SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS Standards, European Union CLP EC 1272/2008 and the Global Harmonization Standard

PART I *What is the material and what do I need to know in an emergency?*

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE

IDENTIFICATION of the SUBSTANCE or PREPARATION:

TRADE NAME:	**CISPLATIN INJECTION SOLUTION**
CHEMICAL NAME:	Active Ingredient: cis-diamminedichloroplatinum
CHEMICAL CLASS:	Active Ingredient: Organoplatinum Complex
THERAPEUTIC CLASS:	Antineoplastic
HOW SUPPLIED:	1 mg/10 mL (50 and 100 mg/mL) Vial
RELEVANT USE of the SUBSTANCE:	Human Pharmaceutical
USES ADVISED AGAINST:	Other than Relevant Use

COMPANY/UNDERTAKING IDENTIFICATION:

U.S. SUPPLIER/MANUFACTURER'S NAME:	**TEVA**
ADDRESS:	1090 Horsham Road North Wales, PA 19454
BUSINESS PHONE:	215-591-3000 [08:00 AM --> 05:00 PM]
EUROPEAN. SUPPLIER/MANUFACTURER'S NAME:	**TEVA/TAPI**
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EMERGENCY PHONE:	United States/Canada/Puerto Rico: 1-800/424-9300 (Chemtrec) [24-hrs] International: 01-703-527-3887 (Chemtrec) [24-hours]
EMAIL:	TevaSDSRequest@tevapharm.com
DATE OF PREPARATION:	November 28, 2012
DATE OF REVISION:	New

ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR. The product is also classified per all applicable EU Directives through EC 1907: 2006, the European Union CLP EC 1272/2008 and the Global Harmonization Standard.

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE

GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008 LABELING AND CLASSIFICATION: According to Article 1, item 5 (a) of CLP Regulation (EC) 1272/2008, medicinal products in the finished state for human use, as defined in 2001/83/EC, are excepted from classification and other criteria of 1272/2008.

EU LABELING/CLASSIFICATION: According to Article 1 of European Union Council Directive 92/32/EEC, medical products in the finished state for human use (as defined by European Union Council Directives 67/548/EEC and 87/21/EEC) are not subject to the regulations and administrative provisions of European Union Council Directive 92/32/EEC.

See Section 16 for full EU classification information of this product.

EMERGENCY OVERVIEW: Product Description: This product is a clear, colorless, odorless, aqueous solution. **Health Hazards:** WARNING! CONTAINS A CYTOTOXIC AGENT. There are scientific studies that suggest that personnel (e.g. nurses, pharmacists, etc.) who prepare and administer parenteral antineoplastics (e.g. in hospitals) may be at some risk due to potential mutagenicity, teratogenicity, and/or carcinogenicity of these materials if workplace exposures are not properly controlled. The actual risk in the workplace is not known. Exposure by all routes must be avoided. This product is toxic by ingestion. This product may be harmful by inhalation and may cause eye and skin irritation. May cause severe skin and respiratory allergic reactions. Exposure may cause depression of respiratory system, adverse gastrointestinal effects, and damage to organs and blood forming system. Severe anaphylactic and anaphylactoid reactions can occur. May cause cancer. Possible mutagenic effects. Reproductive toxin; possible risk or harm to unborn child and impaired fertility. May cause harm to breastfed babies. In therapeutic use, this material has caused bone marrow suppression, leading to bleeding and infection. Additional systemic effects seen in therapeutic use include change in auditory acuity, change in kidney tubules, corrosivity to skin, depressed renal function tests, hallucinations, nausea or vomiting. See Section 11 (Toxicological Information) for information on other potential health hazards. **Flammability Hazards:** This product is not flammable or combustible. When involved in a fire, this material may decompose and produce irritating vapors and toxic compounds (including chlorine, carbon and nitrogen oxides and platinum compounds). **Reactivity Hazards:** This product is not reactive. **Environmental Hazards:** This product may cause harm to animals and aquatic organisms if accidentally released to the environment. **Emergency Recommendations:** Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

3. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	EINECS #	% w/v	EU Classification (67/548/EEC) GHS and EU Classification (1272/2008 EC) Risk Phrases/Hazard Statements
ACTIVE INGREDIENT				
Cisplatin cis-diamminedichloro platinum	15663-27-1	239-733-8	Proprietary	SELF CLASSIFICATION: EU 67/548 Classification: Reproductive Toxicity Cat. 2, Carcinogenicity Cat. 2, Mutagenic Cat. 2, Toxic, Irritant Risk Phrases: R45, R46, R25, R37/38, R41, R42/43, R48/20/22, R61, R62, R64 Symbols: T GHS and EU 1272/2008 Classification: Reproductive Cat. 1A, Germ Cell Mutagenicity Cat. 1B, Carcinogenicity Cat. 1B, Acute Oral Toxicity Cat. 2, Eye Damage/Corrosion Cat. 1, Skin Irritation Cat. 2, Skin Sensitization Cat. 1, Respiratory Sensitization Cat. 1, STOT Cat. 2, Effects on or Via Lactation Hazard Statement Codes: H360Df, H340, H350, H300, H315, H318, H317, H334, H371, H362 Hazard Symbols/Pictograms: GHS05, GHS06, GHS08
EXCIPIENTS				
Sodium Chloride	7647-14-5	231-598-3	Proprietary	EU 67/548 CLASSIFICATION: Not Applicable GHS AND EU 1272/2008 CLASSIFICATION: Not Applicable
Water	7732-18-5	231-791-2	Balance	EU 67/548 Hazard Classification: Not Applicable GHS and EU 1272/2008 HAZARD CLASSIFICATION: Not Applicable

NOTE: This product contains hydrochloric acid and/or sodium hydroxide for pH adjustment. No hazard from these chemicals remains in the final product and so this SDS does not address hazards for these chemicals. See Section 16 for full classification information of this product.

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

DESCRIPTION OF FIRST AID MEASURES: Upon contact of this product with skin, eyes, or mucous membranes, immediately decontaminate by flushing with water for at least 20 minutes! Remove contaminated clothing and shoes. Take a copy of this SDS to health professional with victim. Wash clothing and thoroughly clean shoes before reuse.

SKIN EXPOSURE: If skin contact with this material occurs, flush affected area with water. Minimum flushing is for 20 minutes. The contaminated individual must seek medical attention if any adverse effects occur after flushing.

EYE EXPOSURE: If this material enters the eyes, open contaminated individual's eyes while under gently running water. Use sufficient force to open eyelids. Have contaminated individual "roll" eyes. Minimum flushing is for 20 minutes. Contaminated individual must seek medical attention if adverse effect occurs or continues after flushing.

INHALATION: If dusts of this material are inhaled, remove victim to fresh air. The contaminated individual must seek medical attention if any adverse effects occur.

INGESTION: If this material is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, seek medical attention. Victim should drink up to three glasses of water. Do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If victim is convulsing, maintain an open airway and obtain immediate medical attention.

INJECTION: If this product is accidentally injected, flush injection site with water. Seek medical attention. Refer to Section 11.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: In therapeutic use, pre-existing gastrointestinal, liver, kidney, lung, bone marrow, hearing, cardiovascular, or nervous system ailments, immune system disorders, blood disorders, hepatobiliary disorders, skin and subcutaneous tissue disorders, lymphatic system disorders and allergy to platinum compounds or pregnancy may be aggravated by exposure to this compound. Persons in the workplace with these conditions may also have aggravation of symptoms.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT IF NEEDED: Treat symptoms and eliminate exposure. No antidotes have been established for Cisplatin overdosage. Hemodialysis is not useful in eliminating platinum from the body, but plasmapheresis lowers the plasma platinum concentration. Management is based on supportive and symptomatic treatments. In event of allergic reaction, epinephrine, corticosteroids, and antihistamines have been employed to alleviate symptoms.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %): Not applicable.

FIRE EXTINGUISHING MEDIA: Unless incompatibilities exist for surrounding materials, carbon dioxide, water spray, 'ABC' type chemical extinguishers, foam, dry chemical and halon extinguishers can be used to fight fires involving this product.

