

1. PRODUCT & COMPANY IDENTIFICATION

| | | |
|-----|------------------------------|---|
| 1.1 | Product Name: | SPRINTRAY SURGICAL GUIDE 3 |
| 1.2 | Chemical Name: | UFI: N3S9-UKE4-Y00W-EV2R |
| 1.3 | Synonyms: | NA |
| 1.4 | Trade Names: | SprintRay Surgical Guide 3 |
| 1.5 | Product Uses & Restrictions: | Professional Use Only |
| 1.6 | Distributor's Name: | SprintRay, Inc. |
| 1.7 | Distributor's Address: | 2710 Media Center Drive, #100A, Los Angeles, CA 90065 USA |
| 1.8 | Emergency Phone: | CHEMTREC: +1 (703) 527-3887 // +1 (800) 424-9300 |
| 1.9 | Business Phone / Fax: | Tel: +1 (800) 914-8004 |

2. HAZARDS IDENTIFICATION

| | | | |
|-----|------------------------|--|--|
| 2.1 | Hazard Identification: | Prepared in accordance with UN Globally Harmonized standards. Intended to comply with OSHA 29 CFR 1910.1200. Canadian WHMIS and Australian Work Health and Safety WARNING! SUSPECTED OF CAUSING CANCER. SUSPECTED OF DAMAGING FERTILITY OR THE UNBORN CHILD. CAUSES SKIN IRRITATION. CAUSES SERIOUS EYE IRRITATION. TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS. Classification: Carc. 2, Repr. 2, Skin Irrit. 2, Eye Irrit. 2A; Aq. Chronic 2 | |
| 2.2 | Label Elements: | <p>Hazard Statements (H): H315 – Causes skin irritation. H351 - H351 – Suspected of causing cancer. H361f (oral) – Suspected of damaging fertility or the unborn child. H319 – Causes serious eye irritation. H411 – Toxic to aquatic life with long lasting effects.</p> <p>Precautionary Statements (P): P203 – Obtain, read, and follow all safety instructions before use. P264+P265 – Wash hands and exposed skin areas with soap and warm water thoroughly after handling. Do not touch eyes. P272 – Contaminated work clothing should not be allowed out of the workplace. P273 – Avoid release to the environment. P280 – Wear protective gloves/eye protection/face protection. P302+P352 - IF ON SKIN, wash with plenty of soap and warm water. P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P332+P317 – If skin irritation occurs: get medical help. P337+P317 – If eye irritation persists: Get medical HELP. P318 – IF exposed or concerned: Get medical advice. P321 – Specific treatment: see section 4 (First Aid) of this SDS. P362+P364 – Take off contaminated clothing and wash it before reuse. P391 – Collect spillage. P405 – Store locked up. P501 – Dispose of contents/container to a licensed treatment, storage, or disposal facility (TSDF).</p> | |
| 2.3 | Other Warnings: | WARNING: This product can expose you to chemicals including <u>Trimethylolpropane Triacrylate</u> , which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov . KEEP OUT OF REACH OF CHILDREN. | |

