

Safety Data Sheet

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

Revision date: March 19, 2014

Supersedes: Not applicable

Version: 1

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE **COMPANY/UNDERTAKING**

Product identifier 1.1.

Product form

: Liquid mixture

Name

: Bakken Crude

Synonyms

: Crude Oil

Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/preparation

: Raw product used in petroleum hydrocarbon and petrochemical refining.

1.2.2. Uses advised against

None known.

Details of the supplier of the safety data sheet 1.3.

Musket Corporation 1111 Bagby St.

Houston, TX 77002

Tel: (713) 332-5726

Emergency telephone number

Emergency number

: CHEMTREC's 24-hr Number: 1-800-424-9300

USA shipments

CANUTEC's

24-hr Number: 1-613-996-6666

CAN shipments

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture

2.1.1. WHMIS Classification

B-2

Flammable liquid

D-1A

Material causing immediate and serious toxic effects (Very toxic)

D-2B

Material causing other toxic effects (Toxic)

2.1.2. Classification according to 2012 29 CFR § 1910.1200 [OSHA GHS]

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Flammable Liquids - Category 2

Aspiration Toxicity - Category 1

Germ Cell Mutagenicity - Category 1B

Carcinogenicity - Category 1B

Safety Data Sheet

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

Reproductive toxicity - Category 2 Eye Damage/Irritation - Category 2A Skin Corrosion/Irritation - Category 2

2.1.3. Adverse physicochemical, human health and environmental effects

May contain or release toxic hydrogen sulfide vapor, which may accumulate in confined spaces. Inhaled hydrogen sulfide may cause central nervous system depression resulting in headache, dizziness, nausea, unconsciousness, and death. Repeated exposure may cause skin dryness or cracking.

2.2. Label elements

2.2.1. Labeling according to WHMIS



2.2.2. Labelling according to 2012 29 CFR § 1910.1200 [OSHA GHS]

Hazard pictograms (OSHA)









Signal word (OSHA) Hazard statements (OSHA) : Danger

: Highly flammable liquid and vapor.

May be fatal if swallowed and enters airways.

Causes serious eve irritation.

Causes skin irritation.

Suspected of damaging fertility or the unborn child.

May cause genetic defects.

May cause cancer.

Precautionary statements (OSHA)

: Keep away from heat, sparks, open flames, hot surfaces - No smoking.

Keep container tightly closed.

Use only outdoors or in a well-ventilated area.

Ground container and receiving equipment and use non-sparking, explosion-

proof equipment and tools.

Take precautionary measures against static discharge.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood. Wear respiratory protection, protective gloves, protective clothing, eye

protection, and face protection.

Wash hands thoroughly after handling.

Take off contaminated clothing and wash it before reuse.

If exposed or concerned: Get medical attention.

Do not breathe vapors or mist.

If swallowed: Immediately call a poison center or doctor.

Do NOT induce vomiting.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

Immediately call a poison center or doctor.

If on skin (or hair): Take off immediately all contaminated clothing.

Rinse skin with water.

If in eyes: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

If irritation persists: Get medical attention.

In case of fire: Use dry chemical, carbon dioxide, foam, or water fog to extinguish.

Store in a cool, well-ventilated place.

Store locked up.

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

Other hazards 2.3.

Spills of this product present a serious slipping hazard.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable.

Mixtures 3.2.

Name	Product identifier (CASRN)	Concentration
Crude Oil ^a	8002-05-9	~100%
Benzene ^b	71-43-2	0.1-1.0%
Cyclohexane ^b	110-82-7	0.1-1.0%
Ethylbenzene ^b	100-41-4	0.1-1.0%
n-Hexane ^b	110-54-3	1.0-5.0%
Hydrogen sulfide ^b	7783-06-4	<0.0005% ^c
Toluene ^b	108-88-3	0.1-1.0%

^a Crude oil may contain variable levels of impurities, such as paraffinic and aromatic hydrocarbons and small amounts of nitrogen and sulfur compounds.

SECTION 4: FIRST AID MEASURES

Description of first aid measures

First-aid measures after inhalation

: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center or doctor. If breathing difficulties develop or if victim is not breathing, oxygen should be administered by qualified personnel. Get medical attention immediately.

