

INVENTORY OF MERCURY RELEASES IN SOUTH AFRICA

PREPARED FOR THE



environmental affairs

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by

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Greening the environment through consultancy

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ABBREVIATIONS

AMAP:	The Arctic Monitoring and Assessment Programme;
EU:	European Union;
FAO:	Food and Agriculture Organization;
FGD:	Flue gas desulfurization; process of/equipment for primarily minimizing emissions of sulphur from combustion flue gases;
GEF:	Global Environment Facility;
Hg:	Mercury;
Hg⁰:	Elemental mercury;
Hg²⁺:	Divalent mercury - the dominating mercury form in organic and inorganic mercury compounds. In the atmosphere, mercury species with divalent mercury are more easily washed out of the air with precipitation and deposited than elemental mercury;
Hg_p:	Particulate mercury - mercury bound in, or adsorbed on, particulate material. In the atmosphere, particulate mercury is deposited much faster than elemental mercury;
IARC:	International Agency for Research on Cancer;
ILO:	International Labor Organization;
IPCS:	International Programme on Chemical Safety;

Kg:	kilogram;
l or L :	litre;
LC₅₀:	Lethal concentration, 50%; concentration of toxic substance in a medium (for example water) at which 50% of the individuals in the toxicity test sample die; a unit used to describe the level of toxicity of a substance to a specific species, for example fish;
LD₅₀:	Lethal dose, 50%; dose (intake) of a toxic substance at which 50% of the individuals in the toxicity test sample die; a unit used to describe the level of toxicity of a substance to a specific species, for example in laboratory tests on mice, birds or other animals;
Life-time:	In atmospheric physio-chemistry: Time during which the first order processes (or totality of the first order processes) of scavenging results in mercury species mass reduction in e times in a geophysical reservoir; for a reservoir with homogeneous mercury species distribution the life-time is equal to the ratio of the mass contained in the reservoir to scavenging rate. Since the mass of mercury in the reservoir left to be reacted or removed decreases over time, the amount reacted or removed per unit of time decreases in a natural logarithmic fashion. For example, a lifetime of mercury of one year, does not mean that it would all be gone in one year if emissions were zero. It means that the rate of removal at the start of the time period in terms of mass per unit time would remove it all in one year, but since the rate of removal decreases as the mass of mercury left decreased, the amount of mercury left after one year would be $(1/e)$ times the initial mass, where "e" is 2.71828183 defined to 8 decimals. In descriptions of life-cycles of products: The time span from when the product is put into use (usually time of purchase) until it is no longer used or discarded;
Load	The intensity of input of pollutants to a given ecosystem from the environment; atmospheric load - the intensity of input from the atmosphere;
LOEL:	Lowest observed effect level (also called LOAEL – lowest observed adverse effect level); for toxic or other effects imposed on organisms or experienced by humans;
LRTAP Convention:	Convention on Long-Range Transboundary Air Pollution;
M:	meter;
MethylHg or MeHg:	methylmercury;
metric ton:	1000 kg;
mg:	Milligram (10^{-3} gram);
MSC-E:	Meteorological Synthesizing Centre – East (associated with the

	LRTAP Convention);
MSW:	Municipal solid waste;
MW:	Megawatt;
MWC:	Municipal waste combustor;
MWh:	Megawatt-hour;
Natural emission:	Mercury input to the atmosphere, which is not connected with current or previous human activity;
NEMA:	National Electrical Manufacturers Association (in the USA)
Ng:	Nanogram (10^{-9} gram);
NGO:	Non-governmental organization;
NRC:	National Research Council of the United States of America;
OECD:	Organization for Economic Cooperation and Development;
Pg:	Picogram (10^{-12} gram);
PM:	Particulate matter
POPs:	Persistent Organic Pollutants;
Ppb:	Parts per billion;
Ppm:	parts per million;
PS:	Particle scrubber; equipment designed to reduce emissions of particles from combustion flue gases
Re-emission:	Secondary input of mercury to the atmosphere from geochemical reservoirs (soil, sea water, fresh water bodies) where mercury has been accumulating as a result of previous and current human activity;
RfD:	Reference dose; term used in evaluation of risk of toxic effects various chemicals (such as methylmercury) on humans; the RfD is defined by US EPA as an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.
SCR:	Selective catalytic reduction; equipment designed to reduce emissions of certain pollutants from combustion flue gases;
SDA:	Spray dryer adsorber system; equipment designed to reduce emissions of certain pollutants from combustion flue gases;
Slag:	Waste material produced when coal is dug from the earth, or a substance produced by mixing chemicals with metal that has been heated until it is liquid in order to remove unwanted substances from it.
SNCR:	Selective non-catalytic reduction; equipment designed to reduce emissions of certain pollutants from combustion flue gases;

TLV:	Threshold limit value;
TWA:	Time weighted average;
UN:	United Nations;
UNCED:	United Nations Conference on Environment and Development;
UNEP:	United Nations Environment Programme;
US EPA:	Environmental Protection Agency of the United States of America;
USA:	United States of America;
Wet deposition -	Flux of substance from the atmosphere onto the underlying surface with atmospheric precipitation;
WHO	World Health Organization;

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