

1. IDENTIFICATION

Product Name	Sulphuric acid (15-51%)
Other Names	Battery fluid, acid; SULPHURIC ACID with not more than 51% acid; Sulphuric acid, 50%
Uses	Industrial use.
Chemical Family	No Data Available
Chemical Formula	H ₂ SO ₄
Chemical Name	Sulphuric acid, aqueous solution
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) Schedule 6

Globally Harmonised System

Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Hazard Categories	Corrosive to Metals - Category 1 Skin Corrosion/Irritation - Category 1A



SAFETY DATA SHEET SULPHURIC ACID (15-51%) REVISION 4, DATE 30 APR 2024

Serious Eye Damage/Irritation - Category 1

Specific Target Organ Toxicity (Single Exposure) - Category 3

Pictograms



Signal Word

Danger

Hazard Statements

H290

May be corrosive to metals.

H314

Causes severe skin burns and eye damage.

H335

May cause respiratory irritation.

Precautionary Statements

Prevention

P260

Do not breathe mist/vapour/spray.

P271

Use only outdoors or in a well-ventilated area.

P280

Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator.

Response

P303 + P361 + P353

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

P310

Immediately call a POISON CENTER or doctor.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P390

Absorb spillage to prevent material-damage.

P301 + P330 + P331

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P363

Wash contaminated clothing before reuse.

P304 + P340

IF INHALED: Remove victim to fresh air and keep comfortable for breathing.

Storage

P403 + P233

Store in a well-ventilated place. Keep container tightly closed.

P406

Store in corrosive resistant container with a resistant inner liner.

P405

Store locked up.

Disposal

P501

Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification

Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification

Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients



Chemical Entity	Formula	CAS Number	Proportion
Sulphuric acid	H2SO4	7664-93-9	>=15 - <=51 %
Water	H2O	7732-18-5	Balance %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then drink plenty of water. Do NOT induce vomiting. For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. Never give anything by mouth to an unconscious person.
Eye	IF IN EYES: Do not rub affected area! Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue flushing until advised to stop by a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor, or for at least 15 minutes.
Skin	IF ON SKIN (or hair): Remove and isolate contaminated clothing and shoes. Immediately flush skin and hair with running water for at least 15 minutes. Immediately call a Poison Centre or doctor/physician for advice. Wash contaminated clothing and shoes before reuse. *For minor skin contact, avoid spreading material on unaffected skin.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a Poison Centre or doctor/physician for advice. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult.
Advice to Doctor	Treat symptomatically. Keep victim calm and warm. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. *Most important symptoms and effects, both acute and delayed: Causes severe skin burns and eye damage. May cause respiratory irritation. Inhaled corrosive substances can lead to a toxic oedema of the lungs.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	Move containers from fire area if you can do it without risk. Cool containers with water spray until well after fire is out. Dike fire-control water for later disposal; do not scatter the material. Do not get water inside containers. *Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire.
Flammability Conditions	Non-combustible; substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
Extinguishing Media	If material is involved in a fire, use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. Use water spray or fog; do not use straight streams. *Reaction with water or moist air may release toxic, corrosive or flammable gases. Reaction with water may generate much heat that will increase the concentration of fumes in the air.
Fire and Explosion Hazard	Risk of violent reaction or explosion! Vapours may accumulate in confined areas. Substance may react with water, releasing corrosive and/or toxic gases and runoff. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated or if contaminated with water.
Hazardous Products of Combustion	Fire will produce irritating, corrosive and/or toxic gases, including Sulphur oxides.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may be corrosive and/or toxic and cause pollution. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing - It may provide little or no thermal protection. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.



Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	2R

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Do not breathe mist/vapours and prevent contact with eyes, skin and clothing.
Clean Up Procedures	Cover with DRY earth, DRY sand or other non-combustible material. Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal (see SECTION 13). *DO NOT GET WATER INSIDE CONTAINERS.
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. *A vapour-suppressing foam may be used to reduce vapours. Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
Decontamination	Use neutralizing agents, e.g. Sodium carbonate, sodium bicarbonate, sodium hydroxide. After cleaning, flush away traces with water.
Environmental Precautionary Measures	Prevent entry into drains and waterways. Local authorities should be advised if significant spillages cannot be contained.
Evacuation Criteria	Spill or leak area should be isolated immediately. Evacuate personnel to safe areas. Keep unauthorised personnel away. Keep upwind and to higher ground.
Personal Precautionary Measures	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation - Use only outdoors or in a well-ventilated place. Handle in accordance with good industrial hygiene and safety practice. Do not breathe mist/vapours and prevent contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator (see SECTION 8). CORROSIVE TO METALS: Absorb spillage to prevent material damage (see SECTION 6). Keep away from heat and sources of ignition - No smoking. *When diluting, always add the product to water. Never add water to the product.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed - Check regularly for leaks. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep only in the original, properly labelled containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Sulphuric acid (CAS No. 7664-93-9): - Safe Work Australia Exposure Standard: TWA = 1 mg/m ³ ; STEL = 3 mg/m ³ - New Zealand Workplace Exposure Standard [Adopted 2018]: TWA = 0.1 mg/m ³ ; Known or presumed human carcinogen (carcinogen category 1). - NIOSH REL/OSHA PEL: TWA = 1 mg/m ³ - Immediately dangerous to life or health (IDLH) concentration: 15 mg/m ³
Exposure Limits	No Data Available



Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	<ul style="list-style-type: none"> - Respiratory protection: Wear respiratory protection in case of inadequate ventilation or if an inhalation risk exists. Recommended: Full facepiece particulate respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Tight sealed safety goggles. If splashes are likely to occur, Face protection shield. - Hand protection: Wear protective gloves. Recommended: Elbow-length, impervious gloves, e.g. Vinyl gloves (excellent protection); Neoprene or Nitrile rubber gloves (good protection). - Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Acid-resistant protective clothing. Long sleeved clothing; Chemical resistant apron, Overalls; Rubber boots. The type of protective equipment must be selected according to the concentration and amount of the hazardous substance(s) at the specific workplace.
Special Hazards Precautions	The International Agency for Research on Cancer (IARC) have concluded that occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to humans, causing cancer of the larynx and to a lesser extent, the lung. Exposure to any mist or aerosol during the use of this product should be avoided and exposure should not exceed the exposure standard.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Take off immediately all contaminated clothing. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Odourless
Colour	Colourless to brown
pH	<1
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	127 °C
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Miscible with water
Specific Gravity	1.25 - 1.40
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available



Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	Strongly hygroscopic.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	Reacts exothermically with water which may cause violent spattering. Reaction with water may generate much heat that will increase the concentration of fumes in the air.
Properties That May Initiate or Contribute to Fire Intensity	Non-combustible; substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
Reactions That Release Gases or Vapours	Fire will produce irritating, corrosive and/or toxic gases, including Sulphur oxides. Reaction with water or moist air may release toxic, corrosive or flammable gases.
Release of Invisible Flammable Vapours and Gases	Contact with metals may evolve flammable hydrogen gas.

