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29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

: Zerex™ ASIAN VEHICLE AFC RTU Trade name

Recommended use of the chemical and restrictions on use

Details of the supplier of the safety data **Emergency telephone number** sheet 1-800-ASHLAND (1-800-274-5263) Ashland

P.O. Box 2219 **Regulatory Information Number** Columbus, OH 43216 1-800-325-3751

United States of America

Product Information 614-790-3333

EHS Customer Requests@ashland.com

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Specific target organ systemic toxicity - repeated

exposure (Oral)

: Category 2 (Kidney, Liver)

GHS Label element

Hazard pictograms



Signal Word : Warning

: May cause damage to organs (Kidney, Liver) through **Hazard Statements**

prolonged or repeated exposure if swallowed.

Precautionary Statements : Prevention:

Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.

Response:

Get medical advice/ attention if you feel unwell.

Disposal:

Dispose of contents/ container to an approved waste disposal

plant.

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Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical Name	CAS-No.	Classification	Concentration (%)
ETHYLENE GLYCOL	107-21-1	Acute Tox. 4; H302	48.97
		STOT RE 2; H373	
DIETHYLENE GLYCOL	111-46-6	Acute Tox. 4; H302	2.45
		STOT RE 2; H373	
SODIUM BENZOATE	532-32-1	Eye Irrit. 2A; H319	2.41

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.

Call a POISON CENTRE or doctor/physician if exposed or

you feel unwell.

Show this safety data sheet to the doctor in attendance.

Do not leave the victim unattended.

If inhaled : If breathed in, move person into fresh air.

If unconscious place in recovery position and seek medical

advice.

If symptoms persist, call a physician.

In case of skin contact : First aid is not normally required. However, it is

recommended that exposed areas be cleaned by washing

with soap and water.

In case of eye contact : Flush eyes with water as a precaution.

Remove contact lenses. Protect unharmed eye.

If eye irritation persists, consult a specialist.

If swallowed : Obtain medical attention.

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Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed

Effects of acute ethylene glycol poisoning appear in three fairly distinct stages. The initial stage occurs shortly after exposure, lasts 6-12 hours, and is characterized by central nervous system effects (transient exhilaration, nausea, vomiting, and in severe cases, coma, convulsions, and possible death). The second stage lasts from 12-36 hours after exposure and is initiated by the onset of coma. This phase is characterized by tachypnia, tachycardia, mild hypotension, cyanosis, and in severe cases, pulmonary edema, bronchopneumonia, cardiac enlargement, and congestive failure. The final stage occurs 24-72 postexposure and is characterized by renal failure, ranging from a mild increase in blood urea nitrogen and creatinine followed by recovery, to complete anuria with acute tubular necrosis that can lead to death. Oxaluria is found in most cases. The most significant laboratory finding in ethylene glycol intoxication is severe metabolic acidosis.

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:

stomach or intestinal upset (nausea, vomiting, diarrhea) irritation (nose, throat, airways)

Cough

pain in the abdomen and lower back

cyanosis (causes blue coloring of the skin and nails from lack of oxygen)

lung edema (fluid buildup in the lung tissue)

acute kidney failure (sudden slowing or stopping of urine production)

Convulsions

May cause damage to organs through prolonged or repeated exposure if swallowed.

Notes to physician

This product contains ethylene glycol. Ethanol decreases the metabolism of ethylene glycol to toxic metabolites. Ethanol should be administered as soon as possible in cases of severe poisoning since the elimination half-life of ethylene glycol is 3 hours. If medical care will be delayed several hours, give the patient three to four 1-ounce oral "shots" of 86-proof or higher whiskey before or during transport to the hospital. Fomepizole (4-methylpyrazole) is an effective antagonist of alcohol dehydrogenase, and as such, may be used as an antidote in the treatment of ethylene glycol poisoning. Hemodialysis effectively removes ethylene glycol and its metabolites from the body.

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SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local

circumstances and the surrounding environment.

Water spray Foam

Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

: High volume water jet

Specific hazards during

firefighting

: Do not allow run-off from fire fighting to enter drains or water

courses.

Hazardous combustion

products

: Alcohols Aldehydes

carbon dioxide and carbon monoxide

ethers toxic fumes Hydrocarbons Sodium oxides

Specific extinguishing

methods

:

Product is compatible with standard fire-fighting agents.

Further information : Standard procedure for chemical fires.

Special protective equipment

for firefighters

: In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Persons not wearing protective equipment should be excluded

from area of spill until clean-up has been completed.

Environmental precautions : Prevent product from entering drains.

