
GLOSSARY OF TERMS AND ABBREVIATIONS

AD/HD: Attention Deficit Hyperactivity Disorder.

Association: The relationship between an exposure and a disease. Such a relationship does not necessarily demonstrate a cause–effect relationship.

Birth defect: Any defect present in a baby at birth, irrespective of whether it is caused by a genetic factor or by non-genetic prenatal events. Common birth defects include heart defects, cleft lip or palate, Down Syndrome, spina bifida and limb defects. Birth defects are the leading cause of infant mortality in Canada.

Bioaccumulation: Some pollutants are excreted more slowly than they are absorbed and are thus stored in the body for long periods of time. Total pollutants in the body (the “body burden”) may increase if the organism is repeatedly exposed to bioaccumulating substances for a long period of time.

Biomarker: Biological materials, enzymes, hormones, etc., that change when exposed to contaminants. See also biomonitoring.

Biomagnification: Pollutants “biomagnify” when their concentration increases as animals eat contaminated plants or other animals. For example, when pollutants in plants are passed on to animals repeatedly feeding on the plants, the animals may accumulate higher levels of contaminants in their own bodies than were originally found in the plants. This is because the animals eat many plants and do not excrete most of the absorbed pollutants. Levels of contaminants can increase up the food chain.

Biomonitoring: Biomonitoring involves measuring and analyzing chemicals, hormone levels or other substances in biological materials (e.g., blood, urine, breath) to estimate exposure, or to detect biochemical changes in the exposed subject before or during the onset of adverse health effects. Biomonitoring sometimes refers to a specific indicator for a particular disease/functional disturbance (e.g., a blood test for lead).

Blood–brain barrier: A term that encompasses multiple mechanisms that control access of blood components to the brain; the fetal and neo-natal blood–brain barrier is more permeable than the adult barrier to small lipophilic molecules.

Body burden: The total amount of a chemical in the body. Some chemicals build up in the body because they are stored in fat or bone and/or are eliminated very slowly.

Carcinogen: A substance (e.g., a chemical) or an agent (e.g., ionizing radiation) that causes cancer.

Childhood cancer: Among all age groups, the most common childhood cancers are leukemia, lymphoma and brain cancer. As children enter their teen years, the incidence of osteosarcoma (bone cancer) increases. Sites affected are different for each type of cancer, as are treatment and cure rates. In almost all cases, childhood cancer appears to arise from non-inherited mutations in the genes of growing cells.

Contaminants: Substances foreign to a natural system or present at unnatural concentrations; unwanted substances that have entered the air, food, water or soil. Contaminants may be chemicals, living things (e.g., bacteria or viruses) or the products of radioactivity. Some contaminants are created by human (e.g., industrial) activities while others are the result of natural processes.

Cotinine: A major metabolite of nicotine and regarded as the best biomarker (in active smokers and in non-smokers) of recent exposure to environmental tobacco smoke (ETS).

DDT: Dichloro-diphenyl-trichloroethane. A persistent insecticide used worldwide until it was banned in most countries in the 1970s.

DEET: N, N-diethyl-m-toluamide. Personal insect repellent for mosquito control.

Developmental toxicants: Agents that cause adverse effects to the developing embryo, fetus or child. These effects usually result from maternal exposure to toxic chemicals before or during pregnancy but can also result from paternal exposures. Early postnatal contact with developmental toxicants can also affect normal development.

Dioxins and furans: Among the most toxic chemicals known. Numerous types in each group, these chemicals are by-products of combustion, degradation of other chemicals, and some industrial processes.

EBDCs: Ethylenebisdithiocarbamates are a group of non-systemic (surface acting) fungicides.

E-coli: Bacterial species (numerous strains exist) found in human and animal intestines.

Endocrine disruptors (also called hormonally active agents): Synthetic chemicals and natural plant compounds (and some pharmaceutical drugs) that

may affect the functioning of the endocrine system (the communication system of glands, hormones and cellular receptors that control the body's internal functions). Many of these substances have been associated with developmental, reproductive and other health problems in wildlife and laboratory animals. There is concern that they could affect humans in similar ways.

Epidemiology: The study of the frequency, distribution and determinants of disease risk in human populations. Also the field of medicine concerned with the determination of the specific causes of localized outbreaks of infection (such as hepatitis), toxic disorders (such as lead poisoning), or any other disease of known cause.

