								
		<u>Units</u>						
		Bq/L	0.0484	0.0000	0.0010	0.0000	0.0000	
Adult	Ingestion Rate	L/d						1.5
Teen	Ingestion Rate	L/d						1
Child	Ingestion Rate	L/d						0.8
Toddler	Ingestion Rate	L/d						0.6
Adult	Intake	Bq/d	7.25E-02	0.00E+00	1.50E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	Bq/d	4.84E-02	0.00E+00	1.00E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Child	Intake	Bq/d	3.87E-02	0.00E+00	8.00E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Toddler	Intake	Bq/d	2.90E-02	0.00E+00	6.00E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Dose conversion - ingestion	Sv/Bq	9.40E-08	2.10E-07	2.80E-07	6.90E-07	1.20E-06	ICRP 2012
Teen	Dose conversion - ingestion	Sv/Bq	1.41E-07	2.20E-07	1.50E-06	1.90E-06	1.60E-06	ICRP 2012
Child	Dose conversion - ingestion	Sv/Bq	1.70E-07	3.10E-07	6.20E-07	2.20E-06	4.40E-06	ICRP 2012
Toddler	Dose conversion - ingestion	Sv/Bq	2.50E-07	4.10E-07	9.60E-07	3.60E-06	8.80E-06	ICRP 2012
	Exposure Duration - days per week	d/wk						7
	Exposure Duration - weeks per year	wk/yr						52
	Averaging Period - weeks per year	wk/yr						52
Adult	Dose	Sv/yr	2.49E-06	0.00E+00	1.53E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	2.49E-06	0.00E+00	5.48E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	2.40E-06	0.00E+00	1.81E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	2.65E-06	0.00E+00	2.10E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Lake Whitefish								
		Bq/g	0.0000	0.0000	0.0000	0.0000	0.0001	
Adult	Ingestion Rate	kg/d						0.023924286
Teen	Ingestion Rate	kg/d						0.021531857
Child	Ingestion Rate	kg/d						0.016747
Toddler	Ingestion Rate	kg/d						0.011962143
Adult	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E-03	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.15E-03	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E-03	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-03	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.26E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.69E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.84E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Other Fish								
		Bq/g	0.0000	0.0000	0.0000	0.0000	0.0000	
Adult	Ingestion Rate	kg/d						0.08231477
Teen	Ingestion Rate	kg/d						0.074083293
Child	Ingestion Rate	kg/d						0.057620339
Toddler	Ingestion Rate	kg/d						0.041157385
Adult	Intake	Bq/d	0.00E+00	0.00E+00	1.65E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	0.00E+00	0.00E+00	1.48E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	0.00E+00	0.00E+00	1.15E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg

Toddler	Intake	Bq/d	0.00E+00	0.00E+00	8.23E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	1.68E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	8.11E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	0.00E+00	0.00E+00	2.61E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	2.88E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Moose								
	Concentration	Bq/g	0.0248	0.0000	0.0000	0.0000	0.0000	
Adult	Ingestion Rate	kg/d						0.033794688
Teen	Ingestion Rate	kg/d						0.03041522
Child	Ingestion Rate	kg/d						0.023656282
Toddler	Ingestion Rate	kg/d						0.016897344
Adult	Intake	Bq/d	8.38E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	7.54E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	5.87E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	4.19E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	2.88E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	3.88E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	3.64E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	3.82E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Caribou								
	Concentration	Bq/g	-	-	-	-	-	Not an exposure pathway
Adult	Ingestion Rate	kg/d						0
Teen	Ingestion Rate	kg/d						0
Child	Ingestion Rate	kg/d						0
Toddler	Ingestion Rate	kg/d						0
Adult	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Berry								
	Concentration	Bq/g	0.0000	0.0000	0.0006	0.0002	0.0002	
Adult	Ingestion Rate	kg/d						0.018006651
Teen	Ingestion Rate	kg/d						0.016205986
Child	Ingestion Rate	kg/d						0.012604656
Toddler	Ingestion Rate	kg/d						0.009003326
Adult	Intake	Bq/d	0.00E+00	0.00E+00	1.08E-02	2.70E-03	2.70E-03	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	0.00E+00	0.00E+00	9.72E-03	2.43E-03	2.43E-03	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	0.00E+00	0.00E+00	7.56E-03	1.89E-03	1.89E-03	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	5.40E-03	1.35E-03	1.35E-03	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	1.10E-06	6.80E-07	1.18E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	5.32E-06	1.69E-06	1.42E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	0.00E+00	0.00E+00	1.71E-06	1.52E-06	3.04E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	1.89E-06	1.77E-06	4.34E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Grouse								
	Concentration	Bq/g	0.0744	0.0000	0.0003	-!	0.0001	
Adult	Ingestion Rate	kg/d						0.020075401
Teen	Ingestion Rate	kg/d						0.018067861
Child	Ingestion Rate	kg/d						0.01405278
Toddler	Ingestion Rate	kg/d						0.0100377
Adult	Intake	Bq/d	1.49E+00	0.00E+00	6.02E-03	-	2.01E-03	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	1.34E+00	0.00E+00	5.42E-03	-	1.81E-03	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	1.05E+00	0.00E+00	4.22E-03	-	1.41E-03	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	7.47E-01	0.00E+00	3.01E-03	-	1.00E-03	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	5.12E-05	0.00E+00	6.16E-07	-	8.79E-07	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	6.92E-05	0.00E+00	2.97E-06	-	1.06E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	6.49E-05	0.00E+00	9.54E-07	-	2.26E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	6.81E-05	0.00E+00	1.06E-06	-	3.22E-06	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Hare								
	Concentration	Bq/g	0.0000	0.0000	0.0000	0.0000	0.0000	
Adult	Ingestion Rate	kg/d						0.014008495
Teen	Ingestion Rate	kg/d						0.012607646
Child	Ingestion Rate	kg/d						0.009805947
Toddler	Ingestion Rate	kg/d						0.007004248
Adult	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Organ								
	Concentration	Bq/g	-	-	-	-	-	Not an exposure pathway
Adult	Ingestion Rate	kg/d						0.00281
Teen	Ingestion Rate	kg/d						0.00227
Child	Ingestion Rate	kg/d						0
Toddler	Ingestion Rate	kg/d						0
Adult	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
TOTAL INGESTION								
Adult	Dose	Sv/yr	8.25E-05	0.00E+00	2.04E-06	6.80E-07	3.11E-06	=SUM(all intake pathways)
Teen	Dose	Sv/yr	1.10E-04	0.00E+00	9.65E-06	1.69E-06	3.73E-06	=SUM(all intake pathways)
Child	Dose	Sv/yr	1.04E-04	0.00E+00	3.11E-06	1.52E-06	7.98E-06	=SUM(all intake pathways)
Toddler	Dose	Sv/yr	1.09E-04	0.00E+00	3.45E-06	1.77E-06	1.14E-05	=SUM(all intake pathways)