First-aid measures after skin contact

: Remove contaminated clothing/shoes, wipe excess from skin. Wash contaminated area thoroughly with soap and water or waterless hand cleanser. Do not use gasoline or solvent (naphtha, kerosene, etc.) for washing this product from exposed skin areas. If irritation or redness develops and persists, get medical attention. Disregard contaminated leather goods.

First-aid measures after eye contact

: In case of contact with eyes, remove contact lenses if present and easy to do. Immediately hold eyelids apart and flush the affected eye(s) with clean water for at least 20 minutes. Get medical attention immediately.

These ingredients are impurities of a complex mixture.

^c Concentration is present in %v/v.

Safety Data Sheet

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

First-aid measures after ingestion

: Do NOT induce vomiting. Do not give anything by mouth. Wash out mouth with water. Get medical attention immediately. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation

: May contain or release toxic hydrogen sulfide vapor, which may accumulate in confined spaces. May cause irritations to the nose, throat, lungs, and respiratory tract. Inhaled hydrogen sulfide may cause central nervous system depression resulting in headache, dizziness, nausea, unconsciousness, and death.

Symptoms/injuries after skin contact

: May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly. Irritation from exposure may aggravate existing open wounds, skin disorders, and dermatitis (skin rash).

Symptoms/injuries after eye contact

: Contact with eyes may cause moderate to severe irritation. May cause eye tearing, redness, and discomfort.

Symptoms/injuries after ingestion

: May cause aspiration and result in chemical pneumonia, severe lung damage, respiratory failure, or even death. May cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically. If large quantities have been ingested or inhaled, contact poison treatment specialist immediately. For inhalation of hydrogen sulfide, consider oxygen therapy.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Unsuitable extinguishing media : Foam, water fog, dry chemical powder, carbon dioxide.

: Do not use water jet, as this could spread the fire; however, water may be used to cool fire-exposed containers.

5.2. Special hazards arising from the substance or mixture

Fire hazard

: Flash point and explosive limits are highly dependent on the crude oil source. Unless otherwise indicated, treat as a FLAMMABLE LIQUID (refer to Section 9 for flash point, flammable/explosive limits). The vapor is heavier than air and may travel long distances to an ignition source and flash back. Vapor can accumulate in low areas. Runoff to sewer may cause fire or explosion hazard.

Reactivity

: This material can be ignited by heat, sparks, flames, or other sources of ignition. If container is not properly cooled, it can rupture in the heat of a fire. When heated, hydrogen sulfide and toxic sulfur oxides may be given off. Refer to Section 10 for combustion products.

5.3. Advice for firefighters

Protective equipment for firefighters

: Wear full protective clothing and NIOSH/MSHA-approved pressure-demand self-contained breathing apparatus.

Safety Data Sheet

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate the area and eliminate all ignition sources. Stay upwind and away from spill/release. Avoid direct contact with material. Carefully contain and stop the source of the spill, if safe to do so. Wear appropriate personal protective equipment (Refer to Section 8).

6.1.2. For emergency responders

Protective equipment

: Wear appropriate personal protective equipment (Refer to Section 8).

Emergency procedures

: Inform relevant authorities in accordance with all applicable regulations. Response and clean-up crews must be properly trained and must utilize

appropriate personal protective equipment (Refer to Section 8).

6.2. Environmental precautions

Avoid entry of spilt material and runoff into sewer or drainage systems, unless system is designed and permitted to handle such material. Do not discharge solid water stream patterns into the liquid resulting in splashing.

6.3. Methods and material for containment and cleaning up

Containment

: Use foam on spills to minimize vapors. Protect bodies of water by diking,

absorbents, or absorbent boom, if possible.

Cleaning up

: Take up with sand or other inert and oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal.

6.4. Reference to other sections

Refer to Section 8 for personal protection equipment. Refer to Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Precautions for safe handling

: Avoid exposure – obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin and eyes or clothing. Avoid breathing vapors or mists. Wear appropriate personal protective equipment (Refer to Section 8). Handle as FLAMMABLE LIQUID. Keep container tightly closed. The vapor is heavier than air and may create an explosive mixture of vapor and air. Hydrogen sulfide may accumulate in enclosed spaces. Avoid confined spaces and areas with poor ventilation. Keep away from heat, sparks, and open flame. No smoking. Electrical equipment should be approved for classified area. Use non-sparking, explosion-proof equipment and tools. Take precautionary measures against static discharge. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Safety Data Sheet

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

Hygiene measures

: Handle in accordance with good industrial hygiene and safety practice. Workers should wash hands with soap and water before eating, drinking, smoking, or using toilet facilities. Promptly remove contaminated clothing and wash it before reuse. Keep contaminated clothing away from sources of ignition. Dispose of leather articles including shoes which cannot be decontaminated.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures:

: This material may contain or release dangerous levels of hydrogen sulfide. In a tank, barge, or other closed container, the vapor space above this material may accumulate hazardous concentrations of hydrogen sulfide. Check atmosphere for oxygen content, hydrogen sulfide and flammability prior to entry.