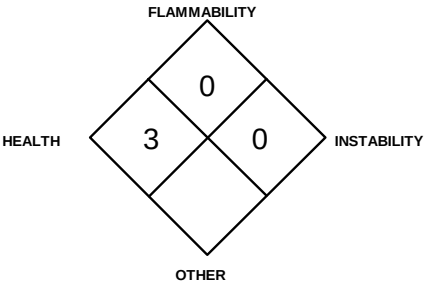
UNSUITABLE FIRE EXTINGUISHING MEDIA: None known.

SPECIAL HAZARDS ARISING FROM THE SUBSTANCE: This solution is not flammable or combustible. When involved in a fire, this material may decompose and produce irritating vapors and toxic compounds (including chlorine, nitrogen oxides and platinum compounds).

Explosion Sensitivity to Mechanical Impact: Not applicable.

Explosion Sensitivity to Static Discharge: Not applicable.

NFPA RATING



Hazard Scale: **0** = Minimal **1** = Slight **2** = Moderate **3** = Serious **4** = Severe

5. FIRE-FIGHTING MEASURES (Continued)

SPECIAL PROTECTIVE ACTIONS FOR FIRE-FIGHTERS: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. All personal protective gear and contaminated fire-response equipment should be decontaminated with soapy water and thoroughly rinsed before being returned to service. Move fire-exposed containers if it can be done without risk to firefighters. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: Spill kits, clearly labeled, should be kept in or near preparation and administrative areas. It is suggested that kits include a respirator, chemical splash goggles, two pairs of gloves, two sheets (12" x 12") of absorbent material, 250-mL and 1-liter spill control pillows and a small scoop to collect glass fragments (if applicable). Absorbents should be able to be incinerated. Finally, the kit should contain two large waste-disposal bags. Avoid generating aerosols from this product.

PROTECTIVE EQUIPMENT:

Small Spills/Spills in Hoods: Personnel wearing nitrile or other appropriate gloves, labcoat or other protective clothing and eye protection should immediately clean spills of less than 5 mL.

Large Spills: Use proper protective equipment, including double nitrile or appropriate gloves, protective clothing (i.e., Tyvek coveralls), and full-face respirator equipped with a High Efficiency Particulate (HEPA) filter. Self-Contained Breathing Apparatus (SCBA) can be used instead of an air-purifying respirator.

METHODS FOR CLEAN-UP AND CONTAINMENT:

Cleanup of Small Spills: The spilled product should be gently covered with absorbent pads. Clean spill with pad and dispose of properly. Decontaminate the spill area (three times) using a bleach and detergent solution and then rinse with clean water.

Spills in Hoods: Decontamination of all interior hood surfaces may be required after the above procedures have been followed. If the HEPA filter of a hood is contaminated, label the unit "Do not use-contaminated" and have trained personnel wearing appropriate protective equipment change and dispose of the filter properly as soon as possible.

Large Spills: Restrict access to the spill areas. For spills of amounts larger than 5 mL, limit spread by gently covering with absorbent sheets, or spill-control pads or pillows. Be sure not to generate aerosols. The dispersion of aerosols into surrounding air and the possibility of inhalation is a serious matter and should be treated as such. Do not apply chemical in-activators as they may produce hazardous by-products. Thoroughly clean all contaminated surfaces three times using a bleach and detergent solution and then rinse with clean water.

All Spills: Use procedures described above and then place all spill residues in an appropriate, labeled container and seal. All contaminated material should be labeled as cytotoxic waste. Move to a secure area. Dispose of in accordance with Federal, State, and local hazardous waste disposal regulations (see Section 13, Disposal Considerations). For spills on water, contain, minimize dispersion and collect. Dispose of recovered material and report spill per regulatory requirements.

ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewer or confined spaces, waterways, soil or public waters. Do not flush to sewer. For spills on water, contain, minimize dispersion and collect.

REFERENCE TO OTHER SECTIONS: Review Sections 2, 8, 11, and 12 before proceeding with cleanup. See Section 13, Disposal Considerations for more information.

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

NOTE: Consistent with the OSHA Bloodborne Pathogen regulation (29 CFR 1910.1030), observe Universal Precautions while using this product. Place used or product-contaminated hypodermic needles and syringes in a rigid "Sharps" container. Do not recap or clip used or product-contaminated hypodermic needles.

PRECAUTIONS FOR SAFE HANDLING: THIS PRODUCT CONTAINS A CYTOTOXIC AGENT. ALL WORK PRACTICES MUST BE DESIGNED TO REDUCE HUMAN EXPOSURE TO THE LOWEST LEVEL. All employees who handle this product should be thoroughly trained to handle it safely. Special attention must be paid in avoiding releasing airborne particles of this product in areas in which this compound is handled or used. As with all chemicals, avoid getting this material ON YOU or IN YOU. Do not eat or drink while handling this material. After handling this material, wash face and hands thoroughly prior to eating, drinking, smoking or applying cosmetics. Ensure this material is used with adequate ventilation. Appropriate personal protective equipment must be worn (see Section 8, Exposure Controls - Personal Protection). Areas in which this product is used should be wiped down, so that this product does not accumulate. Particular care in working with this product must be practiced in pharmacies and other preparation areas, during manufacture of this product, and during patient administration. Operations of high risk associated with the use of this product include:

- Withdrawal of needles from drug vials;
- Drug transfers using syringes and needles or filter straws;
- Opening ampoules; and
- Expulsion of air from drug-filled syringes.

DO NOT CLIP OR CRUSH NEEDLE WITH WHICH THIS PRODUCT WAS IN CONTACT. Use of this product should meet the following provisions:

- Work should be performed in a designated area for working with hazardous drugs;
- Containment devices, such as a Biological Safety Cabinet, should be used; contaminated waste must be properly handled; and
- Work areas must be regularly decontaminated.

7. HANDLING and STORAGE (Continued)

CONDITIONS FOR SAFE STORAGE: Containers of this material must be properly labeled. Product should be stored in cabinet for cytotoxic materials, away from direct sunlight and sources of intense heat. Recommended Storage Temperature: 20-25°C (68-77°F). Store away from incompatible materials (see Section 10, Stability and Reactivity). Material should be stored in secondary containers. Keep containers tightly closed when not in use. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Empty containers may contain residual material; therefore, empty containers should be handled with care and disposed of properly.

SPECIFIC END USE(S): This product is human pharmaceutical.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: When cleaning non-disposable equipment, wear nitrile or other appropriate gloves (double gloving is recommended), goggles, and lab coat. Prevent dispersion of particulates by wetting or dampening surfaces prior to clean up of equipment. If applicable, wash equipment using a bleach and detergent solution and then rinse with clean water.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/CONTROL PARAMETERS:

VENTILATION AND ENGINEERING CONTROLS: General: Use with adequate ventilation. Follow standard operating procedures and requirements for handling this product. Ensure eyewash stations are available and accessible in areas where this product is used. Wear appropriate personal protect equipment consistent with the recommendations of this SDS. Prevent accumulation of product on work surfaces by routinely cleaning areas appropriately.

WORKPLACE EXPOSURE LIMITS/CONTROL PARAMETERS:

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLVs		OSHA-PELs		NIOSH-RELs		NIOSH	OTHER
		TWA mg/m^3	STEL mg/m^3	TWA mg/m^3	STEL mg/m^3	TWA mg/m^3	STEL mg/m^3	IDLH mg/m^3	mg/m^3
Cisplatin cis-diamminedichloroplatinum The limits given are for platinum, soluble salts, as Pt	15663-27-1	THIS IS A CYTOTOXIC AGENT. ALL WORK PRACTICES MUST BE DESIGNED TO REDUCE HUMAN EXPOSURE TO THE LOWEST LEVEL.							**Teva OEL Range µg/m³ ≥ 0.1 - <1** (established 05Mar2012)
		0.002	NE	0.002	NE	0.002	NE	NE	DFG MAKs: Chloroplatinates: Danger of Sensitization of the Skin and Airways PEAK = 0.002(ceiling)
Sodium Chloride	7647-14-5	NE	NE	NE	NE	NE	NE	NE	NE

NE = Not Established See Section 16 for Definitions of Other Terms Used

INTERNATIONAL OCCUPATIONAL EXPOSURE LIMITS: Currently, no other exposure limits are in force for components of this product.

