APPENDIX 8

Atlantic RBCA Version 2

ACRONYMS AND DEFINITIONS

Aliphatic hydrocarbon: Hydrocarbons in which the carbon-hydrogen groupings are arranged in open chains that may be branched. The term includes paraffins and olefins and provides a distinction from aromatics and naphthenes, which have at least some of their carbon atoms arranged in closed chains or ring.

Absorption factor: The percent or fraction of a chemical in contact with an organism that becomes absorbed into the receptor.

Absorption: The uptake of a chemical by a cell or an organism, including the flow into the bloodstream following exposure through the skin, lungs, and/or gastrointestinal tract.

Acute toxicity: The development of symptoms of poisoning or the occurrence of adverse health effects after exposure to a single dose or multiple doses of a chemical within a short period of time.

Acute exposure: The single large exposure or dose to a chemical, generally occurring over a short period.

Adsorption: The physical process of attracting and holding molecules of other substances or particles to the surfaces of solid bodies with which the former are in contact.

Acceptable risk: A risk level that is considered by society or regulatory agencies as tolerable.

Alkanes: Hydrocarbons that contain only single bonds. The chemical name indicates the number of carbon atoms and ends with the suffix “ane”.

Alkenes: Hydrocarbons that contain carbon-carbon double bonds. The chemical name indicates the number of carbon atoms and ends with the suffix 'ene'.

Alkyl groups: A group of carbon and hydrogen atoms that branch from the main carbon chain or ring in a hydrocarbon molecule. The simplest alkyl group, a methyl group, is a carbon atom attached to three hydrogen atoms.

Analyte: The chemical for which a sample is tested, or analyzed.

Aromatic: A compound containing one or more conjugated rings that also may contain sulfur, nitrogen, and oxygen.

ASTM: American Society for Testing and Materials, responsible for many of the standard methods used in industry.

Background level: The normal ambient environmental concentration levels of a chemical.

Bioaccumulation: The retention and concentration of a chemical in the tissues of an organism or biota.

Bioconcentration factor: A measure of the amount that a selected chemical substance accumulates in humans or in biota. It is the ratio of the concentration of substances in an organism to the concentration of the substance in surrounding environmental media.

Bioconcentration: The accumulation of a chemical in tissues of organisms to levels greater than levels in the surrounding media for the organism's habitat; often used synonymously with bioaccumulation.

Boiling point: A characteristic physical property of a liquid at which the vapour pressure is equal to that of the atmosphere and the liquid is converted to a gas.

BTEX: Benzene, toluene, ethylbenzene, and the xylene isomers.

Bunker fuel: Heavy residual oil also called bunker C, bunker C fuel oil, or bunker oil.

Cancer: A disease characterized by malignant, uncontrolled invasive growth of body tissue cells.

Carcinogen: A chemical or substance capable of producing cancer in living organisms.

Carcinogenic: Tending to produce or incite cancer in living organisms.

Carcinogenicity: The ability of a chemical to cause cancer in a living organism.

Chromatogram: The resultant electrical output of sample components passing through a detection system following chromatographic separation. A chromatogram may also be called a trace.

Chronic: Pertaining to the long term (i.e., of long duration).

Chronic exposure: The long-term, low-level exposure to chemicals, i.e., the repeated exposure or doses to a chemical over along period of time. It may cause latent damage that does not appear until a later period in time.

Chronic toxicity: The occurrence of symptoms, diseases, or other adverse health effects that develop and persist over time, after exposure to a single dose or multiple doses of a chemical delivered over a relatively long period of time.

Chronic daily intake: The exposure, expressed in mg/kg-day, averaged over a long period of time.

Coarse-grained soil: A coarse-grained soil is defined as material having greater than 50% (by dry weight) particles equal to or greater than 75 microns (200 mesh) in diameter.

Confidence interval (CI): Pertaining to a range and the probability that an uncertain quantity falls within this range.

Confidence limits: The upper and lower boundary values of a range of statistical probability numbers that define the confidence interval.

Cycloalkane: A class of alkanes that are in the form of a ring.

Cycloparaffin: An example of a cycloalkane.

Degradation: The physical, chemical, or biological breakdown of a complex compound into simpler compounds and byproducts.

Dermal exposure: Exposure of an organism or receptor through skin absorption.

Diesel fuel: That portion of crude oil that distills out within the temperature range approximately 200-370 ^{o}C. A general term covering oils used as fuel in diesel and other compression ignition engines.

