Table 22 Ecological Hazard Quotients for each VEC at CAM-F

CoPCs	Ptarmigan	Snowy Owl	Lemming	Arctic Hare	Ermine	Arctic Fox	Caribou
Inorganics							
Antimony	2.83E-02	2.47E-01	6.44E-03	1.80E-02	1.62E-01	1.72E-01	5.19E-03
Barium	1.16E-02	3.77E-03	4.97E-02	2.96E-02	1.44E-02	1.51E-02	2.37E-02
Beryllium	6.39E-04	4.05E-03	2.57E-04	2.59E-04	1.36E-03	1.50E-03	2.72E-04
Boron	1.94E-03	1.24E-05	3.52E-03	2.06E-03	1.80E-04	1.25E-04	1.53E-04
Cadmium	9.08E-03	5.66E-04	2.85E-02	1.68E-02	3.50E-03	2.23E-03	1.07E-03
Chromium	2.76E-01	1.15E-02	1.65E-04	9.64E-05	1.09E-05	9.31E-06	1.24E-05
Copper	1.19E-02	3.59E-03	1.17E-01	7.05E-02	3.82E-02	3.35E-02	1.92E-02
Lead	5.62E-02	5.00E-03	1.97E-02	1.16E-02	2.13E-03	1.93E-03	9.94E-04
Tin	6.36E-04	1.35E-02	4.80E-04	1.66E-03	1.50E-02	1.65E-02	2.57E-04
Zinc	3.15E-01	3.96E-02	1.93E-01	1.14E-01	2.65E-02	2.50E-02	7.15E-03
Organics							
Benzene	1.10E-05	2.07E-07	8.70E-06	5.07E-06	4.75E-07	3.18E-07	7.31E-08
Toluene	5.60E-06	1.05E-07	4.41E-06	2.57E-06	2.41E-07	1.61E-07	1.03E-07
Ethylbenzene	3.02E-05	9.18E-07	1.22E-05	7.10E-06	9.61E-07	5.93E-07	3.65E-08
Total Xylenes	2.63E-03	8.46E-05	1.98E-03	1.15E-03	1.64E-04	1.00E-04	1.68E-05
F1 C6-C10	1.04E-03	4.26E-05	2.45E-03	1.42E-03	3.26E-04	1.89E-04	2.16E-05
F2 C10-C16	1.77E-02	1.69E-03	1.83E-02	1.07E-02	7.26E-03	5.23E-03	1.82E-04
F3 C16-C34	5.54E-02	1.27E-02	7.14E-02	4.15E-02	4.23E-02	2.75E-02	7.99E-04
F4 C34-C50	6.81E-03	2.55E-03	1.05E-02	6.13E-03	1.30E-02	8.60E-03	1.53E-04
Total PCBs	3.83E-03	1.66E-03	5.89E-03	4.74E-03	1.94E-02	1.69E-02	5.96E-05

5.4.4.2 Risk Estimates for Snowy Owl

For the Snowy Owl the intake pathways included surface water, soil, and soil to terrestrial mammal prey. The Snowy Owl feeds mainly on small mammals.

Risks (HQ values) for the Snowy Owl were less than 1 for all substances. However, antimony had an HQ value that lay between 0.1 and 1.0; HQ = 0.247. All other substances that were assessed had HQ values that lay below 0.1. Examination of the pathways leading to the high HQ value for antimony shows the HQ value was dominated by the terrestrial mammal ingestion pathway, based on measured (2004) concentrations of antimony in lemming tissue from the CAM-F site. Risks due to ingestion of soil and surface water are negligible.

5.4.5 Risk Characterization for Mammalian Receptors

Tables showing the derivation of risk estimates for mammalian receptors can be found in Appendix C. Table 21 shows the HQ values for each VEC. The text below provides a synopsis of the risk estimates for each VEC.

5.4.5.1 Risk Estimates for Lemming

Intake pathways for the lemming included surface water, soil, and soil to plants. The

lemming feeds on vegetation including grasses and shrubs, and bark and twigs of willow and birch.

Risks (HQ values) for the lemming were less than 1 for all substances. However, a number of inorganic substances had HQ values that lay between 0.1 and 1.0. These substances were copper (HQ = 0.117) and zinc (HQ = 0.193). All other substances that were assessed had HQ values that lay below 0.1. Examination of the pathways leading to the high HQ values for copper and zinc shows that the overall HQ values are dominated by risks from ingestion of terrestrial plants. Risks due to ingestion of soil and surface water are negligible.