Prevent further leakage or spillage if safe to do so.

If the product contaminates rivers and lakes or drains inform

respective authorities.

Methods and materials for containment and cleaning up

: Soak up with inert absorbent material (e.g. sand, silica gel,

acid binder, universal binder, sawdust).

Keep in suitable, closed containers for disposal.

Other information : Comply with all applicable federal, state, and local regulations.

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SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Do not breathe vapours/dust.

Do not smoke.

Container hazardous when empty.

Smoking, eating and drinking should be prohibited in the

application area.

For personal protection see section 8.

Dispose of rinse water in accordance with local and national

regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated

place.

Electrical installations / working materials must comply with

the technological safety standards.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
ETHYLENE GLYCOL	107-21-1	Ceiling	100 mg/m3 Aerosol.	ACGIH
		TWA	10 mg/m3 Inhalable fraction and vapor	ACGIHLIS_P
DIETHYLENE GLYCOL	111-46-6	TWA	10 mg/m3	WEEL

Engineering measures : Provide sufficient mechanical (general and/or local exhaust)

ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or

apparent adverse effects.

Personal protective equipment

Hand protection

Remarks : The suitability for a specific workplace should be discussed

with the producers of the protective gloves.

Eye protection : Not required under normal conditions of use. Wear splash-

proof safety goggles if material could be misted or splashed

into eyes.

Skin and body protection : Wear as appropriate:

impervious clothing

Safety shoes

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

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Wear resistant gloves (consult your safety equipment

supplier).

Hygiene measures : Wash hands before breaks and at the end of workday.

When using do not eat or drink. When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : liquid

Colour : pink

Odour : No data available

Odour Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Boiling point/boiling range : 212 °F / 100 °C

(1,013.333333 hPa)

Calculated Phase Transition Liquid/Gas

Flash point : $> 250 \, ^{\circ}\text{F} / > 121 \, ^{\circ}\text{C}$

Evaporation rate : No data available

Flammability (solid, gas) : No data available

Upper explosion limit : 15.3 %(V)

GLP: Calculated Explosive Limit

Lower explosion limit : 3.2 %(V)

GLP: Calculated Explosive Limit

Vapour pressure : 23.3333333 hPa (20 °C)

Calculated Vapor Pressure

Relative vapour density : No data available

Relative density : No data available

Density : 1.0827 g/cm3 (15.6 °C)

Solubility(ies)

Water solubility : No data available

Solubility in other solvents : No data available

Partition coefficient: n-

octanol/water

: No data available

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Thermal decomposition : No data available

Viscosity

Viscosity, dynamic : No data available

Viscosity, kinematic : No data available

Oxidizing properties : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.

Chemical stability : Stable under recommended storage conditions.

Possibility of hazardous

reactions

: Product will not undergo hazardous polymerization.

Conditions to avoid : excessive heat

Exposure to moisture

Incompatible materials : Acids

Aldehydes Alkali metals

Alkaline earth metals

Bases iron salts strong alkalis

Strong oxidizing agents Sulphur compounds

Hazardous decomposition

products

Alcohols

Aldehydes

carbon dioxide and carbon monoxide

ethers

Hydrocarbons Organic acids Sodium oxides

ketones

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of : Inhalation

exposure

Inhalation
Skin contact

Eye Contact Ingestion

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Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity :

Remarks: Ingestion of medications contaminated with diethylene glycol has caused kidney failure and death in humans. Products containing diethylene glycol should be

considered toxic by ingestion.

Acute dermal toxicity : Remarks: Skin absorption of this material (or a component)

may be increased through injured skin.

Components:

ETHYLENE GLYCOL:

Acute oral toxicity : LD 50 (Rat): 6,140 mg/kg

LD50 (Human): Estimated 1.56 g/kg

Assessment: The component/mixture is classified as acute

oral toxicity, category 4.

Acute inhalation toxicity : LC 50 (Rat): 10.9 mg/l

Exposure time: 1 h

Test atmosphere: dust/mist

Assessment: No adverse effect has been observed in acute

inhalation toxicity tests.

Acute dermal toxicity : LD 50 (Rabbit): 9,530 mg/kg

DIETHYLENE GLYCOL:

Acute oral toxicity : LD50 (Human): Expected 1,120 mg/kg

Target Organs: Kidney

Acute inhalation toxicity : LC50 (Rat): > 4.6 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Assessment: No adverse effect has been observed in acute

inhalation toxicity tests.

Acute dermal toxicity : LD 50 (Rabbit): 13,300 mg/kg

SODIUM BENZOATE:

Acute oral toxicity : LD 50 (Rat, male and female): 3,450 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 12.2 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Remarks: Information given is based on data obtained from

similar substances.

