

GLOSSARY

For the purpose of this Handbook, the following terms and phrases shall have the meanings set out below:

Abandoned Mine Site - A mine site that has been relinquished by its owners for the purpose of disposing of its ownership. It usually has not been closed down in a planned and orderly fashion.

Abandoned or Shut Down Mine Site - Class I: An abandoned or shut down mining operation that is assessed and found to have at least one 'significant risk' to human and/or environmental health or safety, or poses a risk to economic activity, and is therefore classified as an Environmental Mining Liability or MEL.

Abandoned or Shut Down Mine Site – Class II: An abandoned or shut down mining operation that is assessed and found to have 'no significant risks' and therefore is not considered a MEL.

Abandoned or Shut Down Mine Site - Class III: An abandoned or shut down mining operation that undergoes a pre-risk assessment and is found to have risks that are of no consequence to human and/or environmental health. These sites are not considered to be MELs.

Adverse effect - Any detrimental effect on humans, plants or animals due to exposure to a toxic substance.

Annual Exceedence Probability – The probability that an event of a certain magnitude may be equalled or exceeded in a specific year.

Area of Study: The zone potentially affected by human and/or environmental health and safety risks and/or risks to economic activities generated by an abandoned or shut down mining operation.

Atterberg Limit – A test to determine liquid and plastic limits on soil and its Plasticity Index.

Background concentration - Substance concentration in water, soil, sediment or air, at levels as found in natural environments.

Bioaccumulation - Process by which chemical substances accumulate in plants or animals via direct exposure to a contaminated source (soil, water, sediment) or indirectly by ingesting contamination from the food chain.

Cancer slope factor - An upper bound, approximating a 95 per cent confidence limit, on the increased cancer risk from a lifetime exposure to an agent. This estimate, usually expressed in units of proportion (of a population) affected per mg/kg-day, is generally reserved for use in the low-dose region of the dose-response relationship, that is, for exposures corresponding to risks less than 1 in 100.

Carcinogenic - An agent that may cause cancer.

Chemicals of potential concern - Chemicals that have hazardous properties, but will be of concern only when shown to come into contact with receptors at concentrations that would cause harm.

Chimney - Sloped or vertical mine work that is worked from the bottom upwards.

Chronic exposure - Continuous or repeated exposure to a given chemical substance for a long period of time.

Closure Plan – a legally required plan for all operating mines which must be regularly updated and submitted to MME.

Conceptual model - A written description and a visual representation of expected links between receptors and contaminants in an exposure scenario.

Cone Penetration Test – Test where a cone is introduced into the soil at a constant speed, the strength required must be measured continuously.

Contaminant - Any chemical, physical, biological or radiological substance found in the air, soil, water or biological matter that could be detrimental to human health or the environment.

Contamination - The environmental presence of substances, elements, energy or a combination of these in concentrations (or in concentrations and persistence) beyond the legal limit stipulated under current national legislation or according to international guidelines.

Cumulative effects - Synergies that result from the proximity of mining operations, where there is a combined impact on the same receptor(s).

***de manifestis* lifetime risk** - Cancer risk sufficiently large that some sort of remediation is desirable.

***de minimis* lifetime risk** - Cancer risk that is so small as to be negligible.

Direct pathway of exposure - Exposure to contaminants through direct contact with the contaminated medium, e.g., air, soil, water, through inhalation, ingestion or dermal contact.

Dose - Absorbed amount of a substance in the human or animal body from where it can exert its toxic effects, expressed per body weight (mg/kg-day).

Dump - A place used for depositing waste rock or solid waste.

Earthquake Design Ground Motion (EDGM) – Seismic ground movement expected for an analyzed area.

Ecological Risk Assessment – Process to evaluate risks to the health of ecological receptors.

Ecotoxicity - Toxic effects of chemicals on ecological receptors

Environment - The global system consisting of natural and artificial physical, chemical, biological, social and cultural elements and their interactions that is constantly being modified by human or natural action and that governs and conditions the existence and development of life in its multiple manifestations.

Environmental damage - All significant loss, diminishment, harm or impairment to the environment or one or more of its components.

Environmentally sensitive area - A portion of territory, legally protected or not, containing natural resources that are deemed unique or of special value to the authorities, scientists, environmental sectors and/or the community at large.

Excess cancer risk - Cancer risk over and above the existing cancer risk.

Exposure - Contact with toxic substances in environmental media.

Exposure assessment - Evaluation of exposure pathways of contaminants and quantification of dose in receptors.

Exposure pathway - Environmental media through which contaminants reach receptors from sources.

Exposure route - Mechanism of intake of contaminants, i.e., inhalation, ingestion or dermal exposure.

Extensometer – A device that measures movement on stress-strained ground.

Failure Mode – The manner in which an element undergoes failure, causing a loss in integrity.

Failure Modes Effects Criticality Analysis – A risk assessment procedure in which a system's potential failure modes are analyzed in terms of the combined influence of different Probabilities of Occurrence and Severity of Consequences.

Foundation – Rocks, concrete and/or soil that make up the base of a structure.

Freeboard – Vertical distance between water surface and the lowest elevation at the reservoir or pond crest.

Gallery - Horizontal or almost horizontal mine works.

Grain-size analysis – A test that determines soil particle size. Progressively, smaller screens are used to evaluate sandy soil distribution while using a hydrometer for finer grain soils (clay, silt).

Hazard - An imminent potential event or a situation that could cause harm.

Hazard index - The sum of hazard quotients.

Hazard quotient - The ratio of estimated exposure or dose and a reference exposure or dose level (e.g., reference concentration or dose).