5.4.5.2 Risk Estimates for Arctic Hare

For the Arctic hare the intake pathways included surface water, soil, soil to plants, and soil to small mammals. The Arctic hare is primarily herbivorous but will also feed on carrion.

Risks (HQ values) for the Arctic hare were less than 1 for all substances. However, zinc had an HQ value that lay between 0.1 and 1.0; HQ = 0.114. All other substances that were assessed had HQ values that lay below 0.1. Examination of the pathways leading to the high HQ value for zinc shows that the overall HQ value is dominated by risks from ingestion of terrestrial plants. Risks due to ingestion of soil, mammals, and surface water are negligible.

5.4.5.3 Risk Estimates for Ermine

For the ermine the intake pathways included surface water, soil, soil to small mammal, soil to soil invertebrate, and soil to plants. The ermine feeds mainly on small mammals, but also consumes some invertebrates and plant material as minor components of its diet.

Risks (HQ values) for the ermine were less than 1 for all substances. However, antimony had an HQ value that lay between 0.1 and 1.0; HQ = 0.162. All other substances that were assessed had HQ values that lay below 0.1. Examination of the pathways leading to the high HQ value for antimony shows the HQ value was dominated by the terrestrial mammal ingestion pathway, based on measured (2004) concentrations of antimony in lemming tissue from the CAM-F site. Risks due to ingestion of soil, terrestrial plants, terrestrial invertebrates, and surface water are negligible.

5.4.5.4 Risk Estimates for Arctic Fox

For the Arctic fox the intake pathways included surface water, soil, soil to small mammal, and soil to plants. The Arctic fox feeds mainly on small mammals, but also consumes some plant material as a minor component of its diet.

Risks (HQ values) for the Arctic fox were less than 1 for all substances. However, antimony had an HQ value that lay between 0.1 and 1.0; HQ = 0.172. All other substances that were assessed had HQ values that lay below 0.1. Examination of the pathways leading to the high HQ value for antimony shows the HQ value was dominated by the terrestrial mammal ingestion pathway, based on measured (2004) concentrations of antimony in lemming tissue from the CAM-F site. Risks due to ingestion of soil, terrestrial plants, and surface water are negligible.

5.4.5.5 Risk Estimates for Caribou

For the caribou, total HQs were calculated for the DEW Line site. In addition, a further area of exposure was defined as "background" for caribou. This was done because the study area is very small in comparison with the typical home range for a caribou. Expected background concentrations for inorganic CoPCs were determined by taking the maximum observed soil concentration for background samples taken at the CAM-F site. Background concentrations for organic CoPCs in surface soil were set to zero (CCME 2001), and background concentrations in plant tissues were calculated by the model.

For caribou the intake pathways included surface water, soil, and soil to plants. The caribou feeds on vegetation, primarily low-growing shrubs and lichens.

Table 23 presents the HQ values for the caribou receptor. Total risks (HQ values) for caribou were much less than 1 for all substances, which suggests that caribou is not at risk from any of these substances at CAM-F.

Table 23 Ecological Hazard Quotients for Caribou at CAM-F

CoPC	CAM-F HQ	Weighting Factor	Background HQ	Weighting Factor	Total HQ
Inorganics					
Antimony	5.04E-03	0.018	5.19E-03	0.982	5.19E-03
Barium	2.51E-02	0.018	2.37E-02	0.982	2.37E-02
Beryllium	2.05E-04	0.018	2.73E-04	0.982	2.72E-04
Boron	1.58E-03	0.018	1.27E-04	0.982	1.53E-04
Cadmium	1.28E-02	0.018	8.53E-04	0.982	1.07E-03
Chromium	7.67E-05	0.018	1.12E-05	0.982	1.24E-05
Copper	5.41E-02	0.018	1.86E-02	0.982	1.92E-02
Lead	9.12E-03	0.018	8.45E-04	0.982	9.94E-04
Tin	3.29E-04	0.018	2.56E-04	0.982	2.57E-04
Zinc	8.64E-02	0.018	5.70E-03	0.982	7.15E-03
Organics					
Benzene	4.06E-06	0.018	0	0.982	7.31E-08
Toluene	2.03E-06	0.018	0	0.982	1.03E-07
Ethylbenzene	5.73E-06	0.018	0	0.982	3.65E-08
Total Xylenes	9.34E-04	0.018	0	0.982	1.68E-05
F1 C6-C10	1.20E-03	0.018	0	0.982	2.16E-05
F2 C10-C16	1.01E-02	0.018	0	0.982	1.82E-04
F3 C16-C34	4.44E-02	0.018	0	0.982	7.99E-04
F4 C34-C50	8.50E-03	0.018	0	0.982	1.53E-04
Total PCBs	3.31E-03	0.018	bd	0.982	5.96E-05