ETS: Environmental Tobacco Smoke (second-hand smoke). The smoke released by idling lit tobacco products (cigarettes, cigars, and pipes), and smoke exhaled by smokers after puffs. ETS contains hundreds of toxic chemicals including over 40 cancer-causing chemicals.

Fish advisories: Public notices issued by local, provincial or national environmental or health agencies that warn about the need to limit or avoid consumption of certain fresh or salt water species, generally those that are predator species at the top of aquatic food chains. Most advisories are directed at pregnant or nursing women and young children, as well as women of child-bearing age.

Food chain: The food chain is a series of organisms, each consuming the organism below them in the chain, and being consumed by the next higher organism. Green (chlorophyll-containing) plants are at the bottom of every food chain; green plants convert sunlight into food energy for the rest of the organisms in the food chain. Because organisms at each level of the food chain use up most of the energy they consume, energy is lost at each level, limiting the length of the chain. The extra buoyancy of water allows for some of this energy to be conserved thus allowing more levels in aquatic food chains. With more levels, contaminants can continue to concentrate (biomagnify). Hence the greater contamination of fish by methylmercury and the need for fish advisories. In nature, food chains usually combine to form food webs.

Food web: Found in any natural community, a food web contains many interlinked food chains. Humans are at the highest level of many food webs and their breastfed infants are higher still.

Incidence: The number of new cases of a disease occurring in a defined population within a specified period of time. Frequently presented as the number of new cases per 1,000 or 100,000 people per year.

Inorganic chemicals: Chemicals that do not contain carbon. Examples include metals like lead, mercury and cadmium, as well as salt and asbestos.

Intrauterine Growth Restriction (IUGR): A low birth weight infant with a birth weight below the lowest decile for gestational age. See also: low birth weight.

Ionizing radiation: A physical agent — ions — released during the spontaneous radioactive decay into small elements of radionuclides emitted during medical X-rays, the regular operation of nuclear power plants, and, in potentially massive amounts, as a result of nuclear accidents and the testing or use of atomic weapons.

Latency period: The period of time between exposure to a disease-causing agent and the first appearance of signs or symptoms of the disease.

Learning disabilities: Refers to a number of disorders that may affect the acquisition, retention, understanding or use of verbal or nonverbal information. These disorders affect learning in individuals who otherwise demonstrate at least average abilities essential for thinking and/or reasoning. Learning disabilities result from impairments in one or more processes related to perceiving, thinking, remembering or learning. They range in severity and may interfere with the acquisition and use of one or more of the following:

- oral language (e.g., listening, speaking and understanding);
- reading (e.g., decoding, phonetic knowledge, word recognition, comprehension);
- written language (e.g., spelling and written expression); and
- mathematics (e.g., computation, problem solving).

Lipophilic/hydrophobic: Literally “fat-loving” or “water-averse.” Used to refer to substances that bind to fat molecules, and as a result often concentrate up the food chain and reach their highest levels in high fat foods such as whole milk, cheese, fatty meats and oily fish.

Lipophobic/hydrophilic: Literally “fat-averse” or “water-loving.” Used to refer to substances that stay in solution in water and tend not to bind to either particles or fatty molecules.

Low birth weight: An infant that weighs less than 2500 grams at birth. See also: IUGR

Melanoma: Dangerous type of skin cancer.

Mental retardation: A disability characterized by significant limitations both in intellectual functioning and adaptive behaviour as expressed in conceptual, social, and practical adaptive skills. This disability originates before age 18 and is often more simply defined in terms of an individual having an IQ <70 but other criteria, beyond intellectual capacity, are generally considered.

Metabolism: Total biochemical and energy processes that maintain life in organisms. Includes the conversion of one compound into another, the building up of larger molecules from smaller ones (anabolism), and the breakdown of compounds (catabolism) to release life-sustaining energy.

Methylmercury: Organic mercury compound formed by moulds and bacteria.

Neurotoxicants: A biological or chemical substance or agent that has an adverse effect on the structure or function of the central (including the brain) and/or peripheral nervous system. Toxicants that exert adverse effects on the developing brain or nervous system are called developmental neurotoxicants.

Organic chemicals: Chemicals containing carbon, usually combined with hydrogen and other elements such as oxygen, nitrogen, or chlorine. Vegetable matter, petroleum, and plastics are examples of organic materials as are PCBs, DDT, and polyvinyl chloride.