E.2 Wollaston Lake (Caribou Eater)

E.2.1 Non-Radionuclides

Sample Calculation		Incremental										
INGESTION PATHWAYS		As	Cd	Co	Cu	Pb	Mo	Ni	Se	U		
Drinking Water												
	<u>Units</u>											
	Concentration	0.0000	0.0001	0.0001	0.0002	0.0001	0.0010	0.0001	0.0001	0.0001		
Adult	Ingestion Rate										1.5	
Teen	Ingestion Rate										1	
Child	Ingestion Rate										0.8	
Toddler	Ingestion Rate										0.6	
Adult	Intake	0.00E+00	1.50E-04	1.50E-04	3.00E-04	1.50E-04	1.50E-03	1.50E-04	1.50E-04	1.50E-04	=Concentration x Ingestion Rate	
Teen	Intake	0.00E+00	1.00E-04	1.00E-04	2.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-04	1.00E-04	=Concentration x Ingestion Rate	
Child	Intake	0.00E+00	8.00E-05	8.00E-05	1.60E-04	8.00E-05	8.00E-04	8.00E-05	8.00E-05	8.00E-05	=Concentration x Ingestion Rate	
Toddler	Intake	0.00E+00	6.00E-05	6.00E-05	1.20E-04	6.00E-05	6.00E-04	6.00E-05	6.00E-05	6.00E-05	=Concentration x Ingestion Rate	
Adult	Body weight										70.7	
Teen	Body weight										59.7	
Child	Body weight										32.9	
Toddler	Body weight										16.5	
	Exposure Duration - days per week										7	
	Exposure Duration - weeks per year										52	
	Averaging Period - weeks per year										52	
Adult	Averaged Intake by body weight	0.00E+00	2.12E-06	2.12E-06	4.24E-06	2.12E-06	2.12E-05	2.12E-06	2.12E-06	2.12E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk	
Teen	Averaged Intake by body weight	0.00E+00	1.68E-06	1.68E-06	3.35E-06	1.68E-06	1.68E-05	1.68E-06	1.68E-06	1.68E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk	
Child	Averaged Intake by body weight	0.00E+00	2.43E-06	2.43E-06	4.86E-06	2.43E-06	2.43E-05	2.43E-06	2.43E-06	2.43E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk	
Toddler	Averaged Intake by body weight	0.00E+00	3.64E-06	3.64E-06	7.27E-06	3.64E-06	3.64E-05	3.64E-06	3.64E-06	3.64E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk	
Lake Whitefish												
	Concentration	0.0000	0.0020	0.0030	0.2000	0.0020	0.0200	0.0100	0.4900	0.0010		
Adult	Ingestion Rate										0.058134074	
Teen	Ingestion Rate										0.026967283	
Child	Ingestion Rate										0.03633325	
Toddler	Ingestion Rate										0.03633325	
Adult	Intake	0.00E+00	1.16E-04	1.74E-04	1.16E-02	1.16E-04	1.16E-03	5.81E-04	2.85E-02	5.81E-05	=Concentration x Ingestion Rate	
Teen	Intake	0.00E+00	5.39E-05	8.09E-05	5.39E-03	5.39E-05	5.39E-04	2.70E-04	1.32E-02	2.70E-05	=Concentration x Ingestion Rate	
Child	Intake	0.00E+00	7.27E-05	1.09E-04	7.27E-03	7.27E-05	7.27E-04	3.63E-04	1.78E-02	3.63E-05	=Concentration x Ingestion Rate	
Toddler	Intake	0.00E+00	7.27E-05	1.09E-04	7.27E-03	7.27E-05	7.27E-04	3.63E-04	1.78E-02	3.63E-05	=Concentration x Ingestion Rate	
Adult	Averaged Intake by body weight	0.00E+00	1.64E-06	2.47E-06	1.64E-04	1.64E-06	1.64E-05	8.22E-06	4.03E-04	8.22E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk	
Teen	Averaged Intake by body weight	0.00E+00	9.03E-07	1.36E-06	9.03E-05	9.03E-07	9.03E-06	4.52E-06	2.21E-04	4.52E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk	
Child	Averaged Intake by body weight	0.00E+00	2.21E-06	3.31E-06	2.21E-04	2.21E-06	2.21E-05	1.10E-05	5.41E-04	1.10E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk	
Toddler	Averaged Intake by body weight	0.00E+00	4.40E-06	6.61E-06	4.40E-04	4.40E-06	4.40E-05	2.20E-05	1.08E-03	2.20E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk	
Other Fish												
	Concentration	0.0000	0.0020	0.0030	0.4200	0.0030	0.0200	0.0200	0.2200	0.0010		
Adult	Ingestion Rate										0.011906979	
Teen	Ingestion Rate										0.005523419	
Child	Ingestion Rate										0.00744175	
Toddler	Ingestion Rate										0.00744175	