3. COMPOSITION & INGREDIENT INFORMATION

| CHEMICAL NAME(S) | CAS No. | RTECS No. | EINECS No. | % | EXPOSURE LIMITS IN AIR (mg/m ³) | | | | | | | | | OTHER |
|---|------------|-----------|------------|-------|---|------|--------|---------|---------|------|------|------|--|-------|
| | | | | | ACGIH | | NOHSC | | | OSHA | | | | |
| | | | | | Ppm | | Ppm | | | Ppm | | | | |
| | | | | | TLV | STEL | ES-TWA | ES-STEL | ES-PEAK | PEL | STEL | IDLH | | |
| ETHOXYLATED BISPHENOL A DIMETHACRYLATE | 41637-38-1 | NA | 609-946-4 | 30-70 | NA | NA | NF | NF | NF | NA | NA | NA | | |
| Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2A, STOT SE 3 (resp); H315, H317, H319, H335 | | | | | | | | | | | | | | |
| TRIMETHYLOLPROPANE FORMAL ACRYLATE | 66492-51-1 | NA | 266-380-7 | 30-70 | NA | NA | NF | NF | NF | NA | NA | NA | | |
| Skin Irrit. 2, Skin Sens. 1, Aq. Chronic 2; H315, H319, H411 | | | | | | | | | | | | | | |
| URETHANE DIMETHACRYLATE | 72869-86-4 | NA | 276-957-5 | 15-35 | NA | NA | NF | NF | NF | NA | NA | NA | | |
| Skin Sens. 1; H317 | | | | | | | | | | | | | | |
| TPO | 75980-60-8 | NA | NA | ≤ 5 | NA | NA | NF | NF | NF | NA | NA | NA | | |
| Repr. 2; H361 | | | | | | | | | | | | | | |
| TRIMETHYLOLPROPANE TRIACRYLATE | 15625-89-5 | NA | 239-701-3 | ≤ 5 | NA | NA | NF | NF | NF | NA | NA | NA | | |
| Skin Irrit. 2, Skin Sens. 1, Eye Irrit. 2A, Carc. 2, Aq. Acute 1, Aq. Chronic 1; H315, H317, H319, H351, H400, H410 | | | | | | | | | | | | | | |

4. FIRST AID MEASURES

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|-----|------------|---|
| 4.1 | First Aid: | <p>Ingestion: If ingested, do not induce vomiting. If product has been swallowed, drink plenty of water or milk IMMEDIATELY. If the patient is vomiting, continue to offer water or milk. Never give water or milk to an unconscious person. Contact the nearest Poison Control Center or local emergency number. Provide an estimate of the time at which the material was ingested and the amount of the substance that was swallowed.</p> <p>Eyes: Splashes are not likely; however, if product gets in the eyes, flush with copious amounts of lukewarm water for at least 15 minutes lifting upper and lower lids, occasionally.</p> <p>Skin: Wash thoroughly with soap and water. In case of contact, immediately flush skin with plenty of water for at least 15 minutes.</p> <p>Inhalation: Remove victim to fresh air at once. If breathing difficult, administer oxygen. If breathing stops give artificial respiration. Keep person warm, quiet and get medical attention.</p> |
|-----|------------|---|

4. FIRST AID MEASURES – cont'd

| | | | | | | | | | | | | | |
|-----------------------------|--|---|---|---------------|----------|---------------------|----------|-------------------------|----------|-----------------------------|----------|-------------|-------------|
| 4.2 | Effects of Exposure: | <p><u>Ingestion:</u> If product is swallowed, may cause nausea, vomiting and/or diarrhea.</p> <p><u>Eyes:</u> Moderately irritating to the eyes. Symptoms of overexposure may include redness, itching, irritation and watering.</p> <p><u>Skin:</u> May be irritating to skin. The product can cause allergic skin reactions (e.g., rashes, welts, dermatitis) in some sensitive individuals.</p> <p><u>Inhalation:</u> None expected.</p> | | | | | | | | | | | |
| 4.3 | Symptoms of Overexposure: | <p><u>Ingestion:</u> Nausea, intestinal discomfort, vomiting and/or diarrhea.</p> <p><u>Eyes:</u> Overexposure in eyes may cause redness, itching and watering.</p> <p><u>Skin:</u> Symptoms of skin overexposure may include redness, itching, and irritation of affected areas. Frostbite like symptoms. The product can cause allergic skin reactions (e.g., rashes, welts, dermatitis) in some individuals.</p> | | | | | | | | | | | |
| 4.4 | Acute Health Effects: | Non-irritating when used as directed. Moderate irritation to eyes and skin near affected areas. | | | | | | | | | | | |
| 4.5 | Chronic Health Effects: | Non-irritating when used as directed. Overexposure may also induce skin sensitization and respiratory hypersensitivity. Possible allergic dermatitis. | | | | | | | | | | | |
| 4.6 | Target Organs: | Eyes, Skin | | | | | | | | | | | |
| 4.7 | Medical Conditions Aggravated by Exposure: | Pre-existing dermatitis, other skin conditions, and disorders of the target organs (eyes, skin). | <table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="background-color: #0000FF; color: white; padding: 2px;">HEALTH</td> <td style="text-align: center; padding: 2px;">2</td> </tr> <tr> <td style="background-color: #FF0000; color: white; padding: 2px;">FLAMMABILITY</td> <td style="text-align: center; padding: 2px;">1</td> </tr> <tr> <td style="background-color: #FFA500; color: white; padding: 2px;">PHYSICAL HAZARDS</td> <td style="text-align: center; padding: 2px;">0</td> </tr> <tr> <td style="background-color: #000000; color: white; padding: 2px;">PROTECTIVE EQUIPMENT</td> <td style="text-align: center; padding: 2px;">B</td> </tr> <tr> <td style="padding: 2px;">EYES</td> <td style="padding: 2px;">SKIN</td> </tr> </table> | HEALTH | 2 | FLAMMABILITY | 1 | PHYSICAL HAZARDS | 0 | PROTECTIVE EQUIPMENT | B | EYES | SKIN |
| HEALTH | 2 | | | | | | | | | | | | |
| FLAMMABILITY | 1 | | | | | | | | | | | | |
| PHYSICAL HAZARDS | 0 | | | | | | | | | | | | |
| PROTECTIVE EQUIPMENT | B | | | | | | | | | | | | |
| EYES | SKIN | | | | | | | | | | | | |