10. STABILITY AND REACTIVITY

General Information	Corrosive to most metals. Reacts exothermically with water.
Chemical Stability	Stable under normal conditions.
Conditions to Avoid	To avoid thermal decomposition, do not overheat. Avoid contact with water/moisture.
Materials to Avoid	Incompatible/reactive with water, oxidising agents, alkalis, most metals, organic chemicals.
Hazardous Decomposition Products	Fire will produce irritating, corrosive and/or toxic gases, including Sulphur oxides. Reaction with water or moist air may release toxic, corrosive or flammable gases. Contact with metals may evolve flammable hydrogen gas.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	<p>Information on toxicological effects:</p> <ul style="list-style-type: none"> - Acute toxicity: Not classified. The effects of sulfuric acid following inhalation are entirely due to local irritation of the respiratory tract, thus classification for acute inhalational toxicity is not recommended despite low median lethal concentrations (LC50s). There is no evidence for the systemic toxicity of sulfuric acid in any study as effects are limited to the site of contact. The main macroscopic and/or microscopic alterations observed in the respiratory tract after acute exposure to sulfuric acid aerosol are haemorrhage, oedema, atelectasis (partial collapse or incomplete inflation of the lung) and thickening of the alveolar wall in the lung of guinea pigs, haemorrhage and oedema of the lungs and/or ulceration of the turbinate, trachea and larynx in rats and mice. These lesions are related to the corrosive/irritant effect of sulfuric acid. - Skin corrosion/irritation: Causes severe skin burns and eye damage. - Serious eye damage/irritation: Causes serious eye damage. - Respiratory/skin sensitisation: Not classified. - Germ cell mutagenicity: Not classified. - Carcinogenicity: Not classified. Strong-inorganic-acid mists containing sulfuric acid (CAS No. 7664-93-9): IARC Group 1 "Carcinogenic to humans". - Reproductive toxicity: Not classified. - STOT (single exposure): May cause respiratory irritation. - STOT (repeated exposure): Not classified. - Aspiration toxicity: Not classified. <p>Information on likely routes of exposure:</p>
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- Ingestion: Corrosive! Causes severe burns.
- Eye contact: Causes serious eye damage.
- Skin contact: Causes severe skin burns.
- Inhalation: May cause respiratory irritation. Inhaled corrosive substances can lead to a toxic oedema of the lungs.
Chronic effects: Repeated overexposure may lead to chronic conjunctivitis, lung damage and dental erosion. The International Agency for Research on Cancer (IARC) have concluded that occupational exposure to strong inorganic acid mists containing sulfuric acid is carcinogenic to humans, causing cancer of the larynx and to a lesser extent, the lung. No direct link has been established with sulfuric acid, itself, and cancer in humans. Exposure to any mist or aerosol during the use of this product should be avoided and exposure should not exceed the exposure standard.

Acute

Ingestion	Acute toxicity (Oral): COMPONENT: Sulfuric acid (CAS No. 7664-93-9): - LD50, Rats: 2,140 mg/kg bw. [NICNAS].
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	No information available.
Persistence/Degradability	No information available.
Mobility	No information available.
Environmental Fate	High concentration in receiving water will injure aquatic life by pH effect. Keep out of waterways.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. Container remains hazardous when empty. Continue to observe all precautions.

14. TRANSPORT INFORMATION**Land Transport (Australia)**

ADG Code

Proper Shipping Name	SULPHURIC ACID with not more than 51% acid
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	2796
Hazchem	2R
Pack Group	II
Special Provision	No Data Available



Sea Transport

IMDG Code

Proper Shipping Name	SULPHURIC ACID with not more than 51% acid
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	2796
Hazchem	2R
Pack Group	II
Special Provision	No Data Available
EMS	F-A, S-B
Marine Pollutant	No

Air Transport

IATA DGR

Proper Shipping Name	SULPHURIC ACID with not more than 51% acid
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	2796
Hazchem	2R
Pack Group	II
Special Provision	No Data Available

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	SULFURIC ACID
Poisons Schedule (Aust)	Schedule 6

National/Regional Inventories

Australia (AIC)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	Listed
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Listed



SAFETY DATA SHEET SULPHURIC ACID (15-51%) REVISION 4, DATE 30 APR 2024

Korea (KECI)	Listed
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Listed
USA (TSCA)	Listed

Additional Information ABBREVIATIONS: SAR = supplied-air respirator SCBA = self-contained breathing apparatus IDLH = Immediately Dangerous to Life or Health.