Storage condition(s)

: Keep in a cool, well-ventilated place. Keep container tightly closed. Store locked up. Keep containers closed and clearly labeled. Containers that have been opened must be resealed and kept upright to prevent leakage. Keep away from heat, sparks, and open flame. Keep away from food and drink. Store away from incompatible materials. Hydrogen sulfide can react with iron in crude oil storage tanks or handling equipment to form iron sulfide. Dry iron sulfide can burn on exposure to air (pyrophoric).

Incompatible materials

: Strong acids, strong oxidizing agents.

7.3. Specific end use(s)

Raw product used in petroleum hydrocarbon and petrochemical refining.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Name	Product identifier (CASRN)	Exposure Limits	
Crude Oil	8002-05-9	ACGIH: Not established NIOSH: 1800 mg/m³ (CEIL), 15 minutes; 350 mg/m³ (TWA) OSHA: Not established	
Benzene	71-43-2	ACGIH: 0.5 ppm (TWA); 2.5 ppm (STEL) NIOSH: 0.1 ppm (TWA); 1 ppm (STEL) OSHA: 10 ppm (TWA); 25 ppm (CEIL); 50 ppm (STEL), 10 minutes	
Cyclohexane	110-82-7 ACGIH: 100 ppm (TWA) NIOSH: 300 ppm (TWA) OSHA: 300 ppm (TWA); 1050 mg/m³ (TWA)		
Ethylbenzene	100-41-4	ACGIH: 20 ppm (TWA) NIOSH: 100 ppm, 435 mg/m³ (TWA); 125 ppm, 545 mg/m³ (ST) OSHA: 100 ppm, 435 mg/m³ (TWA)	
n-Hexane	110-54-3	ACGIH: 50 ppm (TWA) NIOSH: 50 ppm (TWA); 180 mg/m³ (TWA) OSHA: 500 ppm (TWA); 1800 mg/m³ (TWA)	

Safety Data Sheet

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

Name	Product identifier (CASRN)	Exposure Limits
Hydrogen sulfide	7783-06-4 ACGIH: 1 ppm (TWA); 5 ppm (STEL) NIOSH: 10 ppm (CEIL), 10 minutes OSHA: 20 ppm (CEIL); 50 ppm (STEL), 10 minutes	
Toluene	108-88-3	ACGIH: 20 ppm (TWA) NIOSH: 100 ppm, 375 mg/m³ (TWA); 150 ppm, 560 mg/m³ (ST) OSHA: 200 ppm (TWA); 300 ppm (CEIL), 500 ppm (10 minute maximum peak)

8.2. Exposure controls

Appropriate engineering controls

: Use adequate ventilation to keep vapor concentration of this product below occupational exposure and flammability limits, particularly in confined spaces.

Personal protective equipment

: Gloves, goggles, protective clothing, respirator

Hand protection

: Chemical resistant, impervious gloves.

Eye protection

: Safety glasses or goggles.

Skin and Body protection

: Chemical resistant clothing.

Respiratory protection

: A NIOSH certified air-purifying respiratory with an organic vapor cartridge may be used under conditions where hydrogen sulfide is not detected and airborne concentrations of hydrocarbons are expected to exceed exposure limits. Where there is potential for airborne exposure to hydrogen sulfide above exposure limits, a NIOSH approved, self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode should be used. If benzene concentrations equal or exceed applicable exposure limits, OSHA requirements for personal protective equipment, exposure monitoring and training may apply.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection

regulations.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state

: Liquid

Color

: Light to dark brown

Odor

: "Rotten egg" if hydrogen sulfide is present.