Distillation range: A single pure substance has one definite boiling point at a given pressure. A mixture of substances, however, exhibits a range of temperatures over which boiling or distillation commences, proceeds and finishes. This range of temperatures, determined by means of standard apparatus, is termed the `distillation' or `boiling' range.

Dose: That amount of a chemical taken in by potential receptors on exposure; it is a measure of the amount of the substance received by the receptor, as a result of exposure, expressed as an amount of exposure (in mg) per unit body weight of the receptor (in kg).

Dose-response: The quantitative relationship between the dose of a chemical and an effect caused by exposure to such substance.

Dose-response evaluation: The process of quantitatively evaluating toxicity information and characterizing the relationship between the dose of a chemical administered or received and the incidence of adverse health effects in the exposed population.

Dose-response curve: A graphical representation of the relationship between the degree of exposure to a chemical substance and the observed or predicted biological effects or response.

Ecosystem: The interacting system of a biological community and its abiotic (i.e., nonliving) environment.

Ecotoxicity assessment: The measurement of effects of environmental toxicants on indigenous populations of organisms within an ecosystem.

Effect (systemic): The response produced due to a chemical that requires absorption and distribution of the chemical and tends to affect the receptor at sites away from the entry point(s).

Effect (local): The response produced due to a chemical that occurs at the site of first contact.

Environmental fate: The ultimate and intermediary destinies of a chemical after release into the environment, and following transport through various environmental compartments.

EQL: Estimated Quantitation Limit is the minimum concentration that can be reliably reported.

Estimated Daily Intake (EDI): The estimated daily intake of a chemical made by Health Canada from environmental sources during normal living activity not related to a contaminated site. This amount may be subtracted from the Tolerable Daily Intake (TDI) for that chemical when determining allowable concentrations to remain on a site.

Exposure pathway: The course a chemical or physical agent takes from a source to an exposed population or organism; it describes a unique mechanism by which an individual or population is exposed to chemicals or physical agents at or originating from a site.

Exposure route: The avenue by which an organism contacts a chemical, such as inhalation, ingestion, and dermal contact.

Exposure scenario: A set of conditions or assumptions about hazard sources, exposure pathways, levels of chemicals, and potential receptors that aids in the evaluation and quantification of exposure in a given situation.

Exposure: Receiving a dose of a chemical substance (or physical agent) or coming in contact with a hazard.

Extrapolation: The estimation of an unknown value by projecting from known values.

Flame ionization detector (FID): A detector for a gas chromatograph that measures any thing that can burn.

Fine-grained soil: A fine-grained soil is defined as material having greater than 50% (by dry weight) particles equal to or less than 75 microns (200 mesh) in diameter.

Fuel oi1: A general term applied to oil used for the production of power or heat. In a more restricted sense, it is applied to any petroleum product that is used as boiler fuel or in industrial furnaces. These oils are normally residues, but blends of distillates and residues are also used as fuel oil. The wider term, `liquid fuel' is sometimes used, but the term `fuel oil' is preferred.

Fugitive dust: Atmospheric dust arising from disturbances of granular matter exposed to the air.

Gas chromatography: An analytical technique, employing a gaseous mobile phase, which separates mixtures into their individual components.

Gasoline (petrol): Refined petroleum distillate, normally boiling within the limits of 30-220'C, which, combined with certain additives, is used as fuel for spark-ignition engines. By extension, the term is also applied to other products that boil within this range.
Grease: A semisolid or solid lubricant consisting of a stabilized mixture of mineral, fatty, or synthetic oil with soaps, metal salts, or other thickeners.

Hazard: The inherent adverse effect that chemical or other object poses. It is that which has the potential for creating adverse consequences.

Heating oil: Gas oil or fuel oil used for firing the boilers of central heating systems.

Human health risk: The likelihood (or probability) that a given exposure or series of exposures to a hazardous substance will cause adverse health impacts on individual receptors experiencing the exposures.

Hydraulic fluid: A fluid supplied for use in hydraulic systems. Low viscosity and low pour-point are desirable characteristics. Hydraulic fluids may be of petroleum or nonpetroleum origin.

Hydrocarbons: Molecules that consist only of hydrogen and carbon atoms.

Individual excess lifetime cancer risk (IELCR): An upper-bound estimate of the increased cancer risk, expressed as a probability, that an individual receptor could expect from exposure over a lifetime; it is a statistical concept and is not dependent on the average residency time in an area.