Adult	Intake	mg/d	0.00E+00	2.38E-05	3.57E-05	5.00E-03	3.57E-05	2.38E-04	2.38E-04	2.62E-03	1.19E-05	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.10E-05	1.66E-05	2.32E-03	1.66E-05	1.10E-04	1.10E-04	1.22E-03	5.52E-06	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.49E-05	2.23E-05	3.13E-03	2.23E-05	1.49E-04	1.49E-04	1.64E-03	7.44E-06	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.49E-05	2.23E-05	3.13E-03	2.23E-05	1.49E-04	1.49E-04	1.64E-03	7.44E-06	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.37E-07	5.05E-07	7.07E-05	5.05E-07	3.37E-06	3.37E-06	3.71E-05	1.68E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.85E-07	2.78E-07	3.89E-05	2.78E-07	1.85E-06	1.85E-06	2.04E-05	9.25E-08	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.52E-07	6.79E-07	9.50E-05	6.79E-07	4.52E-06	4.52E-06	4.98E-05	2.26E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	9.02E-07	1.35E-06	1.89E-04	1.35E-06	9.02E-06	9.02E-06	9.92E-05	4.51E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Moose

	Concentration	mg/kg	-	-	-	-	-	-	-	-	-	Not an exposure pathway
Adult	Ingestion Rate	kg/d										0
Teen	Ingestion Rate	kg/d										0
Child	Ingestion Rate	kg/d										0
Toddler	Ingestion Rate	kg/d										0
Adult	Intake	mg/d	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Teen	Intake	mg/d	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Child	Intake	mg/d	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Caribou

	Concentration	mg/kg	0.0000	0.0050	0.0050	3.5000	0.0100	0.0200	0.0300	0.1900	0.0010	
Adult	Ingestion Rate	kg/d										0.361345431
Teen	Ingestion Rate	kg/d										0.285430401
Child	Ingestion Rate	kg/d										0.24155
Toddler	Ingestion Rate	kg/d										0.24155
Adult	Intake	mg/d	0.00E+00	1.81E-03	1.81E-03	1.26E+00	3.61E-03	7.23E-03	1.08E-02	6.87E-02	3.61E-04	=Concentration x Ingestion Rate
Teen	Intake	mg/d	0.00E+00	1.43E-03	1.43E-03	9.99E-01	2.85E-03	5.71E-03	8.56E-03	5.42E-02	2.85E-04	=Concentration x Ingestion Rate
Child	Intake	mg/d	0.00E+00	1.21E-03	1.21E-03	8.45E-01	2.42E-03	4.83E-03	7.25E-03	4.59E-02	2.42E-04	=Concentration x Ingestion Rate
Toddler	Intake	mg/d	0.00E+00	1.21E-03	1.21E-03	8.45E-01	2.42E-03	4.83E-03	7.25E-03	4.59E-02	2.42E-04	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.56E-05	2.56E-05	1.79E-02	5.11E-05	1.02E-04	1.53E-04	9.71E-04	5.11E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.39E-05	2.39E-05	1.67E-02	4.78E-05	9.56E-05	1.43E-04	9.08E-04	4.78E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.67E-05	3.67E-05	2.57E-02	7.34E-05	1.47E-04	2.20E-04	1.39E-03	7.34E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.32E-05	7.32E-05	5.12E-02	1.46E-04	2.93E-04	4.39E-04	2.78E-03	1.46E-05	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Berry

