

Solve 7G

Safety Data Sheet

Date Issued: 05/08/2015

Date Revised: 05/08/2015

I. PRODUCT IDENTIFICATION

Product Name: **Solve 7G**

Company: **WaterSolve LLC, 5031 68TH Street, Caledonia, Michigan 49316 USA**

For product information call 616 575-8693 or visit www.gowatersolve.com

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident

Call CHEMTREC Day or Night

Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

Intended Use of the Product

Use of substance/mixture: Municipal and industrial water and wastewater treatment for the removal of turbidity, color, suspended solids and phosphorus. Sludge compaction and volume reduction. Oily wastewater clarification and dissolved air flotation. Emulsion breaking.

II. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Classification (GHS-US)

Met. Corr. 1 H290

Acute Tox. 4 (Oral) H302

Skin Corr. 1A H314

Eye dam. 1 H318

Full text of H-phrases: see Section 16

GHS-Labeling



GH507

GH505

Hazard pictograms: **Signal word:**

Hazard statements: H290

H302

H 314

H318

Precautionary statements:

Prevention: P234

P260

P264

P270

P280

P301+P312

P301+P330+P331

P303+P361+P353

DANGER

May be corrosive to metals.

Harmful if swallowed

Causes severe skin burns and eye damage.

Causes serious eye damage.

Keep only in original container.

Do not breathe spray, mist, vapors.

Wash face, hands and any exposed skin thoroughly after handlings.

Do not eat, drink or smoke when using this product.

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

IF SWALLOWED: Call a POISON CENTER, or doctor if you feel unwell.

IF SWALLOWED: rinse mouth. DO NOT induce vomiting.

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

	P304+P340	IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.
Response:	P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P310	Immediately call a POISON CENTER or doctor/physician.
	P321	Specific treatment (see Section 4).
	P330	Rinse mouth.
	P363	Wash contaminated clothing before reuse.
	P390	Absorb spillage to prevent material damage.
	P405	Store locked up.
	P406	Store in corrosive resistant container with a resistant inner liner.
	P501	Dispose of contents/container according to local, regional, national, territorial, provincial, and international regulations.

Other hazards Not contributing to the classification:

May be corrosive to respiratory tract. May produce explosive hydrogen gas on contact with incompatibilities or upon thermal decomposition.

Unknown Acute Toxicity (GHS-US) Not available.

III. COMPOSITION/INFORMATION ON INGREDIENTS

Name	Product identifier	% (w/w)	Classification (GHS-US)
Water	CAS No 7732-18-5	30-60	Not classified
Sulfuric acid, iron (3+) salt (3:2) *	CAS No 10028-22-5	40-70	H290 Met. Corr. 1 H302 Acute Tox. 4 (Oral) H315 Skin Irrit. 2 H318 eye Dam. 1
Sulfuric acid **	CAS No 7664-93-9	<0.1 0.1-1 1 – 5	H314 Skin Corr. 1A H318 Eye Dam. 1 H350 Carc. 1A H402 Aquatic Acute 3

Full text of H-phrases: See Section 16

The specific chemical identity and/or exact percentage of composition has been withheld as a trade secret within the meaning of the OSHA Hazard Communication Standard (29 CFR 1910.1200). More than one the ranges of concentration prescribed by Controlled Products Regulations has been used where necessary, due to varying composition.

*As $\text{Fe}_2(\text{SO}_4)_3 \cdot 9\text{H}_2\text{O}$ (Dry Ferric Sulfate)

** Strong inorganic acid aerosols/mists containing this substance are carcinogenic to humans.

However, under conditions of normal use this is not a potential route of exposure, and does not warrant a carcinogenicity classification for the mixture.

IV. FIRST AID MEASURES

Description of first aid measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible). If exposed or concerned: Seek medical advice/attention.

Eye Contact: Important! Rinse immediately with plenty of water, for a prolonged period while holding the eyelids wide open, also under the eyelids Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 60 minutes. Immediately call a POISON CENTER or doctor/physician.

Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 60 minutes. Seek medical attention. Remove all contaminated clothing and shoes. Immediately call a POISON CENTER or doctor/physician. Wash clothing before reuse.