5. FIREFIGHTING MEASURES

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|-----|---------------------------|---|--|
| 5.1 | Fire & Explosion Hazards: | This material can burn but will not readily ignite. However, if involved in a fire, this product may decompose at high temperatures to form toxic gases (e.g., CO, CO _x , Hydrocarbons). | |
| 5.2 | Extinguishing Methods: | CO ₂ , Dry Chemical, Alcohol foam, Dry Chemical. Use water spray to cool containers. | |
| 5.3 | Firefighting Procedures: | Keep containers cool until well after the fire is out. Fight fires for surrounding materials. As in any fire, wear MSHA/NIOSH approved self-contained breathing apparatus (pressure-demand) and full protective gear. Keep containers cool until well after the fire is out. Use water spray to cool fire-exposed surfaces and to protect personal. Fight fire upwind. Avoid spraying water directly into storage containers because of the danger of boil-over. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply, or any natural waterway. Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. | |

6. ACCIDENTAL RELEASE MEASURES

| | | | |
|-----|---------|--|--|
| 6.1 | Spills: | <p>Before cleaning any spill or leak, individuals involved in spill cleanup must wear appropriate Personal Protective Equipment. Plastic or rubber gloves, respirator, eye protection and apron may be required for clean-up of large spills.</p> <p>For <u>small Spills</u> (e.g., < 1 gallon (3.8 L)) wear appropriate protective equipment including gloves and protective eyewear. Use a non-combustible material such as vermiculite or sand to soak up the product and place into a container for later disposal. Do not use water or a material such as "speedy dry" to soak up material.</p> <p>For <u>large Spills</u> (e.g., ≥ 1 gallon (3.8 L)), keep incompatible materials away from spill. Dike and contain spill with inert material (e.g., sand or earth). Transfer liquid to containers for recovery or disposal and solid diking material to separate containers for proper disposal. Remove contaminated clothing promptly and wash affected skin areas with soap and water. Keep runoff from waterways.</p> | |
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7. HANDLING & STORAGE INFORMATION

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|-----|---------------------------|---|--|
| 7.1 | Work & Hygiene Practices: | Do not eat, drink, or smoke when handling this product. Avoid contact to eyes and skin. Avoid inhalation of vapors, fumes and dusts. Wash thoroughly after handling and use. Do not smoke, eat, drink, chew gum or tobacco, or apply cosmetics within the working area. | |
| 7.2 | Storage & Handling: | Use and store in a cool, dry, well-ventilated location (e.g., local exhaust ventilation, fans) away from heat and direct sunlight. Use normal precautions common to safe manufacturing practices should be followed in handling and storage. Keep product contained and retain all warning and identity labels. Store out of direct sunlight. Keep out of the reach of children. Keep away from open flames, sparks, and other possible sources of ignition. Keep away from incompatible materials listed in Section 10. Keep container tightly closed when not in use. | |
| 7.3 | Special Precautions: | Read and understand the manufacturer's instructions and the precautionary label on this product. Avoid overexposure of skin contact. Clean all spills promptly. Open containers slowly on a stable surface. Keep container tightly closed when not in use. Empty containers may contain residual amounts of this product; therefore, empty containers should be handled with care. | |

