

## LIST OF ACRONYMS

A	Contaminated area (hectares)
ADAF	Age-dependent Adjustment Factor
ADD	Average daily dose of a substance from all exposure pathways (mg/kg-day)
ADD <sub>D</sub>	Dermally-absorbed average daily dose of a substance from water, including personal cleaning and washing of clothes
ADD <sub>j</sub>	Average daily dose of contaminant j (mg/kg-day)
ADD <sub>F</sub>	Average daily dose of the substance from food sources (mg/kg-day)
ADD <sub>I</sub>	Average daily dose of a substance due to inhalation of air (mg/kg-day)
ADD <sub>O</sub>	Average daily dose of a substance due to oral intake of water (µg/kg-day)
ADD <sub>W</sub>	Average daily dose of the substance from intake of water (mg/kg-day)
ADD <sub>S</sub>	Average daily dose of the substance from intake of soil (mg/kg-day)
ADD <sub>SD</sub>	Average daily dose of the substance from intake of sediment (mg/kg-day)
AEC	Area of Environmental Concern
AF	The attributable fraction of mortalities or morbidities due to exposure to the pollutant
AT	Averaging time (days or years)
ATSDR	Agency for Toxic Substances and Disease Registry
B	The population incidence of mortality or morbidity (e.g., deaths or hospitalisation rates per 1 000 people)
BAF	Bioavailability factor for substances in air (default 1)
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe. Federal Institute for Geosciences and Natural Resources
BMDL	Benchmark Dose Limit
BW	Body weight of endpoint species (kg)
C	Concentration of substance in air (mg/m <sup>3</sup> ), soil (mg/kg) or water (mg/litre)
C <sub>ij</sub>	Concentration of contaminant j in medium (mg/kg or mg/litre)
CCME	Canadian Council of Ministers of the Environment
CF	Unit conversion factor
CHS	Contamination Hazard Scenario

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CoM	Chamber of Mines
CPT	Cone Penetration Tests
CRA	Cumulative Risk Assessment
CSF	Cancer Slope Factor
CTE	Central Tendency Exposure
$\Delta_{\text{deaths}}$	Potential proportion change in mortality associated with a change in the pollutant concentration of $1 \mu\text{g}/\text{m}^3$
$\Delta_p$	The modelled change in the mean pollutant concentration in $\mu\text{g}/\text{m}^3$
$DA_{\text{event}}$	Absorbed dose per unit skin area per event ( $\text{mg}/\text{cm}^2\text{-event}$ )
DME	Department of Minerals and Energy (South Africa)
DWA	Department of Water Affairs (Namibia)
DRA	Detailed Risk Assessment
E	Potential mortalities or morbidities per day or per year due to exposure to the pollutant
ED	Exposure duration (years)
EDGM	Earthquake Design Ground Motion
EEC	Estimated Environmental Concentration on site (mg contaminant/l of water, mg contaminant/kg of soil, mg contaminant/kg of food)
EF	Exposure frequency (days/year)
ERA	Ecological Risk Assessment
EV	Event frequency (events/day)
FAO	Food and Agriculture Organization
FIR	The total food ingestion rate (kg/day)
$FIR_i$	Intake rate of food type i (kg/day)
FMEA	Failure Mode Effect Analysis
FMECA	Failure Modes Effects Criticality Analysis
$F_s$	Factor of Safety
GHS	Globally Harmonized System
GPS	Global Positioning System
GSN	Geological Survey of Namibia
HDPE	High Density Polyethylene
HHRA	Human Health Risk Assessment

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HI	Hazard Index.
HQ	Hazard Quotient.
HR	Home range size (hectares)
IARC	International Agency for Research on Cancer.
ICOLD	International Commission on Large Dams.
ILCRs	Increment Lifetime Cancer Risk.
IMDG	International Marine Dangerous Goods (Code)
IPEP	Institute of Professional Environmental Practice
IR	Daily intake rate of air (m <sup>3</sup> /day), soil (mg/day) or water (litres/day)
IR <sub>i</sub>	Consumption rate of medium i (kg/day or litre/day)
IRIS	USEPA Integrated Risk Information System.
IRS	Intact Rock Strength
ISO	International Organization for Standardization
ITER	International Toxicity Estimates of Risk
JICA	Japan International Cooperation Agency
LDPE	Low Density Polyethylene
LOAEL	Lowest-Observed-Adverse-Effect Limit
MAC	Maximum Allowable Concentrations
mamsl	metres above mean sea level
MEL	Mining Environmental Liability
MET	Ministry of Environment and Tourism
MIDS	Mine Inventory Data Sheet
MME	Ministry of Mines and Energy
MRLGH	Ministry of Regional and Local Government and Housing
NOAEL	No-observed-adverse-effect-level
NRC	National Research Council (USA)
OEHHA	(California) Office of Environmental Health Hazard Assessment
P	Size of the exposed population (number)
P <sub>i</sub>	Proportion of the i <sup>th</sup> food type in the diet
PCB	Polychlorinated biphenyl
Pf	Probability of Failure

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PI	Probability Index
PLPS	Leaching test by synthetic precipitation
PMF	Probable Maximum Flood
Q*	Cancer slope factor (mg/kg-day) <sup>-1</sup>
QA/QC	Quality Assurance / Quality Control
QEP	Qualified Environmental Professional
RABM	Risk Assessment Base Map
RARF	Risk Assessment Record Form
RBC	Risk Based Concentration
RfD	Reference Dose. Measured in mg/kg-day
RME	Reasonable Maximum Exposure
RR	Risk Ratio
SA	Total skin surface area (cm <sup>2</sup> )
SANS	South African National Standards
SD/AMS	Shut Down / Abandoned Mine Site
SHS	Safety Hazard Scenario
SPT	Standard Penetration Test
SRA	Simplified Risk Assessment
SSTL	Site-specific target level
SWCC	Soil Water Characteristic Curve
TDI	Tolerable Daily Intake (has same meaning as RfD)
TSF	Tailings Storage Facility
UCLM	Upper Confidence Limit of the Mean
UNEP	United Nations Environment Programme
URF	Unit Risk Factor
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator System
UV	Ultra Violet
WHO	World Health Organization