Ingestion: An exposure type whereby chemical substances enter the body through the mouth and into the gastrointestinal system.

Inhalation: The intake of a substance by receptors through the respiratory tract system.

Intake: The amount of material inhaled, ingested, or dermally absorbed during a specified time period. It is a measure of exposure, expressed in mg/kg-day.

Integrated Risk Information System (IRIS): A U.S. EPA database containing verified reference doses (RfDs) and slope factors (SFs) and up-to-date health risk and EPA regulatory information for numerous chemicals. It serves as an important source of toxicity information for health and environmental risk assessment.

Jet fuel: Kerosene or gasoline/kerosene mixture for fueling aircraft gas turbine engines.

K_d: Soil/water partition coefficient, provides a soil- or sediment-specific measure of the extent of chemical partitioning between soil or sediment and water, unadjusted for the dependence on organic carbon.

Kerosene: A refined petroleum digitate intermediate in volatility between gasoline and gas oil. Its distillation range generally falls within the limits of 150 and 300'C. Its main uses are as a jet engine fuel, an illuminant, for heating purposes and as a fuel for certain types of internal combustion engines.
K_{oc}: Organic carbon adsorption coefficient provides a measure of the extent of chemical partitioning between organic carbon and water at equilibrium.

K_{ow}: Octanol/water partition coefficient provides a measure of the extent of chemical partitioning between water and octanol at equilibrium.

K_w: Water/air partition coefficient, provides a measure of the distribution of a chemical between water and air at equilibrium.

Leachate: A contaminated liquid resulting when water percolates, or trickles, through waste materials and collects components of those wastes; leaching usually occurs at landfill and may result in hazardous chemicals entering soils, surface water, or groundwater.

Lifetime risk: Risk that results from lifetime exposure to a chemical substance.

Lifetime average daily dose: The exposure, expressed as mass of a substance contacted and absorbed per unit body weight per unit time, averaged over a lifetime.

Lifetime exposure: The total amount of exposure to a substance that a human receptor would be subjected to in a lifetime.

LOAEL: That chemical dose rate causing statistically or biologically significant increases in frequency or severity of adverse effects between the exposed and control groups. It is the lowest dose level, expressed in mg/kg body weight/day, at which adverse effects are noted in the exposed population. (Lowest Observable Adverse Effect Level)

LOEL: The lowest exposure or dose level to a substance at which effects are observed in the exposed population; the effects may or may not be serious. (Lowest Observable Effect Level)

Liquid chromatography: A chromatographic technique that employs a liquid mobile phase.

Mass spectrometer: An analytical technique that "fractures" organic compounds into characteristic fragments based on functional groups that have a specific mass to charge ratio.

Mineral hydrocarbons: Petroleum hydrocarbons considered "mineral" because they come from the earth rather than from plants or animals.

Maximum contaminant level (MCL): A legally enforceable maximum chemical concentration standard that is allowable in drinking water, issued by the U.S. EPA under the SDWA authorities.

Modeling: Use of mathematical algorithms to simulate and predict real events and processes.

Monitoring: Measurement of concentrations of chemicals in environmental media or in tissues of humans and other biological receptors/organisms over time.

No observed adverse effect level (NOAEL): The highest chemical intakes at which there are no statistically or biologically significant increases in frequency or severity of adverse effects between the exposed and control groups (meaning statistically significant effects are observed at this level, but they are not considered to be adverse). It is a dose level, expressed in mg/kg body weight/day, at which no adverse effects are noted in the exposed population.

No observed effect level: That dose rate of chemical at which there are no statistically or biologically significant increases in frequency or severity of any effects between the exposed and control groups, (i.e., the highest level at which a chemical causes no observable changes in the species under investigation). It is a dose level, expressed in mg/kg body weight/day, at which no effects are noted in exposed populations.

Olefin: Synonymous with alkene.

Polycyclic aromatic hydrocarbons (PAHs): PAHs consist of a suite of compounds comprised of two or more aromatic rings. PAHs are found in many petroleum mixtures, and they are predominantly introduced to the environment through natural and anthropogenic combustion processes.

Paraffin (alkanes): One of a series of saturated aliphatic hydrocarbons, the lowest numbers of which are methane, ethane, and propane. The higher homologues are solid waxes.

Pathway: Any specific route by which a potential receptor or individual may be exposed to an environmental hazard, such as the release of a chemical material.

Permissible exposure limit (PEL): A maximum (legally enforceable) allowable level for a chemical in workplace air, expressed as ppm or mg/m^3 of substance in air.