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

| | | | | | | | | | | | |
|-----|--|------------------|-------|------|--------|---------|---------|------|------|------|-------|
| 8.1 | Exposure Limits: ppm (mg/m ³) | | ACGIH | | NOHSC | | | OSHA | | | OTHER |
| | | CHEMICAL NAME(S) | TLV | STEL | ES-TWA | ES-STEL | ES-PEAK | PEL | STEL | IDLH | |
| | | NA | NA | NA | NF | NF | NF | NA | NA | NA | |

8. EXPOSURE CONTROLS & PERSONAL PROTECTION – cont'd

| | | | |
|-----|-------------------------------------|---|---|
| 8.2 | Ventilation & Engineering Controls: | General mechanical (e.g., fans) or natural ventilation is sufficient when this product is in use. Use local or general exhaust ventilation to effectively remove and prevent buildup of vapors or mist generated from the handling of this product. Ensure appropriate decontamination equipment is available (e.g., sink, safety shower, eye-wash station). | |
| 8.3 | Respiratory Protection: | No special respiratory protection is required under typical circumstances of use or handling. In instances where mist or vapors of this product are generated, and respiratory protection is needed, use only protection authorized by 29 CFR §1910.134, applicable U.S. State regulations, or the Canadian CAS Standard Z94.4-93 and applicable standards of Canadian Provinces, EC member States, or Australia. | |
| 8.4 | Eye Protection: | Wear chemical splash proof goggles and/or face shield. Ensure appropriate decontamination equipment is available (e.g., sink, safety shower, eye-wash station). |  |
| 8.5 | Hand Protection: | Wear impervious resistant gloves when using or handling this product. When handling large quantities of fluid (e.g., ≥ 1 gallon (3.8 L), wear rubber, nitrile or impervious plastic gloves. |  |
| 8.6 | Body Protection: | No apron required. Eye wash stations and deluge showers should be available. Upon completion of work activities involving large quantities of this product (fluid), wash any exposed areas thoroughly with soap and water. | |

9. PHYSICAL & CHEMICAL PROPERTIES

| | | |
|------|---|-----------------------|
| 9.1 | Appearance: | Clear, viscous liquid |
| 9.2 | Odor: | NA |
| 9.3 | Odor Threshold: | NA |
| 9.4 | pH: | NA |
| 9.5 | Melting Point/Freezing Point: | NA |
| 9.6 | Initial Boiling Point/Boiling Range: | NA |
| 9.7 | Flashpoint: | NA |
| 9.8 | Upper/Lower Flammability Limits: | NA |
| 9.9 | Vapor Pressure: | NA |
| 9.10 | Vapor Density: | NA |
| 9.11 | Relative Density: | NA |
| 9.12 | Solubility: | NA |
| 9.13 | Partition Coefficient (log P _{ow}): | NA |
| 9.14 | Autoignition Temperature: | NA |
| 9.15 | Decomposition Temperature: | NA |
| 9.16 | Viscosity: | < 1000 cPs @ 25°C |
| 9.17 | Other Information: | NA |

10. STABILITY & REACTIVITY

| | | |
|------|-----------------------------------|---|
| 10.1 | Stability: | Relatively stable under ambient conditions when stored properly. |
| 10.2 | Hazardous Decomposition Products: | If exposed to extremely high temperatures , products of thermal decomposition may include irritating vapors and toxic gases (e.g., oxides of carbon & nitrogen). |
| 10.3 | Hazardous Polymerization: | May occur, if exposed to extremely high temperatures. |
| 10.4 | Conditions to Avoid: | Exposure or contact to extreme temperatures, incompatible chemicals, strong light sources, sparks, flame. |
| 10.5 | Incompatible Substances: | Strong oxidizers, peroxides, strong alkalis or acids, UV light |