PROTECTIVE EQUIPMENT: *The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132, including* U.S. Federal OSHA Respiratory Protection (29 CFR 1910.134), OSHA Eye Protection 29 CFR 1910.133, OSHA Hand Protection 29 CFR 1910.138, OSHA Foot Protection 29 CFR 1910.136 and OSHA Body Protection 29 CFR1910.132)*, equivalent standards of Canada (including CSA Respiratory Standard Z94.4-02,* Z94.3-M1982, *Industrial Eye and Face Protectors and* CSA Standard Z195-02, *Protective Footwear), or standards of EU member states (including EN 529:2005 for respiratory PPE, CEN/TR 15419:2006 for hand protection, and CR 13464:1999 for face/eye protection). Please reference applicable regulations and standards for relevant details.*

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed above. For materials without listed exposure limits, minimize respiratory exposure. If necessary, use only respiratory protection authorized under appropriate regulations. Oxygen levels below 19.5% are considered IDLH by U.S. OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under U.S. OSHA's Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Wear splash goggles or safety glasses as appropriate for the task. If necessary, refer to appropriate regulations.

HAND PROTECTION: Wash hands and wrists before putting on and after removing gloves. During manufacture or other similar operations, wear the appropriate hand protection for the process. Use double gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this SDS. Because all gloves are to some extent permeable and their permeability increases with time, they should be changed regularly (hourly is preferable) or immediately if torn or punctured. If necessary refer to appropriate regulations.

SKIN PROTECTION: Use appropriate protective clothing for the task (e.g., lab coat, etc.). If necessary, refer to the U.S. OSHA Technical Manual (Section VII: Personal Protective Equipment) or other appropriate regulations.

9. PHYSICAL and CHEMICAL PROPERTIES

The following information is for the drug product.

PHYSICAL FORM: Liquid.

COLOR: Clear.

ODOR: Practically odorless.

ODOR THRESHOLD: Not applicable.

MOLECULAR WEIGHT: Mixture.

MOLECULAR FORMULA: Mixture.

pH: Adjusted to 3.2 to 4.4

HOW TO DETECT THIS SUBSTANCE (identification/warning properties): There are no distinguishing characteristics of this product in event of accidental release.

9. PHYSICAL and CHEMICAL PROPERTIES (Continued)

The following information is for the active ingredient.

FORM: Crystalline powder or crystals.
COLOR: Deep yellow to orange.
MOLECULAR FORMULA: $H_6Cl_2N_2Pt$
MOLECULAR WEIGHT: 301.1
ODOR: Odorless
ODOR THRESHOLD: Not applicable.
VAPOR PRESSURE @ 25°C: Not available.
pH: 1% solution is 4.5-6.0
FLASH POINT: Not available.
AUTOIGNITION TEMPERATURE: Not available.
MELTING/FREEZING POINT: 207°C (404.6°C)
BOILING POINT @ 760 mmHg: Not available.
SOLUBILITY IN WATER: Soluble in water or saline at 1 mg/mL.
OTHER SOLUBILITIES: Soluble in sodium chloride solution, dimethylformamide. Insoluble in most common solvents.
COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Log P = -2.19

10. STABILITY and REACTIVITY

CHEMICAL STABILITY: Normally stable. Contact with aluminum can cause oxidization and discoloration.
DECOMPOSITION PRODUCTS: *Combustion:* Products of thermal decomposition may include chlorine, nitrogen oxides and platinum compounds. *Hydrolysis:* None known.
MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Platinum therapeutic agents are reported to be incompatible with oxidizing agents of aluminum, sodium bicarbonate, sodium bisulfate, and sodium metabisulfite. Avoid contact with chloride salts and materials that are incompatible with water.
POSSIBILITY OF HAZARDOUS REACTION/POLYMERIZATION: None known.
CONDITIONS TO AVOID: Exposure to or contact with extreme temperatures, incompatible chemicals.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

SYMPTOMS OF EXPOSURE BY ROUTE OF EXPOSURE: This material is a anti-neoplastic agent which is a drug intended for administration under the supervision of physicians experienced in cancer chemotherapy. The main expected routes of occupational exposure to this compound are via inhalation of aerosols and skin contact. The anticipated symptoms of exposure, by route of exposure are as follows:

INHALATION: Inhalation of mists or sprays of this material may irritate the mucous membranes and upper respiratory tract. Symptoms of such exposure may include coughing, sneezing, and congestion. May cause allergic reaction.

CONTACT WITH SKIN or EYES: Skin contact may be highly irritating. Contact with the skin can cause adverse effects as described under 'Health Effects from Therapeutic Use' may occur from skin absorption. Aerosols of soluble platinum salts cause a burning sensation in the eyes, lacrymation, and conjunctival hyperemia, sometimes associated with photophobia, which suggests that the corneal epithelium may be involved. Prolonged eye contact may cause corrosive effect. May cause allergic reaction.

SKIN ABSORPTION: No data is available on potential absorption of this product through intact skin.

INGESTION: Ingestion of this compound is not anticipated to be a significant route of occupational exposure. Ingestion of this compound (i.e., through poor hygiene practices) may be harmful and cause adverse effects as described under 'Other Potential Health Effects'.

INJECTION: Accidental injection of this product, via laceration or puncture by a contaminated object may cause pain and irritation in addition to the wound. Other effects described under 'Other Potential Health Effects'.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD	(BLUE)	3*
FLAMMABILITY HAZARD	(RED)	0
PHYSICAL HAZARD	(YELLOW)	0

PROTECTIVE EQUIPMENT

EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8

For Routine Industrial Use and Handling Applications

Hazard Scale: **0** = Minimal **1** = Slight **2** = Moderate
3 = Serious **4** = Severe * = Chronic hazard

OTHER HEALTH EFFECTS FROM THERAPEUTIC USE: In therapeutic use, the most common signs of acute toxicity are nausea and vomiting. Delayed toxicity can include bone marrow depression, peripheral neuropathy (uncommon), hearing loss, transient cortical blindness and hemolytic anemia. The following adverse effects, described by body system may occur.

- ***Allergic Reactions:*** Anaphylactic-like reactions, including facial edema, wheezing, tachycardia, and hypotension within a few minutes of drug administration can occur in persons sensitive to this compound.
- ***Ears:*** Ototoxicity (hearing loss): Irreversible hearing loss may occur with Cisplatin. Tinnitus, which occurs early, may be followed by high-frequency hearing loss.
- ***Gastrointestinal:*** Marked nausea (may be persistent and/or delayed), diarrhea, vomiting and anorexia may persist for up to 1 week after treatment.
- ***Hematologic:*** Bone marrow suppression, anemia (including Coomb's positive hemolytic anemia), leukopenia and thrombocytopenia. Fever and infection have also been reported in patients with neutropenia. Potential fatalities due to infection (have been reported.
- ***Hepatotoxicity:*** Transient elevations of liver enzymes, especially SGOT, as well as bilirubin, have been reported to be associated with Cisplatin administration at the recommended doses.