Odor threshold

: No information available

рΗ

: No information available

Melting point

: Pour Point of <-54°C (<-65.2°F)

Boiling point

: Initial Boiling Point of 33.7°C (92.66°F)

Flash point

: < 21°C (<69.8°F) (Closed cup)

. 1210 (100.01) (0103cd cup

Evaporation rate

: No information available

Flammability (solid, gas)

: No information available

Explosive limits

: No information available

Explosive illillis

: 15.2 psi at 37.8°C (100°F)

Vapor pressure

15.2 psi at 37.6 C (100 l

Relative vapor density at 20°C

: No information available

Relative density

: 0.8079 g/mL at 15.56°C (60°F)

Average API Gravity of 43.5 °API at 15.56°C (60°F)

Safety Data Sheet

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

Solubility : Insoluble in water

Log Pow: No information availableLog Kow: No information availableSelf ignition temperature: No information available

Decomposition temperature : No information available Viscosity, kinematic : 3.337 cSt at 15.56°C (60°F) Viscosity, dynamic : 2.696 kg/m*s at 15.56°C (60°F)

Explosive properties : No information available Oxidizing properties : No information available

9.2. Other information

Upper flammable Limit : Variable depending on crude sources ~15%

Lower Flammable Limit : Variable depending on crude sources ~0.5%

Sensitivity to mechanical impact : No information available

Sensitivity to static discharge : Bond and ground containers during product transfer to reduce the possibility

of static-initiated fire or explosion.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

This product is stable under the normal conditions of use.

10.2. Chemical stability

This product is stable under the normal conditions of use.

10.3. Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous polymerization is not known to occur.

10.4. Conditions to avoid

Avoid high temperatures and all sources of ignition. Prevent vapor accumulation.

10.5. Incompatible materials

Strong acids, strong bases, strong oxidizing agents, metals, metal oxides, interhalogens, metal salts.

10.6. Hazardous decomposition products

May generate carbon oxides, nitrogen oxides, sulfur oxides, sulfur compounds (H₂S), smoke and irritating vapors when heated to decomposition.

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

11.1.1. Product Data:

Routes of entry

: Oral, inhalation, skin and eye contact.

Acute toxicity

: No product data available.

11.1.2. Ingredient Data:

Name	Product identifier (CASRN)	Route & Species	Acute Toxicity Value (LD ₅₀ /LC ₅₀)
Crude Oil	8002-05-9	Oral, rat	>4,300 mg/kg
		Dermal, rabbit	>2,000 mg/kg
Benzene	71-43-2	Oral, rat	930 mg/kg
		Dermal, rabbit	>8,240 mg/kg
		Inhalation, rat (vapor)	13,700 ppm (4h)
Cyclohexane	110-82-7	Oral, rat	6,200 mg/kg
		Dermal, rabbit	>2,000 mg/kg
		Inhalation, rat	>9,500 ppm (4h)
Ethylbenzene	100-41-4	Oral, rat	3,500 mg/kg
		Dermal, rabbit	15,380 mg/kg
	,	Inhalation, rat	~4,000 ppm (4h)
n-Hexane	110-54-3	Oral, rat	15,820 mg/kg
		Dermal, rabbit	>3,295 mg/kg
	*	Inhalation, rat	38,500 ppm (4h)
Hydrogen sulfide	7783-06-4	Inhalation, rat (gas)	444 ppm (4h)
Toluene	108-88-3	Oral, rat	3,000 mg/kg
		Dermal, rabbit	12,125 mg/kg
		Inhalation, rat	7,585 ppm (4h)

Skin corrosion/irritation

: May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly. Irritation from exposure may aggravate existing open wounds, skin disorders, and dermatitis (skin rash).

Serious eye damage/irritation

: Contact with eyes may cause moderate to severe irritation. Exposed victims may experience eye tearing, redness, and discomfort.

Respiratory or skin sensitization

: Contact with this product is not expected to cause sensitization, based upon the available data and the known hazards of the components.

Mutagenicity

: Some crude oils and crude oil fractions have been positive in mutagenicity studies. This product may contain benzene as a part of complex mixture at ≥0.1% that has been shown to cause mutagenicity in laboratory tests.

Therefore, this product is considered to be mutagenic.