	Concentration	mg/kg	0.0000	0.0015	0.0090	0.5100	0.0030	0.0420	0.1290	0.0075	0.0015	
Adult	Ingestion Rate	kg/hr										0.001766878
Teen	Ingestion Rate	kg/hr										0.007204776
Child	Ingestion Rate	kg/hr										0.008525
Toddler	Ingestion Rate	kg/hr										0.008525
Adult	Intake	mg/hr	0.00E+00	2.65E-06	1.59E-05	9.01E-04	5.30E-06	7.42E-05	2.28E-04	1.33E-05	2.65E-06	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	1.08E-05	6.48E-05	3.67E-03	2.16E-05	3.03E-04	9.29E-04	5.40E-05	1.08E-05	=Concentration x Ingestion Rate

Child	Intake	mg/hr	0.00E+00	1.28E-05	7.67E-05	4.35E-03	2.56E-05	3.58E-04	1.10E-03	6.39E-05	1.28E-05	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	0.00E+00	1.28E-05	7.67E-05	4.35E-03	2.56E-05	3.58E-04	1.10E-03	6.39E-05	1.28E-05	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.75E-08	2.25E-07	1.27E-05	7.50E-08	1.05E-06	3.22E-06	1.87E-07	3.75E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.81E-07	1.09E-06	6.15E-05	3.62E-07	5.07E-06	1.56E-05	9.05E-07	1.81E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.89E-07	2.33E-06	1.32E-04	7.77E-07	1.09E-05	3.34E-05	1.94E-06	3.89E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	7.75E-07	4.65E-06	2.64E-04	1.55E-06	2.17E-05	6.67E-05	3.88E-06	7.75E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Grouse												
Adult	Concentration	mg/kg	0.0000	0.0030	0.0040	2.1000	0.1500	0.0200	0.0200	0.2600	0.0010	
Teen	Ingestion Rate	kg/hr										0.00414118
Child	Ingestion Rate	kg/hr										0.006557713
Toddler	Ingestion Rate	kg/hr										0.00225
Adult	Intake	mg/hr	0.00E+00	1.24E-05	1.66E-05	8.70E-03	6.21E-04	8.28E-05	8.28E-05	1.08E-03	4.14E-06	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	1.97E-05	2.62E-05	1.38E-02	9.84E-04	1.31E-04	1.31E-04	1.71E-03	6.56E-06	=Concentration x Ingestion Rate
Child	Intake	mg/hr	0.00E+00	6.75E-06	9.00E-06	4.73E-03	3.38E-04	4.50E-05	4.50E-05	5.85E-04	2.25E-06	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	0.00E+00	6.75E-06	9.00E-06	4.73E-03	3.38E-04	4.50E-05	4.50E-05	5.85E-04	2.25E-06	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.76E-07	2.34E-07	1.23E-04	8.79E-06	1.17E-06	1.17E-06	1.52E-05	5.86E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.30E-07	4.39E-07	2.31E-04	1.65E-05	2.20E-06	2.20E-06	2.86E-05	1.10E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.05E-07	2.74E-07	1.44E-04	1.03E-05	1.37E-06	1.37E-06	1.78E-05	6.84E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	4.09E-07	5.45E-07	2.86E-04	2.05E-05	2.73E-06	2.73E-06	3.55E-05	1.36E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Hare												
Adult	Concentration	mg/kg	0.0000	0.0100	0.0080	2.1000	0.0060	0.0100	0.0300	0.1400	0.0010	
Teen	Ingestion Rate	kg/hr										0.002636739
Child	Ingestion Rate	kg/hr										0.001561871
Toddler	Ingestion Rate	kg/hr										0.0002875
Adult	Intake	mg/hr	0.00E+00	2.64E-05	2.11E-05	5.54E-03	1.58E-05	2.64E-05	7.91E-05	3.69E-04	2.64E-06	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	1.56E-05	1.25E-05	3.28E-03	9.37E-06	1.56E-05	4.69E-05	2.19E-04	1.56E-06	=Concentration x Ingestion Rate
Child	Intake	mg/hr	0.00E+00	2.88E-06	2.30E-06	6.04E-04	1.73E-06	2.88E-06	8.63E-06	4.03E-05	2.88E-07	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	0.00E+00	2.88E-06	2.30E-06	6.04E-04	1.73E-06	2.88E-06	8.63E-06	4.03E-05	2.88E-07	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.73E-07	2.98E-07	7.83E-05	2.24E-07	3.73E-07	1.12E-06	5.22E-06	3.73E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.62E-07	2.09E-07	5.49E-05	1.57E-07	2.62E-07	7.85E-07	3.66E-06	2.62E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Child	Averaged Intake by body weight	mg/kg-d	0.00E+00	8.74E-08	6.99E-08	1.84E-05	5.24E-08	8.74E-08	2.62E-07	1.22E-06	8.74E-09	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Toddler	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.74E-07	1.39E-07	3.66E-05	1.05E-07	1.74E-07	5.23E-07	2.44E-06	1.74E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7
Organ												
Adult	Concentration	mg/kg	-	-	-	-	-	-	-	-	-	Not an exposure pathway
Teen	Ingestion Rate	kg/hr										0.006
Child	Ingestion Rate	kg/hr										0.004739461