Inhalation: Remove to fresh air and keep at rest and in a position comfortable for breathing. Using proper respiratory protection, immediately move the exposed person to fresh air. Call a POISON CENTER or doctor/physician.

Ingestion: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

Most important symptoms and effects, both acute and delayed.

General: Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

Inhalation: May cause irritation to the respiratory tract.

Skin contact: Causes severe skin burns. Redness. Pain. Serious skin burns. Blisters

Eye contact: Causes serious eye damage.

Ingestion: Ingestion is likely to be harmful or have adverse effects. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. Swallowing a small quantity of this material will result in serious health hazard.

Chronic Symptoms: None expected under normal use.

Indication of Any immediate medical attention and special treatment needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

V. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing media appropriate to surrounding fire and environment.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire or burning liquid.

Special hazards arising from the substance or mixture

Fire Hazard: Not flammable.

Explosion Hazard: Product is not explosive, but may release flammable/ explosive hydrogen gas on contact with some metals.

Reactivity: Reacts with strong oxidants causing fire and explosion hazard. May react violently with alkalis.

Advice for Firefighters

Precautionary Measures for fire-fighters: Exercise caution when fighting any chemical fire. Under fire conditions, hazardous fumes will be present.

Firefighting instructions: Keep upwind. Use water spray or fog for cooling exposed containers. Do not allow run-off from firefighting to enter drains or water sources. Do not breathe fumes from fires or vapors from decomposition.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Firefighters must use full bunker gear including NIOSH/MSHA approved positive pressure, self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Notify appropriate authorities if liquid enter sewers or waterways.

Hazardous Combustion products: None known.

Other information: May produce explosive hydrogen gas on contact with incompatibilities or upon thermal decomposition.

Reference to Other Sections

Refer to Section 9 for flammability properties.

VI. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

General measures: Avoid all unnecessary exposure with eyes, on skin, or on clothing. Do not breathe vapor, mist or spray.

For non emergency personnel:

Protective equipment: Use appropriate personal protection equipment (PPE).

Emergency procedures: Evacuate unnecessary personnel. Keep upwind.

For Emergency Personnel

Protective equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Evacuate unnecessary personnel. Stop leak if safe to do so. Ventilate area. Eliminate ignition sources.

Environmental Precautions:

Prevent entry to sewers and public waters.

Methods and materials for containment and cleaning up:

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for clean up: Clear up spills immediately and dispose of waste safely. Cautiously neutralize spilled liquid. Absorb and/or contain spill with inert material, then place in suitable container. If spilled directly onto the ground, remove sufficient soil to ensure material is fully recovered. Contact competent authorities after a spill. Practice good housekeeping – spillage can be slippery on smooth surface either wet or dry. Ventilate area.

Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection. Concerning disposal after cleaning, see item 13.

VII. HANDLING AND STORAGE

Precautions for Safe Handling

Hygiene measures: Handle in accordance with good industrial hygiene and safety procedures. Always wash your hands and other exposed areas with mild soap and water immediately after handling this product, and once again before leaving the workplace. Wash contaminated clothing before reuse. Do not eat, drink or smoke in areas where product is used.

Conditions for safe storage including any incompatibilities

Technical measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. May be corrosive to some metals. Store in original container or corrosive resistant and /or lined container. Storage areas should be periodically checked for corrosion and integrity. Store locked up.

Incompatible materials: Strong bases, strong oxidizers, strong acids, metals. Alkalis.

Specific end use: Municipal and industrial water and wastewater treatment for the removal of turbidity, color, suspended solids and phosphorus. Sludge compaction and volume reduction. Oily wastewater clarification and dissolved air flotation. Emulsion breaking.

VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Sulfuric acid (7664-93-9)		
Mexico	OEL TWA (mg/m ³)	1 mg/m ³
USA ACGIH	ACGIH TWA (mg/m ³)	0.2 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	1 mg/m ³
USA NIOSH	NIOSH REL (TWA) (mg/m ³)	1 mg/m ³
USE IDLH	US IDLH (mg/m ³)	15 mg/m ³
Alberta	OEL STEL (mg/m ³)	3 mg/m ³
Alberta	OEL TWA (mg/m ³)	1 mg/m ³
British Columbia	OEL TWA (mg/m ³)	0.2 mg/m ³ (Thoracic, contained in strong inorganic acid mists)
Manitoba	OEL TWA (mg/m ³)	0.2 mg/m ³
New Brunswick	OEL STEL (mg/m ³)	3 mg/m ³
New Brunswick	OEL TWA (mg/m ³)	1 mg/m ³
Newfoundland & Labrador	OEL TWA (mg/m ³)	0.2 mg/m ³

Nova Scotia	OEL TWA (mg/m ³)	0.2 mg/m ³
Nunavut	OEL STEL (mg/m ³)	3 mg/m ³
Nunavut	OEL TWA (mg/m ³)	1 mg/m ³
Northwest Territories	OEL STEL (mg/m ³)	3 mg/m ³
Northwest Territories	OEL TWA (mg/m ³)	1 mg/m ³
Ontario	OEL TWA (mg/m ³)	0.2 mg/m ³
Prince Edward Island	OEL TWA (mg/m ³)	0.2 mg/m ³
Quebec	VECD (mg/m ³)	3 mg/m ³
Quebec	VEMP (mg/m ³)	1 mg/m ³
Saskatchewan	OEL STEL (mg/m ³)	0.6 mg/m ³
Saskatchewan	OEL TWA (mg/m ³)	0.2 mg/m ³
Yukon	OEL STEL (mg/m ³)	1 mg/m ³
Yukon	OEL TWA (mg/m ³)	1 mg/m ³

Exposure Controls

Appropriate engineering controls

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal protective equipment

Avoid all unnecessary exposure. Protective goggles/ face shield. Gloves, Protective clothing. If insufficient ventilation wear respiratory protections.

Materials for protective clothing: corrosion-proof, acid resistant clothing.

Respiratory protection: If exposure limits are exceeded or irritation is experienced, Use a NIOSH-approved respirator or self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

Hand protection: wear chemically resistant protective gloves.

Skin and body protection: Wear suitable protective clothing. Chemical resistant suit. Rubber apron, boots.

Eye protection: A full face shield is recommended. Chemical goggles.

Environmental Exposure Controls: Do not allow the product to be released into the environment.

Other information: When using, do not eat, drink or smoke.

IV. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state/color/ Odor:	Liquid, reddish brown
Odor:	Not available
pH:	< 1
Melting point/range:	Not applicable
Freezing point:	< -50°C (< -58 °F)
Initial Boiling Point/range:	Not available
Flash point:	Not applicable
Auto ignition temperature:	Not applicable
Decomposition temperature:	Not applicable
Flammability solid or gas:	Not applicable
Explosive properties	
Upper/lower explosion limit:	No applicable
Vapor pressure:	Not available
Relative vapor density at 20°C:	Not available
Specific gravity:	1.50-1.55
Solubility:	100%
Partition coefficient	Not available
(n-octanol/water):	
Viscosity:	Not available

Explosion data-Sensitivity
 To Mechanical impact: Not expected to present an explosion hazard due to mechanical impact
 Explosion data-Sensitivity
 To Static discharge: Not expected to present an explosion hazard due to static discharge

X. STABILITY AND REACTIVITY

Reactivity: Reacts with strong oxidants causing fire and explosion hazard. May react violently with alkalis.

Chemical stability: Stable under recommended normal conditions.

Possibility of hazardous reactions: Hazardous polymerization will not occur.

Conditions to avoid: Direct sunlight, extremely high or low temperatures, open flames, sources of ignition and incompatible materials.

Incompatible materials: Strong bases, strong oxidizers, metals, alkalis and strong acids.

Hazardous decomposition

products: Thermal decomposition generates: Corrosive vapors. Sulfur oxides.

XI. TOXICOLOGICAL INFORMATION

Information on toxicological effects-Product

Acute toxicity: Harmful if swallowed.

LD50 and LC50 Data

Ferric Sulfate 55%	
ATE US (oral)	500.00 mg/kg body weight

Skin corrosion/irritation: Causes severe skin burns and eye damage. pH: <1

Serious eye damage/eye irritation: Causes serious eye damage. pH <1

Respiratory or skin sensitization: Not classified.

Germ cell mutagenicity: Not classified.

Carcinogenicity: Not classified.