Organochlorine compounds: A wide variety of synthetic organic compounds containing chlorine particularly notable for their persistence and stability. Some have been deliberately manufactured (e.g., several pesticides, including DDT, PCBs, though these are now banned or greatly restricted in use). Others are breakdown or reaction products like dioxins formed from incineration of products like PVC plastic. All are now widely distributed in the environment.

Organophosphates: Organic chemicals containing phosphorous, some of which are involved in cellular energy metabolism. Nerve gas (no longer manufactured) and organophosphate pesticides are based on the same chemistry and can interfere with important aspects of cellular energy metabolism in nervous system tissues, including in the brain.

PAHs: Polycyclic aromatic hydrocarbons include a large number of toxic chemicals, including several cancer-causing chemicals, created from the combustion of organic material, including fossil fuels. Exposure occurs via air pollution but most PAHs are adhered to fine particulate matter; unlike VOCs, they are not very volatile.

PBDEs: Polybrominated diphenyl ethers. Widely used in consumer products as flame retardants.

PCBs: Polychlorinated biphenyls. Manufactured for transformer cooling oil and numerous other applications. No longer manufactured and use is restricted because of carcinogenic properties and persistence in the environment.

Persistence: Refers to chemicals or agents that remain a long time in the environment. For example, lead and mercury persist in the environment because they are stable elements; PCBs are chemically stable compounds that resist degradation. Mercury and PCBs cycle between environmental media including air, water and food chains.

Phthalates: Compounds used to make some plastics soft and flexible. A plasticizer compound.

PM: Particulate Matter. Described in three categories: coarse, fine and ultrafine. Particle diameter generally noted in subscript. Hence:

- coarse - PM_{10} , or $PM_{2.5-10}$ (particle diameter between 2.5 and 10 microns);
- fine - $PM_{2.5}$ or $PM_{1.0-2.5}$ (particle diameter between 1.0 and 2.5 microns); and
- ultrafine – $PM_{1.0}$ (particle diameter less than 1.0 microns).

PMRA: Pest Management Regulatory Agency. Agency within Health Canada responsible for registering pesticides for use in Canada.

Polychlorinated naphthalenes: chemicals used for cable insulation, persistent and bioaccumulative and recommended by the European Commission (in 2004) as candidates for addition to the Stockholm Convention on Persistent Organic Pollutants.

POPs: Persistent organic pollutants. Chlorinated organic compounds characterized by resistance to natural breakdown, consequent persistence and bioaccumulation in the environment. Also often highly toxic.

Prevalence: The number of events (e.g. instances of a given disease or other condition in a given population at a designated time. Note this is a number not a rate. See also Rate and Incidence.

Rate: In epidemiology, an expression of the frequency with which a certain circumstance (e.g., asthma incidence in children) occurs in relation to a certain period of time, a fixed population, or some other fixed standard. The use of rates

rather than raw numbers is essential for comparison of experience between populations at different time or different places.

Reproductive toxicants: Chemical substances or agents that cause adverse effects on the male and female reproductive systems. Toxicity may be expressed as alterations of sexual behaviour, decreases in fertility, loss of the fetus or abnormal fetal genital development during pregnancy. Interference with sexual function may occur from puberty through adulthood.

SCCPs: Short-chained chlorinated paraffins. Chemicals used in metal working and leather finishing, and recommended by the European Commission (in 2004) as candidates for addition to the Stockholm Convention on Persistent Organic Pollutants.

SIDS: Sudden Infant Death Syndrome (also called Crib Death). Refers to the sudden and unexpected death of apparently healthy babies. Exact cause is unknown but risk factors include exposure to environmental tobacco smoke during pregnancy or after birth and sleeping on the stomach.

Teratogen: Any substance or factor that can cause structural or functional malformations of an embryo or fetus which are also known as congenital malformations or birth defects. Known teratogens include certain chemicals and viruses and ionizing radiation.

Toxic substances: Substances capable of causing harm to humans, animals or other living things. In common usage, the term refers to chemical substances that are capable of causing harm at very low levels of exposure, while providing little or no benefit.

USEPA: United States Environmental Protection Agency.

USFDA: United States Food and Drug Administration.

UV Radiation: Ultraviolet radiation, emitted by the sun's rays or used industrially (e.g., for sterilization purposes).

VOCs: Volatile organic compounds. Organic gases and vapours in the air. Examples of sources include the burning of fuels, dry cleaning operations, and the evaporation of organic compounds from solvents, paints, or other coatings.

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