5.5 CONCENTRATION OF CoPCs IN MEAT

Estimated concentrations of CoPCs in caribou meat at CAM-F are provided in Table 24. In addition, a further area of exposure was defined as "background" for caribou. This was done because the study area is very small in comparison with the typical home range for a caribou. Expected background concentrations for inorganic CoPCs were calculated by taking the geometric mean of all soil samples at the CAM-F site. Background concentrations for organic CoPCs in surface soil were set to zero (CCME 2001), and background concentrations in plant tissues were calculated by the model.

Estimated concentrations of CoPCs in small mammals at CAM-F are provided in Table 25. Additionally, a weighted average including background meat concentrations is provided to estimate the amount of exposure to humans consuming small mammals across the landscape (to be used in the HHRA).

Table 24 Estimated Concentrations of CoPCs in Caribou Meat at CAM-F

CoPC	CAM-F Caribou Meat Concentration (mg/kg-fresh wt.)	Weighting Factor	Background Caribou Meat Concentration (mg/kg-fresh wt.)	Weighting Factor	Total Caribou Meat Concentration (mg/kg-fresh wt.)
Inorganics					
Antimony	6.33E-04	0.018	6.52E-04	0.982	6.52E-04
Barium	1.34E-02	0.018	1.26E-02	0.982	1.26E-02
Beryllium	7.90E-05	0.018	1.04E-04	0.982	1.04E-04
Boron	1.78E-02	0.018	1.76E-03	0.982	2.05E-03
Cadmium	1.04E-02	0.018	6.90E-04	0.982	8.65E-04
Chromium	8.37E-01	0.018	1.08E-01	0.982	1.21E-01
Copper	1.27E+00	0.018	4.28E-01	0.982	4.43E-01
Lead	3.17E-02	0.018	2.79E-03	0.982	3.31E-03
Tin	9.78E-02	0.018	7.67E-02	0.982	7.71E-02
Zinc	4.08E+02	0.018	2.66E+01	0.982	3.35E+01
Organics					
Benzene	4.49E-07	0.018	0	0.982	8.08E-09
Toluene	8.16E-07	0.018	0	0.982	5.11E-08
Ethylbenzene	2.84E-06	0.018	0	0.982	1.47E-08
Total Xylenes	1.20E-05	0.018	0	0.982	2.16E-07
F1 C6-C10	8.13E-03	0.018	0	0.982	1.46E-04
F2 C10-C16	2.38E+00	0.018	0	0.982	4.28E-02
F3 C16-C34	1.93E+01	0.018	0	0.982	3.47E-01
F4 C34-C50	3.57E+00	0.018	0	0.982	6.43E-02
Total PCBs	6.53E-02	0.018	0	0.982	1.18E-03

Table 25 Estimated Concentrations of CoPCs in Small Mammal Meat at CAM-F

CoPC	CAM-F Small Mammal Meat Concentration (mg/kg-fresh wt.)	Weighting Factor	Background Small Mammal Meat Concentration (mg/kg-fresh wt.)	Weighting Factor	Total Small Mammal Meat Concentration (mg/kg-fresh wt.)
Inorganics					
Antimony	1.00E+00	0.018	6.52E-04	0.982	1.86E-02
Barium	1.47E+00	0.018	1.22E+00	0.982	1.22E+00
Beryllium	2.50E-02	0.018	1.04E-04	0.982	5.53E-04
Boron	1.78E-02	0.018	1.76E-03	0.982	2.05E-03
Cadmium	8.80E-02	0.018	6.09E-02	0.982	6.14E-02
Chromium	1.80E-01	0.018	8.46E-01	0.982	8.34E-01
Copper	2.55E+00	0.018	3.61E+00	0.982	3.59E+00
Lead	5.00E-01	0.018	7.85E-01	0.982	7.80E-01
Tin	2.70E+00	0.018	4.59E-01	0.982	4.99E-01
Zinc	3.66E+01	0.018	3.65E+01	0.982	3.65E+01
Organics					
Benzene	4.49E-07	0.018	0	0.982	8.09E-09
Toluene	8.16E-07	0.018	0	0.982	1.47E-08
Ethylbenzene	2.84E-06	0.018	0	0.982	5.12E-08
Total Xylenes	1.20E-05	0.018	0	0.982	2.16E-07
F1 C6-C10	8.13E-03	0.018	0	0.982	1.46E-04
F2 C10-C16	2.38E+00	0.018	0	0.982	4.28E-02
F3 C16-C34	1.93E+01	0.018	0	0.982	3.47E-01
F4 C34-C50	3.57E+00	0.018	0	0.982	6.43E-02
Total PCBs	6.38E-02	0.018	0	0.982	1.15E-03