Child	Ingestion Rate	kg/hr											0
Toddler	Ingestion Rate	kg/hr											0
Adult	Intake	mg/hr	-	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	-	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Child	Intake	mg/hr	-	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Toddler	Intake	mg/hr	-	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Averaged Intake by body weight	mg/kg-d	-	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Supermarket Foods													
Adult	Total Intake by body weight	mg/kg-d	-	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05		
Teen	Total Intake by body weight	mg/kg-d	-	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05		
Child	Total Intake by body weight	mg/kg-d	-	3.14E-04	2.70E-04	2.15E-02	1.22E-04	4.56E-03	3.34E-03	2.97E-03	6.84E-05		
Toddler	Total Intake by body weight	mg/kg-d	-	3.72E-04	3.86E-04	2.88E-02	1.69E-04	6.46E-03	4.83E-03	4.17E-03	9.83E-05		
TOTAL INGESTION													
Adult	Total Intake by body weight	mg/kg-d	0.00E+00	1.71E-04	1.68E-04	2.95E-02	1.62E-04	2.20E-03	2.02E-03	2.60E-03	8.28E-05		=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	0.00E+00	2.28E-04	2.09E-04	3.06E-02	1.51E-04	2.89E-03	2.32E-03	2.89E-03	5.76E-05		=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	0.00E+00	3.56E-04	3.16E-04	4.78E-02	2.12E-04	4.77E-03	3.61E-03	4.98E-03	7.99E-05		=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	0.00E+00	4.55E-04	4.76E-04	8.13E-02	3.46E-04	6.87E-03	5.38E-03	8.17E-03	1.20E-04		=SUM(all intake pathways)