OTHER HEALTH EFFECTS FROM THERAPEUTIC USE:

- ***Musculoskeletal System:*** Muscle cramps, defined as localized, painful, involuntary skeletal muscle contractions.
- ***Neurotoxicity:*** Peripheral neuropathies, loss of taste, seizures, Lhermitte's sign, dorsal column myelopathy, and autonomic neuropathy.
- ***Ocular Toxicity:*** Optic neuritis, papilledema, blurred vision and altered color perception, and cerebral blindness.
- ***Renal System:*** Dose-related and cumulative renal insufficiency, including acute renal failure, is the major dose-limiting toxicity of Cisplatin. Impairment of renal function has been associated with renal tubular damage.
- ***Serum Electrolyte Disturbances:*** Hypomagnesemia, hypocalcemia, hyponatremia, hypokalemia, anti-diuretic hormone syndrome and hypophosphatemia.
- ***Urinary System:*** Elevation of uric acid.
- ***Other Events:*** Cardiac abnormalities, hiccups, elevated serum amylase, rash, alopecia, malaise, asthenia, and dehydration have been reported. Local soft tissue toxicity has been reported following extravasation of Cisplatin. Infusion of solutions with a Cisplatin concentration greater than 0.5 mg/mL may result in tissue cellulitis, fibrosis, necrosis, pain, edema, and erythema.
- ***Overdose:*** Acute overdosage with this drug may result in kidney failure, liver failure, deafness, ocular toxicity (including detachment of the retina), significant myelosuppression, intractable nausea and vomiting and/or neuritis. In addition, death can occur following overdosage.

HEALTH EFFECTS OR RISKS FROM EXPOSURE:

Acute: This product may be harmful by ingestion and inhalation. Eye contact may cause irritation.

Chronic: Dermatitis (inflammation and redness of the skin) may occur after chronic, low-level skin contact. May cause fetal harm. May cause mutagenic or carcinogenic effects. Can cause skin and/or respiratory sensitization and serious allergic reactions. Chronic therapeutic use has caused other adverse effects as described under 'Other Potential Health Effects'.

TARGET ORGANS: Acute: Occupational Exposure and Therapeutic Use: Skin, eyes, respiratory system. Chronic: Occupational Exposure: Skin. Therapeutic Use: See information under 'Other Health Effects'.

TOXICITY DATA: The following toxicity data are currently available for active ingredient of this product. Due to the large amount of data for this compound, only Human data and LD50 Oral Rat and Mouse data are presented in this SDS. Data are available for the excipient ingredient, but are not presented in this SDS. Contact Teva for more information.

CISPLATIN:

TDLo (Intravenous-Human) 1500 µg/kg/6 days-intermittent: Sense Organs and Special Senses (Ear): change in acuity; Kidney/Ureter/Bladder: renal function tests depressed; Blood: changes in bone marrow (not otherwise specified)

TDLo (Intravenous-Human) 500 µg/kg/13 days-intermittent: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis), renal function tests depressed, Blood: other changes

TDLo (Intravenous-Human) 2500 µg/kg: Behavioral: hallucinations, distorted perceptions; Gastrointestinal: nausea or vomiting; Kidney/Ureter/Bladder: renal function tests depressed

TDLo (Intravenous-Human) 72 mg/kg/25 days-intermittent: Gastrointestinal: nausea or vomiting

TDLo (Intravenous-Human) 1.474 mg/kg: Behavioral: anorexia (human); Blood: leukopenia, changes in other cell count (unspecified)

TDLo (Intravenous-Human) 1.72 mg/kg: Gastrointestinal: hypermotility, diarrhea; Blood: thrombocytopenia

TDLo (Intravenous-Human) 1.84 mg/kg: Sense Organs and Special Senses (Ear): tinnitus; Behavioral: somnolence (general depressed activity); Gastrointestinal: nausea or vomiting

TDLo (Intravenous-Human) 1.875 mg/kg: Peripheral Nerve and Sensation: sensory change involving peripheral nerve; Gastrointestinal: nausea or vomiting

TDLo (Intravenous-Human) 2.02 mg/kg: Vascular: thrombosis distant from injection site; Blood: granulocytopenia; Nutritional and Gross Metabolic: body temperature increase

TDLo (Intravenous-Human) 2.57 mg/kg/1 year-intermittent: Blood: leukopenia, thrombocytopenia

TDLo (Intravenous-Human) 7.14 mg/kg/80 days-intermittent: Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Nutritional and Gross Metabolic: changes in potassium; Nutritional and Gross Metabolic: changes in metals, not otherwise specified

TDLo (Intravenous-Human) 7.37 mg/kg/12 weeks-intermittent: Peripheral Nerve and Sensation: paresthesis; Blood: leukopenia, thrombocytopenia

TDLo (Intravenous-Human) 11.057 mg/kg/18 weeks-intermittent: Kidney/Ureter/Bladder: renal function tests depressed

CISPLATIN (continued):

TDLo (Intravenous-Human) 5.53 mg/kg/9 weeks-intermittent: Sense Organs and Special Senses (Olfaction): change in sensation of smell; Sense Organs and Special Senses (Ear): change in acuity

TDLo (Intravenous-Human) 4.44857142857143 mg/kg/6 weeks-intermittent: Kidney/Ureter/Bladder: renal function tests depressed

TDLo (Intravenous-Human) 4.04 mg/kg/22 days-intermittent: Gastrointestinal: nausea or vomiting; Blood: aplastic anemia

TDLo (Intravenous-Human) 12.12 mg/kg/106 days-intermittent: Kidney/Ureter/Bladder: renal function tests depressed; Blood: thrombocytopenia; Nutritional and Gross Metabolic: changes in potassium

TDLo (Intravenous-Man) 2140 µg/kg/5 days-intermittent: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis)

TDLo (Intravenous-Man) 3.1 mg/kg: Sense Organs and Special Senses (Ear): tinnitus

TDLo (Intravenous-Man) 9.29 mg/kg/20 weeks-intermittent: Blood: leukemia; Tumorigenic: active as anti-cancer agent

TDLo (Intravenous-Man) 3.2 mg/kg/5 days-intermittent: Behavioral: somnolence (general depressed activity), changes in psychophysiological tests

TDLo (Intravenous-Man) 6.4 mg/kg/4 weeks-intermittent: Brain and Coverings: changes in circulation (hemorrhage, thrombosis, etc.); Behavioral: changes in psychophysiological tests; Blood: hemorrhage

TDLo (Intravenous-Man) 6.2 mg/kg/39 days-intermittent: Sense Organs and Special Senses (Ear): change in acuity, tinnitus

TDLo (Intraperitoneal-Woman) 2.6 mg/kg/2 hours: Kidney/Ureter/Bladder: renal function tests depressed

TDLo (Intradermal-Human) 40 ng/kg: Skin and Appendages: primary irritation (after topical exposure), corrosive (after topical exposure)

TDLo (Parenteral-Man) 2140 µg/kg/5 days-intermittent: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis)

TDLo (Intraarterial-Human) 4.25 mg/kg: Vascular: other changes; Blood: changes in leukocyte (WBC) count; Tumorigenic: active as anti-cancer agent

CISPLATIN (continued):

TDLo (Intraarterial-Human) 3.75 mg/kg: Gastrointestinal: nausea or vomiting; Nutritional and Gross Metabolic: changes in potassium; Tumorigenic: active as anti-cancer agent

TDLo (Intraarterial-Human) 3.75 mg/kg: Gastrointestinal: nausea or vomiting; Liver: other changes; Kidney/Ureter/Bladder: urine volume increased

TDLo (Intraarterial-Human) 3.75 mg/kg: Endocrine: hyperglycemia; Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol), changes in leukocyte (WBC) count

TDLo (Intraarterial-Human) 3.75 mg/kg: Nutritional and Gross Metabolic: changes in potassium; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: other Enzymes; Tumorigenic: active as anti-cancer agent

TDLo (Unreported-Child) 19,200 µg/kg/12 weeks-intermittent: Sense Organs and Special Senses (Ear): change in acuity

LD_{50} (Oral-Rat) 25,800 µg/kg: Behavioral: changes in motor activity (specific assay); Gastrointestinal: hypermotility, diarrhea; Blood: normocytic anemia

LD_{50} (Oral-Rat) 20 mg/kg: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Blood: leukopenia, changes in bone marrow (not otherwise specified)

LD_{50} (Oral-Rat) 25 mg/kg

LD_{50} (Oral-Mouse) 6600 µg/kg

LD_{50} (Oral-Mouse) 32,700 µg/kg: Lungs, Thorax, or Respiration: cyanosis; Gastrointestinal: hypermotility, diarrhea; Kidney/Ureter/Bladder: urine volume increased