Teratogenicity: Not classified.

Specific Target organ toxicity (repeated exposure): Not classified.

Reproductive toxicity: Not classified.

Specific target organ toxicity (single exposure): Not classified.

Aspiration Hazard: Not classified.

Symptoms/injuries after inhalation: May be corrosive to respiratory tract.

Symptoms/injuries after skin contact: Causes severe skin burns. Redness. Pain. Serious skin burns. Blisters.

Symptoms/injuries after eye contact: Causes serious eye damage.

Symptoms/injuries after ingestion: Ingestion is likely to be harmful or have adverse effects. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. Swallowing a small quantity of this material will result in serious health hazard.

Chronic Symptoms: None expected under normal conditions of use.

Information of Toxicological effects-ingredient(s)

LD50 AND LC50 data:

Sulfuric acid, iron (3+) salt (3:2) (10028-22-5)

LD50 Oral Rat	500 mg/kg
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Sulfuric acid (7664-93-9)

LD50 Oral Rat	2140 mg/kg
LC50 Inhalation Rat (mg/l)	510 mg/m ³ (Exposure time: 2h)

Water (7732-18-5)

LD50 Oral rat	>90000mg/kg
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Sulfuric acid (7664-93-9)

IARC Group	1
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XI. ECOLOGICAL INFORMATION

Toxicity: Not classified

Sulfuric acid (7664-93-9)

LC50 Fish 1	500 mg/l (Exposure time 96h: Species Brachydanio rerio(static)
LC50 Fish 2	42mg/l (Exposure time 96h-Species: Gambusia affinis (static)

Persistence and degradability:

Ferric Sulfate 55%

Persistence and Degradability	Not established.
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Bioaccumulative potential

Ferric Sulfate 55%

Bioaccumulative Potential	Not established.
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Sulfuric acid (7664-93-9)

BCF Fish 1	(no bioaccumulation)
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Mobility in soil: Not available

Other adverse effects

Other information: Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Dispose of waste material in accordance with local, regional, state, international, provincial, territorial, and national regulations.

14. TRANSPORT INFORMATION

Land transport

USDOT

Proper Shipping Name: UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(CONTAINS FERRIC ACID, SULFURIC ACID)

Hazard Class: 8

Packing Group: II

UN/ID Number: UN3264

DOT-Labels: 8

ERG number: 154

Sea transport

IMDG:

Proper Shipping Name: UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(CONTAINS FERRIC ACID, SULFURIC ACID)

Hazard Class: 8

Packing Group: II

UN/ID Number: UN3264

IMDG-Labels: 8

EmS-No. (Fire): F-A

EmS-No. (Spillage): S-B

ERG number: 154

Air transport

IATA

Proper Shipping Name: UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(CONTAINS FERRIC ACID, SULFURIC ACID)

Hazard Class: 8
Packing Group: II
UN/ID Number: UN3264
ICAO-Labels: 8
EGR Codes (IATA): 8L

TDG

Proper Shipping Name: UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(CONTAINS FERRIC ACID, SULFURIC ACID)

Hazard Class: 8
Packing Group: II
UN/ID Number: UN3264
ICAO-Labels: 8

15. REGULATORY INFORMATION

US Federal Regulations

Ferric Sulfate 55%

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Sulfuric acid, iron (3+) salt (3:2) (10028-22-5)	
Listed on the United States TSCA (Toxic Substances Control Act Inventory)	
Sulfuric acid (7664-93-9)	
Listed on the United States TSCA (Toxic Substances Control Act Inventory)	
Listed on the United States SARA Section 302	
Listed on the United States SARA Section 313	
SARA Section 302 Threshold Planning Quantity (TPQ)	1000
SARA Section 313- Emission Reporting	1.0% (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)

Water (7732-18-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

US STATE REGULATIONS

Sulfuric acid (7664-93-9)

U.S.-California –Proposition 65-Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.
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Sulfuric acid, iron (3+) salt (3:2) (10028-22-5)

U.S.- Massachusetts-Right to Know List
U.S.- New Jersey-Right to Know Hazardous Substance List
U.S.- Pennsylvania-RTK (Right to Know List)-Environmental Hazard List
U.S.- Pennsylvania-RTK (Right to Know List)