11. TOXICOLOGICAL INFORMATION

| | | | | |
|------|------------------------------|---|-----------------|----------------|
| 11.1 | Routes of Entry: | Inhalation: NO | Absorption: YES | Ingestion: YES |
| 11.2 | Toxicity Data: | This product has NOT been tested on animals to obtain toxicology data. Toxicology data, found in scientific literature, is available for some of the components of the product and is not presented in this document. | | |
| 11.3 | Acute Toxicity: | See Section 4.4 | | |
| 11.4 | Chronic Toxicity: | See Section 4.5 | | |
| 11.5 | Suspected Carcinogen: | WARNING: This product can expose you to chemicals including <u>Trimethylolpropane Triacrylate</u> , which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov . | | |
| 11.6 | Reproductive Toxicity: | This product contains <u>TPO</u> , which is suspected of damaging fertility or the unborn child. | | |
| | Mutagenicity: | This product is not reported to produce mutagenic effects in humans. | | |
| | Embryotoxicity: | This product is not reported to produce embryotoxic effects in humans. | | |
| | Teratogenicity: | This product is not reported to cause teratogenic effects in humans. | | |
| | Reproductive Toxicity: | This product contains <u>TPO</u> , which is suspected of damaging fertility or the unborn child. | | |
| 11.7 | Irritancy of Product: | The product can cause allergic skin reactions (e.g., rashes, welts, dermatitis) upon prolonged or repeated exposure. | | |
| 11.8 | Biological Exposure Indices: | NE | | |
| 11.9 | Physician Recommendations: | Treat symptomatically. | | |

12. ECOLOGICAL INFORMATION

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|------|------------------------------|---|
| 12.1 | Environmental Stability: | There is no specific data available for this product. WGK 3 (Severe hazard to waters) |
| 12.2 | Effects on Plants & Animals: | There is no specific data available for this product. |
| 12.3 | Effects on Aquatic Life: | There is no specific data available for this product. |

13. DISPOSAL CONSIDERATIONS

| | | |
|------|-------------------------|---|
| 13.1 | Waste Disposal: | Products covered by this SDS, in their original form, when disposed as waste, are considered non-hazardous waste according to Federal RCRA regulations (40 CFR 261). Disposal should be in accordance with local, state, and federal regulations. Dispose of in accordance with federal, state and local regulations. |
| 13.2 | Special Considerations: | NA |

14. TRANSPORTATION INFORMATION

The basic description (ID Number, proper shipping name, hazard class & division, packing group) is shown for each mode of transportation. Additional descriptive information may be required by 49 CFR, IATA/ICAO, IMDG and the CTDGR.

| | | |
|------|----------------------|---------------|
| 14.1 | 49 CFR (GND): | NOT REGULATED |
| 14.2 | IATA (AIR): | NOT REGULATED |
| 14.3 | IMDG (OCN): | NOT REGULATED |
| 14.4 | TDGR (Canadian GND): | NOT REGULATED |
| 14.5 | ADR/RID (EU): | NOT REGULATED |
| 14.6 | SCT (MEXICO): | NOT REGULATED |
| 14.7 | ADGR (AUS): | NOT REGULATED |

15. REGULATORY INFORMATION

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|------|-----------------------------------|--|
| 15.1 | SARA Reporting Requirements: | This product does not contain any substances subject to SARA Title III, Section 313 reporting requirements. |
| 15.2 | SARA Threshold Planning Quantity: | There are no specific Threshold Planning Quantities for the components of this product. |
| 15.3 | TSCA Inventory Status: | The components of this product are listed on the TSCA Inventory. |
| 15.4 | CERCLA Reportable Quantity (RQ): | NA |
| 15.5 | Other Federal Requirements: | NA |
| 15.6 | Other Canadian Regulations: | This product has been classified according to the hazard criteria of the HPR and the SDS contains all of the information required by the HPR. The components of this product are listed on the DSL/NDL. None of the components of this product are listed on the Priorities Substances List. WHMIS D2B (Other Toxic Effects) |
| 15.7 | State Regulatory Information: | <p><u>Trimethylolpropane Triacrylate</u> is found on the following state criteria list(s): CA65, MN.</p> <p><u>TPO</u> is found on the following criteria list(s): NJ and PA.</p> <p>No other ingredients in this product, present in a concentration of 1.0% or greater, are listed on any of the following state criteria lists: California Proposition 65 (CA65), Delaware Air Quality Management List (DE), Florida Toxic Substances List (FL), Massachusetts Hazardous Substances List (MA), Michigan Critical Substances List (MI), Minnesota Hazardous Substances List (MN), New Jersey Right-to-Know List (NJ), New York Hazardous Substances List (NY), Pennsylvania Right-to-Know List (PA), Washington Permissible Exposures List (WA), Wisconsin Hazardous Substances List (WI).</p> <p> WARNING: This product can expose you to chemicals including <u>Trimethylolpropane Triacrylate</u>, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.</p> |
| 15.8 | Other Requirements: | This product is found on the following inventory lists: Australia - AICS; China - IECSC; Europe - ELINCS/EINEC; Japan - ENCS; Korea - KECl; New Zealand - NZIoC; Philippines - PICCS; USA - TSCA |