Skin corrosion/irritation

Not classified based on available information.

Components:

ETHYLENE GLYCOL:

Result: Mildly irritating to skin

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DIETHYLENE GLYCOL:

Species: Human

Result: Slightly irritating to skin

SODIUM BENZOATE:

Result: Mildly irritating to skin

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Remarks: Unlikely to cause eye irritation or injury.

Components:

ETHYLENE GLYCOL:

Result: Possibly irritating to eyes

DIETHYLENE GLYCOL:

Species: Rabbit

Result: Slightly irritating to eyes

SODIUM BENZOATE:

Species: Rabbit

Result: Irritating to eyes

Method: OECD Test Guideline 405

Respiratory or skin sensitisation

Skin sensitisation: Not classified based on available information. Respiratory sensitisation: Not classified based on available information.

Components:

DIETHYLENE GLYCOL:

Test Type: Maximisation Test (GPMT)

Species: Guinea pig

Method: Directive 67/548/EEC, Annex V, B.6.

Result: Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Not classified based on available information.

Components:

DIETHYLENE GLYCOL:

Genotoxicity in vitro : Test Type: Ames test

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

GLP: yes

: Test species: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 479

Result: negative GLP: yes

Genotoxicity in vivo : Test Type: In vivo micronucleus test

Test species: Mouse

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Method: OECD Test Guideline 474

Result: negative GLP: yes

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

STOT - single exposure

Not classified based on available information.

STOT - repeated exposure

May cause damage to organs (Kidney, Liver) through prolonged or repeated exposure if swallowed.

Components:

ETHYLENE GLYCOL: Exposure routes: Ingestion Target Organs: Kidney, Liver

Assessment: May cause damage to organs through prolonged or repeated exposure.

DIETHYLENE GLYCOL: Exposure routes: Ingestion Target Organs: Kidney

Assessment: May cause damage to organs through prolonged or repeated exposure.

Aspiration toxicity

Not classified based on available information.

Experience with human exposure

Components:

DIETHYLENE GLYCOL:

Liver

Further information

Product:

Remarks: No data available

Carcinogenicity:

IARC No component of this product present at levels greater than or

equal to 0.1% is identified as probable, possible or confirmed

human carcinogen by IARC.

OSHA No component of this product present at levels greater than or

equal to 0.1% is identified as a carcinogen or potential

carcinogen by OSHA.

NTP No component of this product present at levels greater than or

equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

ETHYLENE GLYCOL:

Toxicity to fish : LC 50 (Bluegill (Lepomis macrochirus)): 27,540 mg/l

Exposure time: 96 h Method: Static Remarks: Mortality

LC 50 (Fathead minnow (Pimephales promelas)): 8,050 mg/l

Exposure time: 96 h

Toxicity to daphnia and other

aquatic invertebrates

: LC 50 (Water flea (Daphnia magna)): > 10,000 mg/l

Exposure time: 48 h Test Type: static test

DIETHYLENE GLYCOL:

Toxicity to fish : LC 50 (Fathead minnow (Pimephales promelas)): 75,210 mg/l

Exposure time: 96 h

Test Type: flow-through test

Toxicity to daphnia and other

aquatic invertebrates

: LC 50 (Water flea (Daphnia magna)): > 10,000 mg/l

Exposure time: 24 h Test Type: static test Method: DIN 38412

SODIUM BENZOATE:

Toxicity to fish : LC 50 (Fathead minnow (Pimephales promelas)): > 100 mg/l

Exposure time: 96 h Test Type: static test Method: Static Remarks: Mortality

Toxicity to daphnia and other

aquatic invertebrates

: LC 50 (Water flea (Daphnia magna)): > 100 mg/l

Exposure time: 96 h Test Type: static test Method: Static Remarks: Mortality

Persistence and degradability

Components:

DIETHYLENE GLYCOL:

Biodegradability : Result: Readily biodegradable

Biodegradation: 70 - 80 %

Exposure time: 28 d

Method: OECD Test Guideline 301B

SODIUM BENZOATE:

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Biodegradability : Result: Readily biodegradable

Biodegradation: 88 % Exposure time: 28 d

Method: OECD Test Guideline 301

Bioaccumulative potential

Components:

ETHYLENE GLYCOL:

Bioaccumulation : Species: Crayfish (Procambarus)

Bioconcentration factor (BCF): 0.27 Exposure time: 61 d

Concentration: 1000 mg/l Method: Flow through

Partition coefficient: n-

octanol/water

: log Pow: -1.36

DIETHYLENE GLYCOL:

Bioaccumulation : Species: Leuciscus idus (Golden orfe)

Bioconcentration factor (BCF): 100

Partition coefficient: n-

octanol/water

: log Pow: -1.47

Mobility in soil
Components:
No data available

Other adverse effects

No data available

Product:

Additional ecological

information

: No data available

Components:

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice : Do not dispose of waste into sewer.