E.2.2 Non-Radionuclides, Organ Consumption

Sample Calculation		Incremental									
INGESTION PATHWAYS		As	Cd	Co	Cu	Pb	Mo	Ni	Se	U	
Drinking Water											
	Concentration	0.0000	0.0001	0.0001	0.0002	0.0001	0.0010	0.0001	0.0001	0.0001	
	Units										
	mg/L										
Adult	Ingestion Rate										1.5
Teen	Ingestion Rate										1
Adult	Intake	0.00E+00	1.50E-04	1.50E-04	3.00E-04	1.50E-04	1.50E-03	1.50E-04	1.50E-04	1.50E-04	=Concentration x Ingestion Rate
Teen	Intake	0.00E+00	1.00E-04	1.00E-04	2.00E-04	1.00E-04	1.00E-03	1.00E-04	1.00E-04	1.00E-04	=Concentration x Ingestion Rate
Adult	Body weight										70.7
Teen	Body weight										59.7
	Exposure Duration - days per week										7
	Exposure Duration - weeks per year										52
	Averaging Period - weeks per year										52
Adult	Averaged Intake by body weight	0.00E+00	2.12E-06	2.12E-06	4.24E-06	2.12E-06	2.12E-05	2.12E-06	2.12E-06	2.12E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	0.00E+00	1.68E-06	1.68E-06	3.35E-06	1.68E-06	1.68E-05	1.68E-06	1.68E-06	1.68E-06	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Lake Whitefish											
	Concentration	0.0000	0.0020	0.0030	0.2000	0.0020	0.0200	0.0100	0.4900	0.0010	
	Units										
	mg/kg										
Adult	Ingestion Rate										0.058134074
Teen	Ingestion Rate										0.026967283
Adult	Intake	0.00E+00	1.16E-04	1.74E-04	1.16E-02	1.16E-04	1.16E-03	5.81E-04	2.85E-02	5.81E-05	=Concentration x Ingestion Rate
Teen	Intake	0.00E+00	5.39E-05	8.09E-05	5.39E-03	5.39E-05	5.39E-04	2.70E-04	1.32E-02	2.70E-05	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	0.00E+00	1.64E-06	2.47E-06	1.64E-04	1.64E-06	1.64E-05	8.22E-06	4.03E-04	8.22E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	0.00E+00	9.03E-07	1.36E-06	9.03E-05	9.03E-07	9.03E-06	4.52E-06	2.21E-04	4.52E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Other Fish											
	Concentration	0.0000	0.0020	0.0030	0.4200	0.0030	0.0200	0.0200	0.2200	0.0010	
	Units										
	mg/kg										
Adult	Ingestion Rate										0.011906979
Teen	Ingestion Rate										0.005523419
Adult	Intake	0.00E+00	2.38E-05	3.57E-05	5.00E-03	3.57E-05	2.38E-04	2.38E-04	2.62E-03	1.19E-05	=Concentration x Ingestion Rate
Teen	Intake	0.00E+00	1.10E-05	1.66E-05	2.32E-03	1.66E-05	1.10E-04	1.10E-04	1.22E-03	5.52E-06	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	0.00E+00	3.37E-07	5.05E-07	7.07E-05	5.05E-07	3.37E-06	3.37E-06	3.71E-05	1.68E-07	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	0.00E+00	1.85E-07	2.78E-07	3.89E-05	2.78E-07	1.85E-06	1.85E-06	2.04E-05	9.25E-08	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Moose											
	Concentration	-	-	-	-	-	-	-	-	-	Not an exposure pathway
	Units										
	kg/d										
Adult	Ingestion Rate										0
Teen	Ingestion Rate										0
Adult	Intake	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Teen	Intake	-	-	-	-	-	-	-	-	-	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	-	-	-	-	-	-	-	-	-	=Intake / Body weight x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Caribou											
	Concentration	0.0000	0.0050	0.0050	3.5000	0.0100	0.0200	0.0300	0.1900	0.0010	
	Units										
	mg/kg										
Adult	Ingestion Rate										0.361345431
Teen	Ingestion Rate										0.285430401
Adult	Intake	0.00E+00	1.81E-03	1.81E-03	1.26E+00	3.61E-03	7.23E-03	1.08E-02	6.87E-02	3.61E-04	=Concentration x Ingestion Rate
Teen	Intake	0.00E+00	1.43E-03	1.43E-03	9.99E-01	2.85E-03	5.71E-03	8.56E-03	5.42E-02	2.85E-04	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	0.00E+00	2.56E-05	2.56E-05	1.79E-02	5.11E-05	1.02E-04	1.53E-04	9.71E-04	5.11E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.39E-05	2.39E-05	1.67E-02	4.78E-05	9.56E-05	1.43E-04	9.08E-04	4.78E-06	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Berry											
	Concentration	mg/kg	0.0000	0.0015	0.0090	0.5100	0.0030	0.0420	0.1290	0.0075	0.0015	
Adult	Ingestion Rate	kg/hr										0.001766878
Teen	Ingestion Rate	kg/hr										0.007204776
Adult	Intake	mg/hr	0.00E+00	2.65E-06	1.59E-05	9.01E-04	5.30E-06	7.42E-05	2.28E-04	1.33E-05	2.65E-06	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	1.08E-05	6.48E-05	3.67E-03	2.16E-05	3.03E-04	9.29E-04	5.40E-05	1.08E-05	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.75E-08	2.25E-07	1.27E-05	7.50E-08	1.05E-06	3.22E-06	1.87E-07	3.75E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.81E-07	1.09E-06	6.15E-05	3.62E-07	5.07E-06	1.56E-05	9.05E-07	1.81E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Grouse											
	Concentration	mg/kg	0.0000	0.0030	0.0040	2.1000	0.1500	0.0200	0.0200	0.2600	0.0010	
Adult	Ingestion Rate	kg/hr										0.00414118
Teen	Ingestion Rate	kg/hr										0.006557713
Adult	Intake	mg/hr	0.00E+00	1.24E-05	1.66E-05	8.70E-03	6.21E-04	8.28E-05	8.28E-05	1.08E-03	4.14E-06	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	1.97E-05	2.62E-05	1.38E-02	9.84E-04	1.31E-04	1.31E-04	1.71E-03	6.56E-06	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	1.76E-07	2.34E-07	1.23E-04	8.79E-06	1.17E-06	1.17E-06	1.52E-05	5.86E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.30E-07	4.39E-07	2.31E-04	1.65E-05	2.20E-06	2.20E-06	2.86E-05	1.10E-07	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare											
	Concentration	mg/kg	0.0000	0.0100	0.0080	2.1000	0.0060	0.0100	0.0300	0.1400	0.0010	
Adult	Ingestion Rate	kg/hr										0.002636739
Teen	Ingestion Rate	kg/hr										0.001561871
Adult	Intake	mg/hr	0.00E+00	2.64E-05	2.11E-05	5.54E-03	1.58E-05	2.64E-05	7.91E-05	3.69E-04	2.64E-06	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	1.56E-05	1.25E-05	3.28E-03	9.37E-06	1.56E-05	4.69E-05	2.19E-04	1.56E-06	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.73E-07	2.98E-07	7.83E-05	2.24E-07	3.73E-07	1.12E-06	5.22E-06	3.73E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	2.62E-07	2.09E-07	5.49E-05	1.57E-07	2.62E-07	7.85E-07	3.66E-06	2.62E-08	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ											
	Concentration	mg/kg	0.0000	4.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Adult	Ingestion Rate	kg/hr										0.006
Teen	Ingestion Rate	kg/hr										0.004739461
Adult	Intake	mg/hr	0.00E+00	2.52E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Teen	Intake	mg/hr	0.00E+00	1.99E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate
Adult	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.56E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Averaged Intake by body weight	mg/kg-d	0.00E+00	3.33E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake / Body weight x Exp_hrs/d x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Supermarket Foods											
Adult	Total Intake by body weight	mg/kg-d	-	1.41E-04	1.36E-04	1.12E-02	9.75E-05	2.05E-03	1.84E-03	1.17E-03	7.44E-05	
Teen	Total Intake by body weight	mg/kg-d	-	2.01E-04	1.80E-04	1.34E-02	8.36E-05	2.76E-03	2.15E-03	1.70E-03	5.03E-05	
	TOTAL INGESTION											
Adult	Total Intake by body weight	mg/kg-d	0.00E+00	5.28E-04	1.68E-04	2.95E-02	1.62E-04	2.20E-03	2.02E-03	2.60E-03	8.28E-05	=SUM(all intake pathways)
Teen	Total Intake by body weight	mg/kg-d	0.00E+00	5.62E-04	2.09E-04	3.06E-02	1.51E-04	2.89E-03	2.32E-03	2.89E-03	5.76E-05	=SUM(all intake pathways)
Child	Total Intake by body weight	mg/kg-d	0.00E+00	3.56E-04	3.16E-04	4.78E-02	2.12E-04	4.77E-03	3.61E-03	4.98E-03	7.99E-05	=SUM(all intake pathways)
Toddler	Total Intake by body weight	mg/kg-d	0.00E+00	4.55E-04	4.76E-04	8.13E-02	3.46E-04	6.87E-03	5.38E-03	8.17E-03	1.20E-04	=SUM(all intake pathways)