Hazard Scenario - Description of the origin, causes and effects of risk-producing events.

Hazardous Waste - Waste or a mixture of waste that could harm public health or the environment, directly or as a result of present or future management, as a result of its acute, chronic or extrinsic toxicity, flammability, reactivity or corrosiveness.

Human Health Risk Assessment – Process to evaluate health risks for human receptors.

Indirect pathway of exposure - Exposure to toxic substances mainly through the food pathway, not through direct contact with contaminated environmental media.

Large Scale Mining Waste - Waste from mining activity consisting of waste rock, low grade ore, mineral waste from leaching, tailings and slag.

Liquefaction – Sudden loss of soil consistency, occurring when water pore pressure is equal to the cohesive force.

Liquid Limit – Soil water content generated by behaviour change from plastic to liquid state.

Low grade ore stockpile – mined ore with low grades which is stockpiled for later processing when economical or for blending with higher grade ore.

Mining Environmental Liability (MEL) - An abandoned or shut down mine, including its waste, that constitutes a significant risk to human and/or environmental health and safety and/or to economic activities.

Mining Operations - Includes all work carried out during and after the construction stage, in all facilities and workplaces of the Extractive Mining Industry, such as mines, treatment plants, smelters, refineries, metal shops, workshops, power plants, loading docks for mining products, camps, storehouses and in general all work, installations, support services and infrastructure necessary to ensure the functioning of the Extractive Mining Industry.

No-observed-adverse-effect level - Dose level of contaminants to humans or test animals at which no adverse health effects were observed.

Open Pit - Mining operation on the surface.

Phreatic Level - Soil water pressure equal to zero.

Piezometer – A device used to measure water pressure of pores on site, based on electronically pressured transducers or open stand pipes.

Plastic Limit – Soil water content where behaviour changes occur from solid to plastic.

Protected area - Any portion of territory that is geographically defined and legally established as officially protected for the purpose of safeguarding biological diversity, preserving nature and conserving the environmental heritage.

Receptor - Species, communities, habitats or ecosystems directly or indirectly exposed to one or more chemical substances associated to environmental contamination.

Reference concentration - Guideline concentration of a substance in an environmental medium against which the concentration of exposure is compared to estimate risk.

Reference dose - An estimate of a daily exposure for a given duration to the human population (including susceptible subgroups) that is likely to be without an appreciable risk of adverse health effects over a lifetime

Remediation Plan (also known as an Environmental Management Plan or a Rehabilitation Plan) - A document that describes in detail the actions and measures required to control, mitigate or eliminate the significant risk generated by a mining environmental liability.

Remediation - A series of actions and measures required to control, mitigate or eliminate a risk to human and/or environmental health or safety that is posed by a mining environmental liability, bringing the risk to an acceptable level (insignificant) and terminating the MEL designation.

Risk - The combination of an event's Likelihood of Occurrence and its Consequence.

Risk Assessment Matrix - An instrument that defines the magnitude of risk for a given Hazard Scenario based on the Likelihood of Occurrence and Potential Consequences for receptors.

Risk characterization - Integrates exposure and toxicity to estimate adverse effects on health associated with exposure to toxic substances.

Safety Factor – Ratio between the resisting forces and the disturbing forces.

Saturated Hydraulic Conductivity – Indicates the speed by which water flows through soil under a hydraulic gradient equal to one.

Seepage – Movement of water through soil.

Shaft - Vertical or sloped mining works running downwards.

Shut Down Mine Site: A mine site that has been shut down for any reason, whether temporarily or permanently, excluding shut downs for operational reasons, maintenance or other regular mine operative practice. A shut down mine site implies that the closure was carried out on a planned basis according to a predetermined Closure Plan.

Slope Indicator – A device, such as an inclinometer, which measures slope movement through time.

Small Scale/industrial Waste - Waste from mining activities not included in the above categories, such as sediment, rejected byproducts, left over reagents, ash, asbestos, tyres, etc.

Soil Liquidity Index – The index quantifying the soil water index related to liquid and plastic limits.

Soil Profile - A term used to illustrate soil strata.

Soil Water Characteristic Curve – Relation between water content in unsaturated soil and the negative pressure of water in soil pores (suction).

Stope - The rock excavation that remains after exploitation is completed in one section of the mine.

Stressor-response - A measure of adverse effects on ecosystems as a result of exposure to chemicals or physical factors.

Tailings dam - All works with safety measures that are designed to contain tailings from a wet concentration plant, including associated tailings pipes, penstocks, drainage systems. These deposits function as the final disposal place of the solid material contained in tailings transported from the plant and enable a large portion of the water in which they were transported to be recovered.

Tailings impoundment - A deposit of dry stacked tailings either end tipped and creating a slope at the natural angle of repose, or co-disposed with retaining walls built of waste rock

Tailings: Solids suspended in liquid to form a slurry that is generated and discharged from wet concentration plants from ore that has undergone one or more stages of fine crushing. The term is also applied to the solid portion of the slurry described above, or to material that is dewatered prior to discharge to the tailings impoundment for dry stacking.

Toe Berm – Material or structure installed in the lower area of the tailings slope to improve stability counterbalancing the trend towards rotational failure.

Toxicity - Inherent capacity of a substance to cause adverse effects in organisms.

Uncertainty - A measure of the level of confidence in scientific interpretations.

Waste rock - Material with no economic value that is extracted with the ore or in mine development.

Waste rock dump - The accumulation of waste rock on the surface.

Water Content – The percentage of water in soil related to its dry weight.