Sulfuric acid (7664-93-9)

U.S.- Massachusetts-Right to Know List
U.S.- New Jersey-Right to Know Hazardous Substance List
U.S.- Pennsylvania-RTK (Right to Know List)-Environmental Hazard List
U.S.- Pennsylvania-RTK (Right to Know List)

Canadian Regulations**Ferric Sulfate 55%**

WHMIS Classification	Class E- Corrosive Material Class D Division 2 Subdivision A-Very toxic material causing other toxic effects Class D Division 2 Subdivision B-Toxic material causing other toxic effects
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**Sulfuric acid, iron (3+) salt (3:2) (10028-22-5)**

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification	Class E- Corrosive Material Class D Division 2 Subdivision A-Very toxic material causing other toxic effects Class D Division 2 Subdivision B-Toxic material causing other toxic effects
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Sulfuric acid (7664-93-9)

Listed on the Canadian DSL (Domestic Substances List)

Listed on the Canadian IDL (Ingredient Disclosure List)

IDL Concentration 1%

WHMIS Classification	Class E- Corrosive Material Class D Division 2 Subdivision A-Very toxic material causing other toxic effects
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This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

GHS Full Text Phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 3	Hazardous to the aquatic environment-Acute Hazard Category 3
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Met. Corr. 1	Corrosive to metals Category 1
Skin Corr. 1 A	Skin corrosion/irritation Category 1A
Skin Irrit. 2	Skin corrosion/irritation Category 2
H290	May be corrosive to metals Category 1
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H318	Causes serious eye damage
H402	Harmful to aquatic life

DATE ISSUED: 05/08/2015**DATE REVISED: 05/15/2015****Revision number: 0**

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

16. OTHER INFORMATION

	HEALTH	FLAMMABILITY	REACTIVITY
NFPA	3	0	0
HMIS	3	0	0

OTHER INFORMATION

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their

circumstances. This information is for the specific material described only and may not be valid if the material is used in combination with any other materials or in any process. The user is responsible to determine the completeness of the information and suitability for the user's own particular use. The knowledge and belief of the company, the information is accurate and reliable as of the date indicated but the company makes no express or implied warranty of merchantability for the material or the information. The company makes no express or implied warranty of fitness for a purpose for the material or for the information. Users of any chemical should educate themselves on all aspects of its use by independent investigation of current scientific and medical knowledge that the material can be used safely.

List of abbreviations and acronyms that could be, but not necessarily are, used in the safety data sheet:

ACGIH: American Conference of Industrial Hygienists
BEI: Biological Exposure Index
CAS: Chemical Abstracts Service (Division of the American Chemical Society)
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act
CMR: Carcinogenic, Mutagenic or Toxic for Reproduction
DOT: Department of Transportation
FG: Food grade
FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act
GHS: Globally Harmonized System of Classification and Labeling of Chemicals
H-statement: Hazard Statement
HMIRC: Hazardous Materials Information Review Commission
HMIS: Hazardous Materials Identification System
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI (ICAO): Technical Instructions by the "International Civil Aviation Organization"
IMDG: International Maritime Code for Dangerous Goods
ISO: International Organization for Standardization
logPow: octanol-water partition coefficient
LCxx: Lethal Concentration, for xx percent of test population
LDxx: Lethal Dose, for xx percent of test population
ICxx: Inhibitory Concentration for xx of a substance
ECxx: Effective Concentration of xx
N.O.S.: Not otherwise Specified
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety and Health
OECD: Organization for Economic Co-operation and Development
OEL: Occupational Exposure Limit
OSHA: Occupational Safety and Health Administration
P-Statement: Precautionary Statement
PBT: Persistent, Bioaccumulative and Toxic
PMRA: Health Canada Pest Management Regulatory Agency
PPE: Personal Protective Equipment
RTK: Right to Know
STEL: Short-term exposure limit
SDS Safety Data Sheet
STOT: Specific Target Organ Toxicity
TLV: Threshold Limit Value
TWA: Time-weighted average
VPVB: Very Persistent and Very Bioaccumulative
WEL: Workplace Exposure Level
WHMIS: Workplace Hazardous Materials Information System
(WAF): *water-accommodated fraction*