DNA Inhibition (Human Cells-Not Otherwise Specified) 10 µmol/L

DNA Inhibition (Human Cells-Not Otherwise Specified) 20 µmol/L

DNA Inhibition (Human Cells-Not Otherwise Specified) 5 µmol/L

DNA Inhibition (Human HeLa cell) 500 nmol/L

DNA Inhibition (Human Lymphocyte) 10 mg/L

DNA Inhibition (Human Ovary) 5 µmol/L

Micronucleus Test (Human Fibroblast) 5 µmol/L

Micronucleus Test (Human Lymphocyte) 8250 nmol/L

Micronucleus Test (Human Lymphocyte) 500 µg/L

Micronucleus Test (Human Lymphocyte) 20 µmol/L/52 hours

Micronucleus Test (Human Lymphocyte) 10 µmol/L/24 hours

11. TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA (continued):

CISPLATIN (continued):
Micronucleus Test (Human Lymphocyte) 2.5 µmol/L/48 hours
Micronucleus Test (Human Cells-Not Otherwise Specified) 316 µmol/L/3 hours
Micronucleus Test (Human Cells-Not Otherwise Specified) 316 µmol/L/3 hours
DNA Damage (Human Lymphocyte) 1 µmol/L/1 hour
DNA Damage (Human Lymphocyte) 100 µmol/L
DNA Damage (Human Lymphocyte) 12 µmol/L
DNA Damage (Human Lymphocyte) 10 µmol/L/12 hours
DNA Damage (Human Lymphocyte) 1.0 mg/L/48 hours
DNA Damage (Human Ovary) 20 µmol/L
DNA Damage (Human Ovary) 40 µmol/L
DNA Damage (Human Ovary) 100 µmol/L/3 hours
DNA Damage (Human HeLa cell) 5 µmol/L
DNA Damage (Human Lung) 10 µmol/L
DNA Damage (Human Fibroblast)15.8 µmol/L/90 minutes
DNA Damage (Human Fibroblast) 10 µmol/L
DNA Damage (Human Fibroblast) 12.5 µmol/L
DNA Damage (Human Mammary Gland) 20 mg/L/2 hours
DNA Damage (Human Embryo) 1 µmol/L/20 hours
DNA Damage (Human Kidney) 40 µmol/L
DNA Damage (Human Mammary Gland) 1.6 mg/L/24 hours
DNA Damage (Human Liver) 0.316 mmol/L/4 hours
DNA Damage (Human Liver) 31.6 µmol/L/48 hours
DNA Damage (Human Liver) 5 µmol/L/24 hours

CISPLATIN (continued):
DNA Damage (Human Cells-Not Otherwise Specified) 100 µmol/L/4 hours
DNA Damage (Human Cells-Not Otherwise Specified) 10 µmol/L
DNA Damage (Human Cells-Not Otherwise Specified) 100 µmol/L/1 hour
DNA Damage (Human Cells-Not Otherwise Specified) 31.6 µmol/L/48 hours
Unscheduled DNA Synthesis (Human Ovary) 10 µmol/L
Unscheduled DNA Synthesis (Human Cells-Not Otherwise Specified) 5 mg/L
Unscheduled DNA Synthesis (Human Fibroblast) 20 µmol/L
Mutation Test Systems-Not Otherwise Specified (Human HeLa cell) 5 µmol/L
Mutation Test Systems-Not Otherwise Specified (Human Cells-Not Otherwise Specified) 5 µmol/L
Mutation Test Systems-Not Otherwise Specified (Human Lymphocyte) 8250 nmol/L
Mutation Test Systems-Not Otherwise Specified (Human Lymphocyte) 10 µmol/L/48 hours
Body Fluid Assay (Human Bacteria-*Salmonella typhimurium*) 24 mg/kg
Body Fluid Assay (Human) 1.29 mg/kg
Cytogenetic Analysis (Human Lymphocyte) 2.5 µmol/L/22 hours
Cytogenetic Analysis (Human Lymphocyte) 1 µmol/L/24 hours

CISPLATIN (continued):
Cytogenetic Analysis (Human Lymphocyte) 0.5 mg/L/24 hours
Cytogenetic Analysis (Human Cells-Not Otherwise Specified) 10 µmol/L
Sister Chromatid Exchange (Human Cells-Not Otherwise Specified) 50 mg/L
Sister Chromatid Exchange (Human Cells-Not Otherwise Specified) 3300 nmol/L
Sister Chromatid Exchange (Human Lymphocyte) 250 ng/L/96 hours
Sister Chromatid Exchange (Human Lymphocyte) 2 µmol/L/52 hours
Sister Chromatid Exchange (Human Lymphocyte) 1 µmol/L/24 hours
DNA Adduct (Human Cells-Not Otherwise Specified) 0.01 mmol/L/1 hour
DNA Adduct (Human Cells-Not Otherwise Specified) 0.04 mmol/L/2 hours
DNA Adduct (Human Cells-Not Otherwise Specified) 3.3 µmol/L/4 hours
DNA Adduct (Human Embryo) 16.5 µmol/L/4 hours
DNA Adduct (Human Embryo) 50 µmol/L/1 hour
DNA Adduct (Human Lung) 16.5 µmol/L/4 hours
DNA Adduct (Human Liver) 12.5 µmol/L/24 hours
DNA Repair (Human Liver) 0.5 µmol/L/12 hours
Specific Locus Test (Human Cells-Not Otherwise Specified) 1 mg/L
Specific Locus Test (Human Cells-Not Otherwise Specified) 5.86 mg/L
Specific Locus Test (Human Cells-Not Otherwise Specified) 18 mg/L/16 hours

CARCINOGENIC POTENTIAL OF COMPONENTS: The carcinogenic effect of Cisplatin was studied in BD IX rats. Cisplatin was administered intraperitoneally (i.p.) to 50 BD IX rats for 3 weeks, 3 X 1 mg/kg body weight per week. Four hundred and fifty-five days after the first application, 33 animals died, 13 of them related to malignancies: 12 leukemias and 1 renal fibrosarcoma. The development of acute leukemia coincident with the use of Cisplatin has been reported. In these reports, Cisplatin was generally given in combination with other leukemogenic agents.

Cisplatin is classified as follows by agencies tracking the carcinogenic potential of chemical compounds as follows.

NTP-R (Reasonably Anticipated to Be a Human Carcinogen) When used in conjunction with Etoposide, Cisplatin is rated IARC-1 (Carcinogenic to Humans).

IRRITANCY OF PRODUCT: This product may irritate the respiratory system, mucous membranes, and eyes. Eye irritation may be more severe.

SENSITIZATION TO THE PRODUCT: Anaphylactic-like reactions, including facial edema, wheezing, tachycardia, and hypotension within a few minutes of drug administration can occur in persons sensitive to this compound.

REPRODUCTIVE TOXICITY INFORMATION: This product is rated Pregnancy Category D (There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks). There are no adequate, well-controlled studies of this compound in pregnant women.

Mutagenicity: Cisplatin is mutagenic in bacteria and produces chromosome aberrations in animal cells in tissue culture.

Embryotoxicity/Teratogenicity: Cisplatin can cause fetal harm when administered to a pregnant woman. In mice, Cisplatin is teratogenic and embryotoxic.

Reproductive Toxicity: Impaired spermatogenesis, azoospermia, and total germinal aplasia have been reported in male patients treated with alkylating agents, especially in combination with other drugs. In some instances spermatogenesis may return in patients in remission, but this may occur only several years after intensive chemotherapy has been discontinued. Patients should be warned of the potential risk to their reproductive capacities. Cisplatin has been reported to be found in human milk.

BIOLOGICAL EXPOSURE INDICES: Currently, there are no Biological Exposure Indices (BEIs) determined for the components of this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY: No information is available on mobility of this product. The following information is available for the active ingredient.

CISPLATIN:
Cisplatin has an aqueous solubility of 2,530 mg/L and the compound is stable towards ionization. The complex should leach through soil unless it is converted into an insoluble simple salt such as platinum hydroxide or platinum monosulfide, or converted into ionic species by biotic and abiotic reactions. The infiltration of the ionic species in soil may be retarded by adsorption process.