16. OTHER INFORMATION

| | | | |
|------|----------------------|---|--|
| 16.1 | Other Information: | <p>WARNING! SUSPECTED OF CAUSING CANCER. SUSPECTED OF DAMAGING FERTILITY OR THE UNBORN CHILD. CAUSES SKIN IRRITATION. CAUSES SERIOUS EYE IRRITATION. TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS.</p> <p>Obtain, read, and follow all safety instructions before use. Wash hands and exposed skin areas with soap and warm water thoroughly after handling. Do not touch your eyes. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/eye protection/face protection. IF ON SKIN, wash with plenty of soap and warm water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation occurs get medical help. If eye irritation persists: Get medical HELP. IF exposed or concerned: Get medical advice. Specific treatment: see section 4 (First Aid) of this SDS. Take off contaminated clothing and wash it before reuse. Collect spillage. Store locked up.</p> <p>KEEP LOCKED UP AND OUT OF REACH OF CHILDREN.</p> <p> WARNING: This product can expose you to chemicals including <u>Trimethylolpropane Triacrylate</u>, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov</p> | |
| 16.2 | Terms & Definitions: | See last page of this Safety Data Sheet. | |
| 16.3 | Disclaimer: | This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR §1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of ShipMate's & SprintRay, Inc.'s, knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness is not guaranteed and no warranties of any type, either expressed or implied, are provided. The information contained herein relates only to the specific product(s). If this product(s) is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition. | |
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DEFINITION OF TERMS

A large number of abbreviations and acronyms appear on a SDS. Some of these that are commonly used include the following:

GENERAL INFORMATION:

| | |
|-------------------|--|
| CAS No. | Chemical Abstract Service Number |
| RTECS No. | Registry of Toxic Effects of Chemical Substances Number |
| EINECS No. | European Inventory of Existing Commercial Chemical Substances Number |

EXPOSURE LIMITS IN AIR:

| | |
|--------------|--|
| ACGIH | American Conference on Governmental Industrial Hygienists |
| IDLH | Immediately Dangerous to Life and Health |
| NOHSC | National Occupational Health and Safety Commission (Australia) |
| OSHA | U.S. Occupational Safety and Health Administration |
| PEL | Permissible Exposure Limit |
| STEL | Short Term Exposure Limit |
| TLV | Threshold Limit Value |
| TWA | Time Weighted Average |

FIRST AID MEASURES:

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| CPR | Cardiopulmonary resuscitation - method in which a person whose heart has stopped receives manual chest compressions and breathing to circulate blood and provide oxygen to the body. |
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HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: HMIS

HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

| | |
|----------|-----------------|
| 0 | Minimal Hazard |
| 1 | Slight Hazard |
| 2 | Moderate Hazard |
| 3 | Severe Hazard |
| 4 | Extreme Hazard |

| |
|----------------------------|
| HEALTH |
| FLAMMABILITY |
| PHYSICAL HAZARDS |
| PERSONAL PROTECTION |

PERSONAL PROTECTION RATINGS:

| | | | |
|----------|--|----------|--|
| A | | G | |
| B | | H | |
| C | | I | |
| D | | J | |
| E | | K | |
| F | | X | Consult your supervisor or SOPs for special handling directions. |

| | | | |
|----------------------|-----------------------------------|----------------------------------|---------------------------|
| | | | |
| Safety Glasses | Splash Goggles | Face Shield & Protective Eyewear | Gloves |
| | | | |
| Boots | Protective Apron | Protective Clothing & Full Suit | Dust Respirator |
| | | | |
| Full Face Respirator | Dust & Vapor Half-Mask Respirator | Full Face Respirator | Airline Hood/Mask or SCBA |