16. OTHER INFORMATION

Related Product Codes SULACC1200, SULACC1300, SULACC2000, SULACC2001, SULACC2100, SULACC3500, SULACC5400, SULACD1400, SULACD1500, SULACD1501, SULACD1502, SULACD2600, SULACD2700, SULACD5400, SULACD5401, SULACD5402, SULACI1007, SULACI1200, SULACI1201, SULACI1400, SULACI1401, SULACI1500, SULACI1501, SULACI1550, SULACI1781, SULACI1804, SULACI1805, SULACI1806, SULACI1807, SULACI1808, SULACI1809, SULACI1810, SULACI1811, SULACI1812, SULACI1813, SULACI1814, SULACI1815, SULACI1816, SULACI1817, SULACI1818, SULACI1822, SULACI1823, SULACI1824, SULACI1848, SULACI1849, SULACI1850, SULACI1851, SULACI1857, SULACI1873, SULACI1874, SULACI1875, SULACI1876, SULACI1877, SULACI1878, SULACI1879, SULACI1880, SULACI1881, SULACI1882, SULACI1883, SULACI1884, SULACI1885, SULACI1886, SULACI1887, SULACI1888, SULACI1889, SULACI1892, SULACI1893, SULACI1894, SULACI1895, SULACI1901, SULACI1902, SULACI1903, SULACI1904, SULACI1906, SULACI1907, SULACI1908, SULACI1909, SULACI1910, SULACI1911, SULACI1912, SULACI1913, SULACI1914, SULACI1915, SULACI1916, SULACI1922, SULACI1923, SULACI1930, SULACI1939, SULACI1940, SULACI1941, SULACI1943, SULACI1964, SULACI1965, SULACI1966, SULACI1967, SULACI1968, SULACI1969, SULACI1970, SULACI1971, SULACI1979, SULACI1980, SULACI1983, SULACI1984, SULACI1991, SULACI1992, SULACI1996, SULACI1998, SULACI1999, SULACI2004, SULACI2005, SULACI2006, SULACI2008, SULACI2014, SULACI2017, SULACI2018, SULACI2024, SULACI2025, SULACI2026, SULACI2035, SULACI2036, SULACI2046, SULACI2047, SULACI2054, SULACI2060, SULACI2061, SULACI2062, SULACI2064, SULACI2066, SULACI2081, SULACI2251, SULACI2700, SULACI2800, SULACI2851, SULACI3500, SULACI3501, SULACI3502, SULACI3503, SULACI3601, SULACI3602, SULACI3608, SULACI3610, SULACI4100, SULACI5000, SULACI5100, SULACI7500, SULACI7510, SULACI7520, SULACI8200

Revision 4

Revision Date 30 Apr 2024

Key/Legend < Less Than
 > Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO₂ Carbon Dioxide
COD Chemical Oxygen Demand
deg C (°C) Degrees Celcius
EPA (New Zealand) Environmental Protection Authority of New Zealand
deg F (°F) Degrees Farenheit
g Grams
g/cm³ Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury



inH₂O Inch of Water

K Kelvin

kg Kilogram

kg/m³ Kilograms per Cubic Metre

lb Pound

LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

ltr or **L** Litre

m³ Cubic Metre

mbar Millibar

mg Milligram

mg/24H Milligrams per 24 Hours

mg/kg Milligrams per Kilogram

mg/m³ Milligrams per Cubic Metre

Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.

mm Millimetre

mmH₂O Millimetres of Water

mPa.s Millipascals per Second

N/A Not Applicable

NIOSH National Institute for Occupational Safety and Health

NOHSC National Occupational Health and Safety Commission

OECD Organisation for Economic Co-operation and Development

Oz Ounce

PEL Permissible Exposure Limit

Pa Pascal

ppb Parts per Billion

ppm Parts per Million

ppm/2h Parts per Million per 2 Hours

ppm/6h Parts per Million per 6 Hours

psi Pounds per Square Inch

R Rankine

RCP Reciprocal Calculation Procedure

STEL Short Term Exposure Limit

TLV Threshold Limit Value

tne Tonne

TWA Time Weighted Average

ug/24H Micrograms per 24 Hours

UN United Nations

wt Weight