Do not contaminate ponds, waterways or ditches with

chemical or used container.

Send to a licensed waste management company.

Dispose of in accordance with all applicable local, state and

federal regulations.

Contaminated packaging : Empty remaining contents.

Dispose of as unused product.

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Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International transport regulations

REGULATION

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
					LID. QIT.

U.S. DOT - ROAD

Not dangerous goods

U.S. DOT - RAIL

Not dangerous goods	

U.S. DOT - INLAND WATERWAYS

Not dangerous goods

TRANSPORT CANADA - ROAD

Not dangerous goods

TRANSPORT CANADA - RAIL

Not dangerous goods

TRANSPORT CANADA - INLAND WATERWAYS

Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES

Not dangerous goods	Not dangerous goods	

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*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID

Marine pollutant	no

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
ETHYLENE GLYCOL	107-21-1	5000	10208.394158
ETHTLENE GLTCOL	107-21-1	3000	10200.394130

SARA 311/312 Hazards : Chronic Health Hazard

SARA 313 Component(s)

ETHYLENE GLYCOL 107-21-1 48.97 %

Pennsylvania Right To Know

ETHYLENE GLYCOL 107-21-1 30.00 - 50.00 % WATER 7732-18-5 30.00 - 50.00 %

DIETHYLENE GLYCOL 111-46-6 1.00 - 5.00 %

New Jersey Right To Know

ETHYLENE GLYCOL 107-21-1 30.00 - 50.00 %

WATER 7732-18-5 30.00 - 50.00 %

DIETHYLENE GLYCOL 111-46-6 1.00 - 5.00 %

SODIUM BENZOATE 532-32-1 1.00 - 5.00 %

California Prop 65 Proposition 65 warnings are not required for this product

based on the results of a risk assessment.

The components of this product are reported in the following inventories:

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL.

AUSTR : On the inventory, or in compliance with the inventory

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NZIOC : Not in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

KECL : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

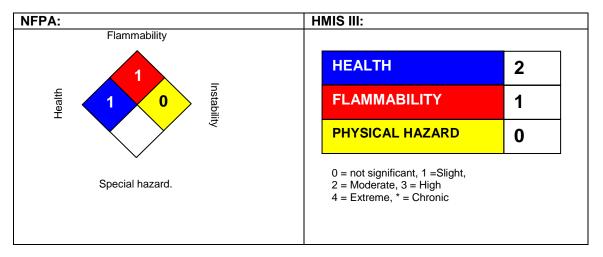
Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

SECTION 16. OTHER INFORMATION

Further information

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NFPA Flammable and Combustible Liquids Classification

Combustible Liquid Class IIIB

Full text of H-Statements referred to under sections 2 and 3.

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

H373 May cause damage to organs through prolonged or repeated exposure

if swallowed.

Sources of key data used to compile the Safety Data Sheet Ashland internal data including own and sponsored test reports

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The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).

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

ACGIH: American Conference of Industrial Hygienists

BEI : Biological Exposure Index

CAS: Chemical Abstracts Service (Division of the American Chemical Society).

CMR: Carcinogenic, Mutagenic or Toxic for Reproduction

FG: Food grade

GHS: Globally Harmonized System of Classification and Labeling of Chemicals.

H-statement: Hazard Statement

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

OECD: Organization for Economic Co-operation and Development

OEL: Occupational Exposure Limit P-Statement: Precautionary Statement PBT: Persistent, Bioaccumulative and Toxic

PPE: Personal Protective Equipment STEL: Short-term exposure limit STOT: Specific Target Organ Toxicity

TLV: Threshold Limit Value TWA: Time-weighted average

vPvB: Very Persistent and Very Bioaccumulative

WEL: Workplace Exposure Level

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

DOT : Department of Transportation

FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act HMIRC: Hazardous Materials Information Review Commission

HMIS: Hazardous Materials Identification System

NFPA: National Fire Protection Association

NIOSH: National Institute for Occupational Safety and Health OSHA: Occupational Safety and Health Administration

PMRA: Health Canada Pest Management Regulatory Agency

RTK: Right to Know

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WHMIS: Workplace Hazardous Materials Information System