PERSISTENCE AND BIODEGRADABILITY: No information on persistence or biodegradability is available for this product. The following information is available for the active ingredient.

CISPLATIN:
If released into the environment, this compound will leach through soil based on its water solubility and the stability of its transformation product, trans-diaminedichloroplatinum. This compound will slowly convert to trans-diaminedichloroplatinum in water. Abiotic or biotic processes can convert the compound into ionic species that will enhance its adsorption capability to soil materials. The trans- form may remain predominantly in the dissolved form unless it is transferred to sediments by precipitation or adsorption resulting from biotic or abiotic processes. This compound was determined to be non-biodegradable using a 21-day OECD screening test.

BIO-ACCUMULATION POTENTIAL: No information available.

12. ECOLOGICAL INFORMATION (Continued)

ECOTOXICITY: This product may be harmful to contaminated plant and animal life, especially in large quantities. All releases to terrestrial, atmospheric and aquatic environments should be avoided. No data are currently available for this product.

RESULTS OF PBT AND vPvB ASSESSMENT: No Data Available. PBT and vPvB assessments are part of the chemical safety report required for some substances in European Union Regulation (EC) 1907/2006, Article 14.

OTHER ADVERSE EFFECTS: The components of this product are not listed as having ozone depletion potential.

ENVIRONMENTAL EXPOSURE CONTROLS: Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT/DISPOSAL METHODS: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. All protective clothing, gloves, and disposable materials used in the preparation or handling of this drug should be disposed of in accordance with established hazardous waste disposal procedures. It is the responsibility of the generator to determine at the time of disposal whether the product meets the criteria of a hazardous waste per regulations of the area in which the waste is generated and/or disposed. Incineration is recommended for the product and disposable equipment. Shipment of wastes must be done with appropriately permitted and registered transporters. Reusable equipment should be cleaned with soap and water and thoroughly rinsed.

DISPOSAL CONTAINERS: Waste materials must be placed in and shipped in appropriate 5-gallon or 55-gallon poly or metal waste pails or drums. Permeable cardboard containers are not appropriate and should not be used. Ensure that any required marking or labeling of the containers be done to all applicable regulations.

PRECAUTIONS TO BE FOLLOWED DURING WASTE HANDLING: Wear proper protective equipment when handling waste materials.

U.S. EPA WASTE NUMBER: Not applicable.

EWC WASTE CODE: Wastes from Human or Animal Health Care or Related Research: 18 01 08: Medicines Other Than Those Mentioned in 18 01 07.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION: This product is NOT classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This material does not meet the criteria of classification of Dangerous Goods, per regulations of Transport Canada.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA): This product does not meet the criteria as Dangerous Goods, per rules of IATA.

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION: This product is NOT classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR): This product does not meet the criteria as Dangerous Goods of the United Nations Economic Commission for Europe.

TRANSPORT IN BULK ACCORDING TO THE IBC CODE: Not applicable.

ENVIRONMENTAL HAZARDS: This product does not meet the criteria of environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID, and ADN) and is not specifically listed in Annex III under MARPOL 73/78.

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: This product is not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this material. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21): ACUTE: Yes; CHRONIC: Yes; FIRE: No; REACTIVE: No; SUDDEN RELEASE: No

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

U.S. TSCA INVENTORY STATUS: This product is regulated under Food and Drug Administration (FDA) standards; this product is not subject to requirements under TSCA.

OTHER U.S. FEDERAL REGULATIONS: This product is regulated under FDA regulations.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is listed on the California Proposition 65 Lists.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDSL STATUS: This product is regulated by the Therapeutic Products Programme (TPP) of Health Canada; it is exempt from the requirements of CEPA.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITY SUBSTANCES LISTS: Components are not on the CEPA substances lists.

15. REGULATORY INFORMATION (Continued)

ADDITIONAL CANADIAN REGULATIONS (continued):

OTHER CANADIAN REGULATIONS: Requirements under the Canadian Heath Canada, Laboratory Biosafety Guidelines may be applicable.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: The WHMIS Requirements of the Hazardous Products Act does not apply in respect of the advertising, sale or importation of any cosmetic, device, drug or food within the meaning of the Food and Drugs Act.

ADDITIONAL EUROPEAN REGULATIONS:

SAFETY, HEALTH, AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE PRODUCT: Formulated, finished medicinal products for human use, are subject to Directive 2001/83/EC and subsequent amendments to the directive.

CHEMICAL SAFETY ASSESSMENT: No Data Available. The chemical safety assessment is required for some substances according to European Union Regulation (EC) 1907/2006, Article 14.

16. OTHER INFORMATION

ANSI LABELING (Z129.1, Provided to Summarize Occupational Hazard Information): **DANGER!** CONTAINS CYTOTOXIC AGENT. ALL EXPOSURE MUST BE MINIMIZED. ACCIDENTAL INJECTION CAN BE FATAL. MAY BE TOXIC IF SWALLOWED. MAY CAUSE RESPIRATORY SYSTEM, EYE, AND SKIN IRRITATION. MAY CAUSE REPRODUCTIVE EFFECTS AND CAN CAUSE HARM DURING PREGNANCY. MAY CAUSE CARCINOGENIC AND MUTAGENIC EFFECT. CAN CAUSE ADVERSE EFFECTS ON DIGESTIVE SYSTEM, BLOOD FORMING SYSTEM, LIVER. MAY CAUSE ALLERGIC REACTION VIA INHALATION, SKIN CONTACT AND INGESTION. Avoid accidental injection. Avoid accidental ingestion. Avoid contact with skin, eyes, and clothing. Keep container closed. Use gloves, safety glasses, and appropriate respiratory and body protection. **FIRST-AID:** If exposed, seek immediate medical attention. If swallowed, do not induce vomiting. If alert, give victim up to three glasses of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush skin with copious amounts of warm water for 20 minutes. Remove contaminated clothing and shoes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **IN CASE OF FIRE:** Use water fog, dry chemical or CO_2, or alcohol foam. **IN CASE OF SPILL:** Refer to Safety Data Sheet for complete spill response procedures. Spill response should be performed by persons properly trained to do so. Decontaminate area with bleach and detergent solution and triple rinse area. Place spill debris in a suitable container. Refer to SDS for additional information.

SPECIAL HANDLING AND DISPOSAL REQUIRED

GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008 LABELING AND CLASSIFICATION: According to Article 1, item 5 (a) of CLP Regulation (EC) 1272/2008, medicinal products in the finished state for human use, as defined in 2001/83/EC, are excepted from classification and other criteria of 1272/2008.

67/548/EEC EU LABELING/CLASSIFICATION: According to Article 1 of European Union Council Directive 92/32/EEC, medical products in the finished state for human use (as defined by European Union Council Directives 67/548/EEC and 87/21/EEC) are not subject to the regulations and administrative provisions of European Union Council Directive 92/32/EEC.

CLASSIFICATION FOR COMPONENTS:

FULL TEXT GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008:

CISPLATIN: This is a self-classification.

Classification: Reproductive Category 1A, Germ Cell Mutagenicity Category 1B, Carcinogenicity Category 1B, Acute Oral Toxicity Category 2, Eye Damage/Corrosion Category 1, Skin Irritation Category 2, Skin Sensitization Category 1, Respiratory Sensitization Category 1, Specific Target Organ Toxicity Category 2, Effects on or Via Lactation

Hazard Statements: H360Df: May damage the unborn child. Suspected of damaging fertility. H340: May cause genetic effects. H350: May cause cancer. H300: Fatal if swallowed. H315: Causes skin irritation. H318: Causes serious eye damage. H317: May cause an allergic skin reaction. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H371: May cause damage to blood forming system and liver. H362: May cause harm to breast-fed children.

ALL OTHER COMPONENTS:

An official classification for these substances has not been published in the CLP 1272: 2008 and is not applicable for self-classification.

FULL TEXT EU 67/548/EEC:

CISPLATIN: This is a self-classification.