OTHER STANDARD ABBREVIATIONS:

| | |
|----------------|--|
| Carc | Carcinogenic |
| Irrit | Irritant |
| NA | Not Available |
| NR | No Results |
| ND | Not Determined |
| NE | Not Established |
| NF | Not Found |
| SCBA | Self-Contained Breathing Apparatus |
| Sens | Sensitization |
| STOT RE | Specific Target Organ Toxicity – Repeat Exposure |
| STOT SE | Specific Target Organ Toxicity – Single Exposure |

NATIONAL FIRE PROTECTION ASSOCIATION: NFPA

| FLAMMABILITY LIMITS IN AIR: | |
|---------------------------------|---|
| Autoignition Temperature | Minimum temperature required to initiate combustion in air with no other source of ignition |
| LEL | Lower Explosive Limit - lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source |
| UEL | Upper Explosive Limit - highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source |

HAZARD RATINGS:

| | |
|----------------|-----------------|
| 0 | Minimal Hazard |
| 1 | Slight Hazard |
| 2 | Moderate Hazard |
| 3 | Severe Hazard |
| 4 | Extreme Hazard |
| ACD | Acidic |
| ALK | Alkaline |
| COR | Corrosive |
| W | Use No Water |
| OX | Oxidizer |
| TREFOIL | Radioactive |

TOXICOLOGICAL INFORMATION:

| | |
|---|---|
| LD₅₀ | Lethal Dose (solids & liquids) which kills 50% of the exposed animals |
| LC₅₀ | Lethal concentration (gases) which kills 50% of the exposed animal |
| ppm | Concentration expressed in parts of material per million parts |
| TD₁₀ | Lowest dose to cause a symptom |
| TCLo | Lowest concentration to cause a symptom |
| TD₁₀, LD₁₀, & LD₅₀ or TC, TC₁₀, LC₁₀, & LC₅₀ | Lowest dose (or concentration) to cause lethal or toxic effects |
| IARC | International Agency for Research on Cancer |
| NTP | National Toxicology Program |
| RTECS | Registry of Toxic Effects of Chemical Substances |
| BCF | Bioconcentration Factor |
| TL_m | Median threshold limit |
| log K_{ow} or log K_{oc} | Coefficient of Oil/Water Distribution |

REGULATORY INFORMATION:

| | |
|--------------|--|
| WHMIS | Canadian Workplace Hazardous Material Information System |
| DOT | U.S. Department of Transportation |
| TC | Transport Canada |
| EPA | U.S. Environmental Protection Agency |
| DSL | Canadian Domestic Substance List |
| NDSL | Canadian Non-Domestic Substance List |
| PSL | Canadian Priority Substances List |
| TSCA | U.S. Toxic Substance Control Act |
| EU | European Union (European Union Directive 67/548/EEC) |
| WGK | Wassergefährdungsklassen (German Water Hazard Class) |

WORKPLACE HAZARDOUS MATERIALS IDENTIFICATION (WHMIS) SYSTEM:

| | | | | | | | |
|------------|-----------|-----------|----------|------------|------------|-----------|----------|
| | | | | | | | |
| Class A | Class B | Class C | Class D1 | Class D2 | Class D3 | Class E | Class F |
| Compressed | Flammable | Oxidizing | Toxic | Irritation | Infectious | Corrosive | Reactive |

CLP/GHS (1272/2008/EC) PICTOGRAMS:

| | | | | | | | | |
|-----------|-----------|----------|-------------|-----------|-------|--------------------|---------------|-------------|
| | | | | | | | | |
| GHS01 | GHS02 | GHS03 | GHS04 | GHS05 | GHS06 | GHS07 | GHS08 | GHS09 |
| Explosive | Flammable | Oxidizer | Pressurized | Corrosive | Toxic | Harmful Irritating | Health Hazard | Environment |