5.6 ECOLOGICAL SITE SPECIFIC TARGET LEVELS

Based upon the results of the ecological risk assessment, no HQ values greater than 1.0 were identified for any of the VECs. The CoPCs with HQ values between 0.1 and 1.0 were antimony, chromium, copper, and zinc. The following VECs were identified as having the highest HQ for each of these CoPCs:

- Snowy Owl exposed to antimony;
- ptarmigan exposed to chromium and zinc; and
- lemming exposed to copper.

Consequently, site specific target levels (SSTLs) were calculated for each of these receptors. The SSTLs were calculated by setting the HQ at 1.0, and determining the corresponding surface soil EPC for that HQ, using a backward calculation. The SSTLs for each receptor are shown in Table 26.

Table 26 Site Specific Target Levels in Surface Soils at CAM-F

VEC	CoPC	Maximum Soil Conc. (mg/kg)	Surface Soil SSTL (mg/kg)
Snowy Owl	Antimony	20	349
Ptarmigan	Chromium	93	2,075
Lemming	Copper	940	4,750
Ptarmigan	Zinc	5,740	40,250

SSTLs for antimony, chromium, copper, and zinc are all well above the maximum concentrations in surface soils. These results indicate that there are no documented instances of contamination at the CAM-F site that require clean-up in order to protect ecological receptors. The overall ERA results also indicate that the existing conditions at CAM-F are not likely to result in adverse effects to exposed biota at the population level.

5.7 UNCERTAINTY ANALYSIS

Uncertainties are inherent in every aspect of the ERA process. The most effective way to decrease uncertainty is to collect site-specific data. Application of site-specific information assists in reduction of uncertainty by allowing removal of generic uptake or transfer factors that are typically calculated in a conservative manner. For CAM-F, much site-specific data has been collected, representing soils, surface water, biota, and lake sediments.

Despite incorporation of a considerable amount of site-specific data, the ERA involves many assumptions, and incorporates simplifications and uncertainty with respect to the characteristics of the receptors, exposure pathways, and CoPC concentrations in the environment. This section qualitatively discusses some significant aspects of uncertainty inherent in this risk assessment.

Data Limitations

The quality of a risk assessment calculation often hinges on the size, extent and condition of the supporting data. In addition to making use of existing site data, a large number of samples were collected for this risk assessment, and a significant amount of data was collected for this study, including both chemical and biological data. The time available for collection of data precluded consideration of fluctuations in measured concentrations due to daily or seasonal influences. Because some of these data sets were summarized statistically, including calculation of a conservative representative value, such as the 95% UCL as the EPC, the values presented are conservative estimators of the true concentration to which native species would be exposed

Key limitations in the ERA included insufficient background data (n=4) for inorganic substances in soils. It is possible that the concentrations of some of the substances that were carried forward as CoPCs are not elevated as a result of human activities, but reflect natural background levels. Another limitation in the ERA included insufficient terrestrial mammal data (n=1 lemming) for inorganic substances. Also, the concentrations of inorganic substances measured in plant tissue samples from the CAM-F site by RRMC (1994) are high, and suggest very high soil-to-plant concentration ratios. It is possible that additional sampling of local and background

soil-plant pairs could reduce uncertainty in the model.

Selection of Chemicals of Potential Concern

Chemicals of potential concern were selected independently in each of the media evaluated in the ecological risk assessment, and the analysis was completed to include all media (water, sediment, soils, and biota exposed to these media) if the substance exceeded screening criteria for any one of these. For each of the media, there are gaps in understanding of the toxicology of the CoPC, and the physical and chemical properties of these chemicals. The approach for selecting CoPC included comparison of each detected chemical value to values that are believed to be protective of most North American species, in most ecosystems. Because empirical data do not exist for all possible CoPCs and media, it is possible that relevant test species and sometimes even the same environmental media, have not been evaluated in the proper context for comparison.