Classification: Reproductive Toxicity Category 2, Carcinogenicity Category 2, Mutagenic Category 2, Toxic, Irritant

Risk Phrases: R45: May cause cancer. R46: May cause heritable genetic damage. R25: Toxic if swallowed. R37/38: Irritating to respiratory system and skin. R41: Risk of serious damage to eyes. R42/43: May cause sensitisation by inhalation and skin contact. R48/20/22: Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed. R61: May cause harm to the unborn child. R62: Possible risk of impaired fertility. R64: May cause harm to breast-fed babies.

ALL OTHER COMPONENTS:

An official classification for these substances has not been published in Commission Directives 93/72/EEC, 94/69 EC, 96/54/EC or subsequent directives and is not applicable for self-classification.

REVISION DETAILS: New

REFERENCES AND DATA SOURCES: Contact the supplier for information.

METHODS OF EVALUATING INFORMATION FOR THE PURPOSE OF CLASSIFICATION: Bridging principles were used to classify this product.

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc. • PO Box 1961, Hilo, HI 96721-1961 • (800) 441-3365

DATE OF PRINTING: January 10, 2013

REVISION HISTORY: New

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DEFINITIONS OF TERMS

For information on medical terms used in this SDS consult an on-line database such as Medline Plus: http://www.nlm.nih.gov/medlineplus/druginformation.html.

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

CAS #: This is the Chemical Abstract Service Number that uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

Ceiling Level (C). Skin absorption effects must also be considered.

DFG MAK Germ Cell Mutagen Categories: 1: Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed humans. **2:** Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed mammals. **3A:** Substances which have been shown to induce genetic damage in germ cells of human of animals, or which produce mutagenic effects in somatic cells of mammals *in vivo* and have been shown to reach the germ cells in an active form. **3B:** Substances which are suspected of being germ cell mutagens because of their genotoxic effects in mammalian somatic cell *in vivo*; in exceptional cases, substances for which there are no *in vivo* data, but which are clearly mutagenic *in vitro* and structurally related to known in vivo mutagens. **4:** Not applicable (Category 4 carcinogenic substances are those with non-genotoxic mechanisms of action. By definition, germ cell mutagens are genotoxic. Therefore, a Category 4 for germ cell mutagens cannot apply. At some time in the future, it is conceivable that a Category 4 could be established for genotoxic substances with primary targets other than DNA [e.g. purely aneugenic substances] if research results make this seem sensible.) **5:** Germ cell mutagens, the potency of which is considered to be so low that, provided the MAK value is observed, their contribution to genetic risk for humans is expected not to be significant.

DFG MAK Pregnancy Risk Group Classification: Group A: A risk of damage to the developing embryo or fetus has been unequivocally demonstrated. Exposure of pregnant women can lead to damage of the developing organism, even when MAK and BAT (Biological Tolerance Value for Working Materials) values are observed. **Group B:** Currently available information indicates a risk of damage to the developing embryo or fetus must be considered to be probable. Damage to the developing organism cannot be excluded when pregnant women are exposed, even when MAK and BAT values are observed. **Group C:** There is no reason to fear a risk of damage to the developing embryo or fetus when MAK and BAT values are observed. **Group D:** Classification in one of the groups A-C is not yet possible because, although the data available may indicate a trend, they are not sufficient for final evaluation.

IDLH-Immediately Dangerous to Life and Health: This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

LOQ: Limit of Quantitation.

MAK: Federal Republic of Germany Maximum Concentration Values in the workplace.

NE: Not Established. When no exposure guidelines are established, an entry of NE is made for reference.

NIC: Notice of Intended Change.

NIOSH CEILING: The exposure that shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, the ceiling shall be assumed as a 15-minute TWA exposure (unless otherwise specified) that shall not be exceeded at any time during a workday.

NIOSH RELs: NIOSH's Recommended Exposure Limits.

PEL-Permissible Exposure Limit: OSHA's Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL that was vacated by Court Order.

SKIN: Used when a there is a danger of cutaneous absorption.

STEL-Short Term Exposure Limit: Short Term Exposure Limit, usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

TLV-Threshold Limit Value: An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour.

TWA-Time Weighted Average: Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS:

This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

HEALTH HAZARD: 0 (Minimal Hazard: No significant health risk, irritation of skin or eyes not anticipated. *Skin Irritation*: Essentially non-irritating. PII or Draize = "0". *Eye Irritation*: Essentially non-irritating, or minimal effects which clear in < 24 hours [e.g. mechanical irritation]. Draize = "0". *Oral Toxicity LD_{50} Rat*: < 5000 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: < 2000 mg/kg. *Inhalation Toxicity 4-hrs LC_{50} Rat*: < 20 mg/L.); **1** (Slight Hazard: Minor reversible Injury may occur; slightly or mildly irritating. *Skin Irritation*: Slightly or mildly irritating. *Eye Irritation*: Slightly or mildly irritating. *Oral Toxicity LD_{50} Rat*: > 500-5000 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 1000-2000 mg/kg. *Inhalation Toxicity LC_{50}* 4-hrs *Rat*: > 2-20 mg/L); **2** (Moderate Hazard: Temporary or transitory injury may occur. *Skin Irritation*: Moderately irritating; primary irritant; sensitizer. PII or Draize > 0, < 5. *Eye Irritation*: Moderately to severely irritating and/or corrosive; reversible corneal opacity; corneal involvement or irritation clearing in 8-21 days. Draize > 0, ≤ 25. *Oral Toxicity LD_{50} Rat*: > 50-500 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 200-1000 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 0.5-2 mg/L.); **3** (Serious Hazard: Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. *Skin Irritation*: Severely irritating and/or corrosive; may destroy dermal tissue, cause skin burns, dermal necrosis. PII or Draize > 5-8 with destruction of tissue. *Eye Irritation*: Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. Draize > 80 with effects irreversible in 21 days. *Oral Toxicity LD_{50} Rat*: > 1-50 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 20-200 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 0.05-0.5 mg/L.); **4** (Severe Hazard: Life-threatening; major or permanent damage may result from single or repeated exposure. *Skin Irritation*: Not appropriate. Do not rate as a "4", based on skin irritation alone. *Eye Irritation*: Not appropriate. Do not rate as a "4", based on eye irritation alone. *Oral Toxicity LD_{50} Rat*: ≤ 1 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: ≤ 20 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: ≤ 0.05 mg/L).

FLAMMABILITY HAZARD: 0 (Minimal Hazard-Materials that will not burn in air when exposure to a temperature of 815.5°C [1500°F] for a period of 5 minutes.); **1** (Slight Hazard-Materials that must be pre-heated before ignition can occur.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued): 1 (continued): Material require considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur, Including: Materials that will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3°C [200°F] (e.g. OSHA Class IIIB, or; Most ordinary combustible materials [e.g. wood, paper, etc.]; **2** (Moderate Hazard-Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres in air, Including: Liquids having a flash-point at or above 37.8°C [100°F]; Solid materials in the form of course dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp; Solids and semisolids that readily give off flammable vapors.); **3** (Serious Hazard- Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions, including: Liquids having a flash point below 22.8°C [73°F] and having a boiling point at or above 38°C [100°F] and below 37.8°C [100°F] [e.g. OSHA Class IB and IC]; Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air [e.g., dusts of combustible solids, mists or droplets of flammable liquids]; Materials that burn extremely rapidly, usually by reason of self-contained oxygen [e.g. dry nitrocellulose and many organic peroxides]); **4** (Severe Hazard-Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and which will burn readily, including: Flammable gases; Flammable cryogenic materials; Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C [73°F] and a boiling point below 37.8°C [100°F] [e.g. OSHA Class IA; Material that ignite spontaneously when exposed to air at a temperature of 54.4°C [130°F] or below [e.g. pyrophoric]).