Photoionization detector (PID): A gas chromatographic detection system that utilizes an ultraviolet lamp as an ionization source for analyte detection. It is usually used as a selective detector by changing the photon energy of the ionization source.

Pica: The behavior in children and toddlers (usually under age 6 years) involving the intentional eating/mouthing of large quantities of dirt and other objects.

Potency: A measure of the relative toxicity of a chemical.

ppb (parts per billion): An amount of substance in a billion parts of another material.

ppm (parts per million): An amount of substance in a million parts of another material; also expressed by mg/kg or ml/L.
Probability: The likelihood of an event occurring.

Purge and trap: A chromatographic sample introduction technique in volatile components that are "purged" from a liquid medium by bubbling gas through it. The components are then concentrated by "trapping" them on a short intermediate column, which is subsequently heated to drive the components on to the analytical column for separation.

Qualitative: Referring to the occurrence of a situation without numerical specifications.

Quantitative: Describing the amounts in exact numerical terms.

Receptor: Refers to members of a potentially exposed population, e.g., persons or organisms that are potentially exposed to concentrations of a particular chemical compound.

Reference dose (RfD): The maximum amount of a chemical that the human body can absorb without experiencing chronic health effects; it is expressed in mg of chemical per kg body weight per day. It is the estimate of lifetime daily exposure of a non-carcinogenic substance for the general human population that appears to be without an appreciable risk of deleterious effects; used interchangeably with acceptable daily dose and Tolerable Daily Intake (TDI).

Response: The reaction of the body to a chemical substance or other physical, chemical, or biological agent.

Risk assessment: The determination of the potential adverse effects due to hazardous exposure in a particular situation; it is the total process of qualifying or quantifying risks and finding acceptable levels of the risks for an individual, group, or society. It may involve the characterization of the types of health and environmental effects expected from exposure to a chemical substance, estimation of the probability (risk) of occurrence of adverse effects, estimation of the number of cases, and a recommendation for corrective actions.

Risk management: The steps and processes taken to reduce, abate, or eliminate the risk that has been revealed by a risk assessment. It is an activity concerned with decisions about whether an assessed risk is sufficiently high to present a public health concern and about the appropriate means for controlling the risks judged to be significant.

Risk: The probability or likelihood of an adverse consequence from a hazardous situation or hazard, or the potential for the realization of undesirable adverse consequences from impending events.

Risk perception: The magnitude of the risk as it is perceived by an individual or society consisting of the measured risk and the preconceptions of the observer.

Risk reduction: The action of lowering the probability of occurrence and/or the value of a risk consequence, thereby reducing the magnitude of the risk.

Sensitivity analysis: A method used to examine the operation of a system by measuring the deviation of its nominal behavior due to perturbations in the performance of its components from their nominal values.

Slope factor (SF): A plausible upper-bound probability estimate of a response per unit intake of a chemical over a lifetime. It is used to estimate an upper bound probability of an individual developing cancer as a result of a lifetime of exposure to a particular level of a potential carcinogen.

Subchronic exposure: The short-term, high-level exposure to chemicals, i.e., the maximum exposure or doses to a chemical over a portion of a lifetime.

Subchronic: Relates to intermediate duration, usually used to describe studies or exposure levels spanning 5 to 90 days duration.

Threshold: The lowest dose or exposure of a chemical at which a specified measurable effect is observed and below which such effect is not observed.

Threshold limit value (TLV): The maximal allowable workpiece air concentration level for a chemical.

Tolerable Daily Intake (TDI): The maximum amount of a chemical that the human body can absorb without experiencing chronic health effects; it is expressed in mg of chemical per kg body weight per day. It is the estimate of lifetime daily exposure of a non-carcinogenic substance for the general human population that appears to be without an appreciable risk of deleterious effects; used interchangeably with acceptable daily dose and Reference Dose (RfD).

Toxicity assessment: Evaluation of the toxicity of a chemical based on available human and animal data. It is the characterization of the toxicological properties and effects of a chemical substance, with special emphasis on the establishment of dose-response characteristics.

Toxicity: The harmful effects produced by a chemical substance. It is the quality or degree of being poisonous or harmful to human or ecological receptors.

Uncertainty: The lack of confidence in the estimate of a variable's magnitude or probability of occurrence.

Uncertainly factor (UF): Also called safety factor, refers to a factor that is used to provide a margin of error when extrapolating from experimental animals to estimate human health risks.