Chemical Speciation

The fate, food chain interactions, and toxicity of a number of inorganic and organic contaminants (including TPH the metals evaluated here) depend to a large extent upon their chemical form, and the context in which they are ingested. As such, conservative assumptions about chemical form, bioavailability, and absorption over the gut were generally carried forward in the risk assessment, and the potential for toxicity is likely to be overstated. For example, it has been generally assumed that 100% of each ingested CoPC is absorbed from ingested soil, sediment, water, or food, and is available to the organism as a potentially toxic substance. This may be reasonable for some CoPCs, but will be highly conservative for others.

Food Chain Interactions

Very limited "real world" data exist that allow quantification of the true relationship between a chemical in an environmental medium and chemical transfer through the food chain. Only a few classes of chemicals appear to be magnified through the food chain. These substances include methyl mercury, some PCBs, some chlorinated pesticides (such as DDT), and some PCDD/PCDF compounds. These substances all have a tendency to partition into fatty tissue rather than water. They are also resistant to natural degradation processes by metabolic enzymes. The TPH substances and PAHs are also hydrophobic classes of chemicals present in the environment. While they are hydrophobic, they may only partially absorbed following ingestion, and may also be metabolized and/or excreted by some invertebrates and most vertebrates. For this reason, food chain magnification does not tend to occur with TPH or PAHs. The extent of food chain magnification is another uncertainty that is generally treated in a conservative manner. Additional collection and chemical analysis of tissue samples from mammalian and avian species could have further reduced uncertainties associated with these values but were beyond the scope of the ecological field program.

Wildlife Exposure Factors

Virtually every factor incorporated into dose calculations for wildlife species possesses a site-specific component. Validity of each exposure factor is dependent on consideration of the site-specific nature of these factors. In the absence

of site-specific validation, exposure factors are incorporated based on validations performed elsewhere for other cases and sometimes for other species. Considerations such as food ingestion rates, water ingestion rates, incidental soil ingestion rates, dietary composition, home range, and time spent at the site were collected from the scientific literature based on other sites and locations. It has been assumed that each receptor organism spends its entire life cycle at the CAM-F site (or in the case of the caribou, between the CAM-F sites). On the basis of this assumption, the VECs are modeled as being exposed to the 95% UCL concentration for each CoPC. Therefore, it is likely that the level of wildlife exposure has been substantially overestimated, particularly for large-bodied or migratory VECs.

Habitat Survey and Valued Environmental Component (VEC) Selection

This risk assessment invested significant effort into consideration of existing habitats and the species that exist within them. Both aquatic and terrestrial habitats were evaluated to identify relevant species, and to support the selection of appropriate VECs. Therefore, the VECs that were selected are known to be present, or can reasonably be expected to be present on the site. These VECs are also known to be reasonably or conservatively representative of other species that may be present on the site and exposed to CoPCs. Use of site-specific receptors decreases uncertainty since local species are considered rather than highly sensitive non-native species.

Receptor-Specific Toxicity Data

For most of the CoPCs and VECs, toxicity data were available in some form. However, it is important to note that toxicity data are generally not available for the particular VEC species under consideration. Toxicity values are not necessarily specific to the VEC species, or to a reproductive or population-level endpoint. As a result, there is uncertainty associated with the extrapolations that are used to translate toxicity data from a test species in the laboratory, to a receptor species in the wild. The conversion factors that are used are scientifically based, and are applied in a manner that is believed to be conservative.

In some cases, there is a lack of chemical toxicity data. Typically, when this was the case, an RTD value was obtained for a small mammal test species, and was conservatively translated into an RTD value for a bird by incorporating an additional safety factor of 5.

Measurement Endpoints from the Toxicity Data

The paucity of toxicity data for many chemicals limited the measurement endpoints that were available. Where LOAEL values were not available, it was necessary to extrapolate from NOAEL values. Correction factors used for this extrapolation are relatively conservative and tend to under-estimate the LOAEL value. This approach is conservative, and if observed chemical concentrations are lower than the RTD values, there is little potential for observable adverse effects at the population level. This approach is more conservative than the suggestion of Suter (1993), that a 20% effect level (such as a 20% reduction in survivorship or growth of exposed biota) be treated as a conservative approximation of the threshold for regulatory concern. Therefore, use of these

reference toxicity doses would overestimate the potential for significant adverse effects on species of concern, and overestimate the potential for significant ecological risks.