E.2.3 Radionuclides

Sample Calculation		Incremental	Incremental	Incremental	Incremental	Incremental	
INGESTION PATHWAYS		U-238	Th-230	Ra-226	Pb-210	Po-210	
Drinking Water							
	Concentration	Bq/L	0.0000	0.0000	0.0000	0.0000	0.0000
Adult	Ingestion Rate	L/d					1.5
Teen	Ingestion Rate	L/d					1
Child	Ingestion Rate	L/d					0.8
Toddler	Ingestion Rate	L/d					0.6
Adult	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Teen	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Child	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Adult	Dose conversion - ingestion	Sv/Bq	9.40E-08	2.10E-07	2.80E-07	6.90E-07	1.20E-06
Teen	Dose conversion - ingestion	Sv/Bq	1.41E-07	2.20E-07	1.50E-06	1.90E-06	1.60E-06
Child	Dose conversion - ingestion	Sv/Bq	1.70E-07	3.10E-07	6.20E-07	2.20E-06	4.40E-06
Toddler	Dose conversion - ingestion	Sv/Bq	2.50E-07	4.10E-07	9.60E-07	3.60E-06	8.80E-06
	Exposure Duration - days per week	d/wk					7
	Exposure Duration - weeks per year	wk/yr					52
	Averaging Period - weeks per year	wk/yr					52
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Child	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
							=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
							=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
							=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
							=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Lake Whitefish							
	Concentration	Bq/g	0.0000	0.0000	0.0007	0.0000	0.0000
Adult	Ingestion Rate	kg/d					0.058134074
Teen	Ingestion Rate	kg/d					0.026967283
Child	Ingestion Rate	kg/d					0.03633325
Toddler	Ingestion Rate	kg/d					0.03633325
Adult	Intake	Bq/d	0.00E+00	0.00E+00	4.07E-02	0.00E+00	0.00E+00
Teen	Intake	Bq/d	0.00E+00	0.00E+00	1.89E-02	0.00E+00	0.00E+00
Child	Intake	Bq/d	0.00E+00	0.00E+00	2.54E-02	0.00E+00	0.00E+00
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	2.54E-02	0.00E+00	0.00E+00
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	4.16E-06	0.00E+00	0.00E+00
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	1.03E-05	0.00E+00	0.00E+00
Child	Dose	Sv/yr	0.00E+00	0.00E+00	5.76E-06	0.00E+00	0.00E+00
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	8.91E-06	0.00E+00	0.00E+00
							=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
							=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
							=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
							=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Other Fish							
	Concentration	Bq/g	0.0000	0.0000	0.0000	0.0000	0.0000
Adult	Ingestion Rate	kg/d					0.011906979
Teen	Ingestion Rate	kg/d					0.005523419
Child	Ingestion Rate	kg/d					0.00744175
Toddler	Ingestion Rate	kg/d					0.00744175
Adult	Intake	Bq/d	0.00E+00	0.00E+00	3.57E-04	0.00E+00	0.00E+00
Teen	Intake	Bq/d	0.00E+00	0.00E+00	1.66E-04	0.00E+00	0.00E+00
Child	Intake	Bq/d	0.00E+00	0.00E+00	2.23E-04	0.00E+00	0.00E+00
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	2.23E-04	0.00E+00	0.00E+00
							=Concentration x Ingestion Rate x 1000 g/kg
							=Concentration x Ingestion Rate x 1000 g/kg
							=Concentration x Ingestion Rate x 1000 g/kg
							=Concentration x Ingestion Rate x 1000 g/kg