Safety Data Sheet according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

Carcinogenicity	9	Crude oil was assessed by IARC and results were inconclusive (Group 3: not classifiable as to its carcinogenicity to humans). Crude oil is not listed as a carcinogen by the NTP or OSHA. This product may contain benzene as a part of complex mixture at ≥0.1% that has been shown to cause carcinogenicity in laboratory tests. Therefore, this product is considered to be carcinogenic.
Reproductive toxicity	•	This product is known to contain n-hexane as a part of complex mixture at ≥0.1% that has been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is expected to be a reproductive toxin.
Teratogenicity/Embryotoxicity	•	Dermal exposure to crude oil during pregnancy resulted in limited evidence of developmental toxicity in laboratory animals. Decreased fetal weight and increased resorptions were noted at maternally toxic doses. No significant effects on pup growth or other developmental landmarks were observed. This product may contain toluene as a part of complex mixture at ≥0.1% that has been shown to cause teratogenicity in laboratory tests. Therefore, this product is considered to be teratogenic.
Specific target organ toxicity (single exposure)	:	At high concentrations (500-1,000 ppm), hydrogen sulfide acts as a systemic poison, causing unconsciousness and death. In lower concentrations (50-500 ppm), hydrogen sulfide acts as a respiratory irritant, and may cause fluid in the lungs or bronchial pneumonia.
Specific target organ toxicity (repeated exposure)	•	May cause skin irritation with prolonged or repeated contact. Chronic exposure to hydrogen sulfide of 50 ppm or greater may induce bronchitis and inflammation of the mucous membrane of the respiratory system. At 250 ppm, hydrogen sulfide may cause bronchial pneumonia and pulmonary edema.
Aspiration hazard	200	May cause aspiration and result in chemical pneumonia, severe lung damage, respiratory failure, or even death. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.
Potential adverse human health effects and symptoms	:	Victims of overexposure may experience4 irritation of the digestive track and respiratory tract, nausea, vomiting, diarrhea, headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue.
Toxicologically synergistic materials	•	None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Coating action of the oil can kill birds, plankton, algae and fish. Keep out of all bodies of water and sewage drainage systems.

12.2. Persistence and degradability

Most crude oils are not regarded as readily biodegradable; however, they will slowly biodegrade.

12.3. Bioaccumulative potential

Hydrocarbon components of crude oil have the potential to bioaccumulate.

12.4. Mobility in soil

No information available.

Safety Data Sheet

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

12.5. Other adverse effects

None anticipated.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste disposal recommendations

: Comply with relevant regulations with regards to disposal, recycling, treatment, transportation and storage of contents and containers.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number:

1267

14.2. UN proper shipping name

PETROLEUM CRUDE OIL

14.3. Transport hazard class(es)

Hazard Class 3

14.4. Packing group

Packing group I

14.5. Special precautions

No information available.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. National regulations

Canada

: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information

required by the Controlled Products Regulations.

US

: This product has been classified in accordance with the 2012 hazard criteria of the OSHA's HCS and the SDS contains all the information required by the

29 CFR § 1910.1200.

All compounds in this product are listed in the Canada Domestic Substances List (DSL) and the US Toxic Substances Control Act (TSCA) Chemical Substance Inventory (1985).

Safety Data Sheet

according to Hazardous Products Act and Controlled Products Regulations and 29 CFR § 1910.1200

SECTION 16: OTHER INFORMATION

Name and phone number of the group, department or party responsible for the preparation of the SDS

: Andy Lash, Compliance and Equipment Manager, Musket Corporation

Phone: (713) 332-4831

Sources of key data

: Report of Analysis

Abbreviations and acronyms

: ACGIH - American Conference of Governmental Industrial Hygienists

bw body weight CAN – Canada

CAS – Chemical Abstracts Service CFR – Code of Federal Regulations DSL – Domestic Substances List

EPA – Environmental Protection Agency GHS – Globally Harmonized System HCS – Hazard Communication Standard

IARC - International Agency for Research on Cancer

LC₅₀ – Acute lethal concentration causing 50% lethality in animals

LD₅₀ – Acute lethal dose causing 50% lethality in animals

MSDS - Material Safety Data Sheet

NIOSH - National Institute of Occupational Safety and Health

NTP - National Toxicology Program

OSHA - Occupational Safety and Health Administration

ppm - parts per million

RCRA - The Resource Conservation and Recovery Act

SCBA - Self Contained Breathing Apparatus

SDS - Safety Data Sheet

STEL - Short-Term Exposure Limit (generally 15 minutes)

TSCA – Toxic Substances Control Act TWA – Time-Weighted Average US(A)– United States (of America)

WHMIS - Workplace Hazardous Materials Information System

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