5.7.1 Summary of Uncertainty Analysis

As a result of the scientific investigations, literature reviews, and risk assessment guidance that have been undertaken or followed in the preparation of this ERA, it is believed that the risk assessment results present a reasonable yet conservative evaluation of the risk to ecological receptors present at the site. Where uncertainty or lack of knowledge were encountered in the development of the risk estimates, reasonable yet conservative assumptions were made, or data were selected, in order to ensure that risks were not underestimated.

6.0 EFFECTS OF PLANNED REMEDIAL ACTIONS

Specific localized areas were identified as "hot spots" where concentrations of selected CoPCs were elevated. Even though, these areas do not pose a significant human or ecological risk, they were selected to be removed for aesthetic reasons as well as to remove any remaining and obvious soil staining/contaminated areas. These areas will be excavated and removed from contact of all receptors.

6.1 NEW EXPOSURE POINT CONCENTRATIONS

With these areas being removed from contact with receptors, it is necessary to recalculate the exposure point concentrations (maximum for human health) for the identified CoPCs.

The newly calculated EPCs were compared to previous EPCs and then reinserted into the models to determine an approximate risk reduction associated with removing the targeted "hot spots".

6.2 EFFECT OF REMEDIATION ON IDENTIFIED RISKS

The consequential removal of these selected areas resulted in drops of EPCs for human health of 14% (antimony), 52% (barium), 20% (beryllium), 86% (cadmium), 93% (copper), 19% (lead), 87% (tin), 95% (total polychlorinated biphenyls (PCBs)), 94% (total petroleum hydrocarbon (TPH) F2 fraction) and 40% (TPH F4 fraction). The EPC for human health represents a drop in the maximum concentrations found on site. This resulted in a subsequent drop in the calculated total hazard quotients associated with the site of 36% (barium), 16% (beryllium), 69% (cadmium), 39% (copper), 78% (lead), 2% (tin), 48% (PCBs), 94% (TPH F2 fraction) and 64% (TPH F4 fraction).

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APPENDIX A

TOXICITY PROFILES

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GLOSSARY AND ACRONYMS

Absolute bioavailability	Absolute bioavailability is the fraction or percentage of an administered dose that reaches systemic circulation (blood) irrespective of via the gastrointestinal tract, skin or lungs
Ah	Aryl hydrocarbon
ATSDR	Agency for Toxic Substances and Disease Registry
Bioavailability	The degree to which a substance becomes available to the target tissue after administration or exposure
CEPA	Canadian Environmental *Protection Act*
COPC	Contaminants of Potential Concern
ESOD	Erythrocyte Superoxide Dismutase
FAO	Food and Agriculture Organization. An organization of the United Nations.
IARC	International Agency for Research on Cancer. An organization of the WHO.
IOC	Intake of concern
IOM	Institute of Medicine
IPCS	International Programme on Chemical Safety
IRIS	Integrated Risk Information System. A database maintained by the US EPA.
LOAEL	Lowest-observed-effects-level. A term that describes the benchmark on a threshold dose-response curve at which the lowest dose results in observed adverse health effects. May be used in place of a NOAEL where a NOAEL cannot be determined.
MAC	Maximum Allowable Concentration
MADEP	Massachusetts Department of Environmental Protection
MOE	Ontario Ministry of the Environment

GLOSSARY AND ACRONYMS

MRL	Minimal Risk Level. A term used by the ATSDR to describe an estimate of daily human exposure to a hazardous substance that is likely to be without an appreciable risk of adverse noncancer health effects over a specified route and duration of exposure.
NATO	North Atlantic Treaty Organization
NCEA	National Center for Environmental Assessment
NIOSH	National Institute for Occupational Safety and Health
NOAEL	No-observed-effects-level. A term that describes the benchmark on a threshold dose-response curve at which the highest dose does not result in adverse effects.
NRC	National Research Council
OEHHA	Office of Environmental Health Hazard Assessment
ORD	Office of Research and Development
PCB	Polychlorinated biphenyls
PCDD	Polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans
PTWI	Provisional Tolerable Weekly Intake
RAF	Relative absorption factor
RDA	Recommended Dietary Allowance
REL	Reference Exposure Level is a NIOSH time-weighted average concentration for up to a 10-hour workday during a 40-hour work week.