Adult	Dose	Sv/yr	0.00E+00	0.00E+00	3.65E-08	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	9.07E-08	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	0.00E+00	0.00E+00	5.05E-08	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	7.82E-08	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Moose								
	Concentration	Bq/g	-	-	-	-	-	Not an exposure pathway
Adult	Ingestion Rate	kg/d						0
Teen	Ingestion Rate	kg/d						0
Child	Ingestion Rate	kg/d						0
Toddler	Ingestion Rate	kg/d						0
Adult	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Caribou								
	Concentration	Bq/g	0.0000	0.0000	0.0006	0.0000	0.0000	
Adult	Ingestion Rate	kg/d						0.361345431
Teen	Ingestion Rate	kg/d						0.285430401
Child	Ingestion Rate	kg/d						0.24155
Toddler	Ingestion Rate	kg/d						0.24155
Adult	Intake	Bq/d	0.00E+00	0.00E+00	2.17E-01	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	0.00E+00	0.00E+00	1.71E-01	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	0.00E+00	0.00E+00	1.45E-01	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	1.45E-01	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	2.22E-05	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	9.38E-05	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	0.00E+00	0.00E+00	3.28E-05	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	5.08E-05	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Berry								
	Concentration	Bq/g	0.0000	0.0000	0.0003	0.0000	0.0000	
Adult	Ingestion Rate	kg/d						0.001766878
Teen	Ingestion Rate	kg/d						0.007204776
Child	Ingestion Rate	kg/d						0.008525
Toddler	Ingestion Rate	kg/d						0.008525
Adult	Intake	Bq/d	0.00E+00	0.00E+00	5.30E-04	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	0.00E+00	0.00E+00	2.16E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	0.00E+00	0.00E+00	2.56E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	2.56E-03	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	5.42E-08	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	1.18E-06	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	0.00E+00	0.00E+00	5.79E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	8.96E-07	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk

Grouse

	Concentration	Bq/g	0.0000	0.0000	0.0001	#VALUE!	0.0001	
Adult	Ingestion Rate	kg/d						0.00414118
Teen	Ingestion Rate	kg/d						0.006557713
Child	Ingestion Rate	kg/d						0.00225
Toddler	Ingestion Rate	kg/d						0.00225
Adult	Intake	Bq/d	0.00E+00	0.00E+00	4.14E-04	-	4.14E-04	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	0.00E+00	0.00E+00	6.56E-04	-	6.56E-04	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	0.00E+00	0.00E+00	2.25E-04	-	2.25E-04	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	2.25E-04	-	2.25E-04	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	4.23E-08	-	1.81E-07	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	3.59E-07	-	3.83E-07	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	0.00E+00	0.00E+00	5.09E-08	-	3.61E-07	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	7.88E-08	-	7.23E-07	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Hare							
	Concentration	Bq/g	0.0000	0.0000	0.0000	0.0000	0.0000	
Adult	Ingestion Rate	kg/d						0.002636739
Teen	Ingestion Rate	kg/d						0.001561871
Child	Ingestion Rate	kg/d						0.0002875
Toddler	Ingestion Rate	kg/d						0.0002875
Adult	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	Organ							
	Concentration	Bq/g	-	-	-	-	-	Not an exposure pathway
Adult	Ingestion Rate	kg/d						0.006
Teen	Ingestion Rate	kg/d						0.004739461
Child	Ingestion Rate	kg/d						0
Toddler	Ingestion Rate	kg/d						0
Adult	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Teen	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Child	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Toddler	Intake	Bq/d	-	-	-	-	-	=Concentration x Ingestion Rate x 1000 g/kg
Adult	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Teen	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Child	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
Toddler	Dose	Sv/yr	-	-	-	-	-	=Intake x DCF x 365 d/yr x Exp_d/wk x Exp_wk/yr / Avg_wk/yr / 7 d/wk
	TOTAL INGESTION							
Adult	Dose	Sv/yr	0.00E+00	0.00E+00	2.64E-05	0.00E+00	1.81E-07	=SUM(all intake pathways)
Teen	Dose	Sv/yr	0.00E+00	0.00E+00	1.06E-04	0.00E+00	3.83E-07	=SUM(all intake pathways)
Child	Dose	Sv/yr	0.00E+00	0.00E+00	3.92E-05	0.00E+00	3.61E-07	=SUM(all intake pathways)
Toddler	Dose	Sv/yr	0.00E+00	0.00E+00	6.07E-05	0.00E+00	7.23E-07	=SUM(all intake pathways)