PHYSICAL HAZARD: 0 (*Water Reactivity*: Materials that do not react with water. *Organic Peroxides*: Materials that are normally stable, even under fire conditions and will not react with water. *Explosives*: Substances that are Non-Explosive. Unstable *Compressed Gases*: No Rating. *Pyrophorics*: No Rating. *Oxidizers*: No "0" rating allowed. *Unstable Reactives*: Substances that will not polymerize, decompose, condense or self-react.); **1** (*Water Reactivity*: Materials that change or decompose upon exposure to moisture. *Organic Peroxides*: Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy. *Explosives*: Division 1.5 and 1.6 substances that are very insensitive explosives or that do not have a mass explosion hazard. *Compressed Gases*: Pressure below OSHA definition. *Pyrophorics*: No Rating. *Oxidizers*: Packaging Group III; Solids: any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose mixture and the criteria for Packing Group I and II are not met. *Unstable Reactives*: Substances that may decompose, condense or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosive hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors.); **2** *Water Reactivity*: Materials that may react violently with water. *Organic Peroxides*: Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may also react violently with water. *Explosives*: Division 1.4 – Explosive substances where the explosive effect are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases*: Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packing Group II Solids: any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)/cellulose mixture and the criteria for Packing Group I are not met. *Unstable Reactives*: Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature); **3** (*Water Reactivity*: Materials that may form explosive reactions with water. *Organic Peroxides*: Materials that are capable of detonation or explosive reaction, but require a strong initiating source, or must be heated under confinement before initiation; or materials that react explosively with water. *Explosives*: Division 1.2 – Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. *Compressed Gases*: Pressure ≥ 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packing Group I Solids: any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3.:2 potassium bromate/cellulose mixture. Liquids: Any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)/cellulose mixture. *Unstable Reactives*: Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a moderate potential to cause significant heat generation or explosion.); **4** (*Water Reactivity*: Materials that react explosively with water without requiring heat or confinement. *Organic Peroxides*: Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. *Explosives*: Division 1.1 and 1.2-explosive substances that have a mass explosion hazard or have a projection hazard. A mass explosion is one that affects almost the entire load instantaneously. *Compressed Gases*: No Rating. *Pyrophorics*: Add to the definition of Flammability "4". *Oxidizers*: No "4" rating. *Unstable Reactives*: Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a high potential to cause significant heat generation or explosion.).

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS:

HEALTH HAZARD: **0** Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials. Gases and vapors with an LC_{50} for acute inhalation toxicity greater than 10,000 ppm.

DEFINITIONS OF TERMS (Continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

HEALTH HAZARD (continued): Dusts and mists with an LC_{50} for acute inhalation toxicity greater than 200 mg/L. Materials with an LD_{50} for acute dermal toxicity greater than 2000 mg/kg. Materials with an LD_{50} for acute oral toxicity greater than 2000 mg/kg. Materials essentially non-irritating to the respiratory tract, eyes, and skin. **1** Materials that, under emergency conditions, can cause significant irritation. Gases and vapors with an LC_{50} for acute inhalation toxicity greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists with an LC_{50} for acute inhalation toxicity greater than 10 mg/L but less than or equal to 200 mg/L. Materials with an LD_{50} for acute dermal toxicity greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials that slightly to moderately irritate the respiratory tract, eyes and skin. Materials with an LD_{50} for acute oral toxicity greater than 500 mg/kg but less than or equal to 2000 mg/kg. **2** Materials that, under emergency conditions, can cause temporary incapacitation or residual injury. Gases with an LC_{50} for acute inhalation toxicity greater than 3,000 ppm but less than or equal to 5,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. Dusts and mists with an LC_{50} for acute inhalation toxicity greater than 2 mg/L but less than or equal to 10 mg/L. Materials with an LD_{50} for acute dermal toxicity greater than 200 mg/kg but less than or equal to 1000 mg/kg. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause severe tissue damage, depending on duration of exposure. Materials that are respiratory irritants. Materials that cause severe, but reversible irritation to the eyes or are lachrymators. Materials that are primary skin irritants or sensitizers. Materials whose LD_{50} for acute oral toxicity is greater than 50 mg/kg but less than or equal to 500 mg/kg. Dusts and mists with an LC_{50} for acute inhalation toxicity greater than 10 mg/L but less than or equal to 200 mg/L. Materials with an LD_{50} for acute dermal toxicity greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials that slightly to moderately irritate the respiratory tract, eyes and skin. Materials with an LD_{50} for acute oral toxicity greater than 500 mg/kg but less than or equal to 2000 mg/kg. **3** (materials that, under emergency conditions, can cause serious or permanent injury): Gases and vapors whose LC_{50} for acute inhalation toxicity is greater than 1,000 ppm but less than or equal to 3,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is greater than 0.5 mg/L but less than or equal to 2 mg/L. Materials whose LD_{50} for acute dermal toxicity is greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials whose LD_{50} for acute oral toxicity is greater than 5 mg/kg but less than or equal to 50 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 3000 ppm and that does not meet the criteria for degree of hazard 4. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause frostbite and irreversible tissue damage. Materials that are respiratory irritants. Cryogenic gases that cause frostbite and irreversible tissue damage. Materials that are corrosive to the respiratory tract. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials that are corrosive to the skin. **4** (materials that, under emergency conditions, can be lethal): Gases and vapors whose LC_{50} for acute inhalation toxicity less than or equal to 1,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD_{50} for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD_{50} for acute oral toxicity is less than or equal to 5 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 1000 ppm.

FLAMMABILITY HAZARD: **0** Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand: Materials that will not burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in according with Annex D. **1** Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur: Materials that will burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in accordance with Annex D. Liquids, solids and semisolids having a flash point at or above 93.4°C (200°F) (i.e. Class IIIB liquids). Liquids with a flash point greater than 35°C (95°F) that do not sustain combustion when tested using the *Method of Testing for Sustained Combustibility*, per 49 CFR 173, Appendix H or the UN *Recommendation on the Transport of Dangerous Goods, Model Regulations* (current edition) and the related *Manual of Tests and Criteria* (current edition). Liquids with a flash point greater than 35°C (95°F) in a water-miscible solution or dispersion with a water non-combustible liquid/solid content of more than 85 percent by weight. Liquids that have no fire point when tested by ASTM D 92 Standard Test Method for Flash and Fire Points by Cleveland Open Cup, up to a boiling point of the liquid or up to a temperature at which the sample being tested shows an obvious physical change. Combustible pellets with a representative diameter of greater than 2 mm (10 mesh). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed up flash point of the solvent. Most ordinary combustible materials. **2** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air: Liquids having a flash point at or above 37.8°C (100°F) and below 93.4°C (200°F) (i.e. Class II and Class IIIA liquids.) Solid materials in the form of powders or coarse dusts of representative diameter between 420 microns (40 mesh) and 2 mm (10 mesh) that burn rapidly but that generally do not form explosive mixtures in air. Solid materials in fibrous or shredded form that burn rapidly and create flash fire hazards, such as cotton, sisal and hemp. Solids and semisolids that readily give off flammable vapors. Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **3** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions: Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 37.8°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (73°F) and below 37.8°C (100°F) (i.e. Class IB and IC liquids). Materials that, on account of their physical form or environmental conditions, can form explosive mixtures with air and are readily dispersed in air. Flammable or combustible dusts with a representative diameter less than 420 microns (40 mesh). Materials that burn with extreme rapidity, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued): **4** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily: Flammable gases. Flammable cryogenic materials. Any liquid or gaseous materials that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. Class IA liquids). Materials that ignite when exposed to air, Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

INSTABILITY HAZARD: **0** Materials that in themselves are normally stable, even under fire conditions: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 500°C (932°F) when tested by differential scanning calorimetry. **1** Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 0.01 W/mL and below 10 W/mL. **2** Materials that readily undergo violent chemical change at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 100W/mL. **3** Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 100 W/mL and below 1000 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. **4** Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures.

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the **N**ational **F**ire **P**rotection **A**ssociation (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD_{50}** - Lethal Dose (solids and liquids) which kills 50% of the exposed animals; **LC_{50}** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m^3** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **Other Information: BEI** - ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

REPRODUCTIVE TOXICITY INFORMATION:

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

ECOLOGICAL INFORMATION:

EC is the effect concentration in water. **BCF** = Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. **TL_m** = median threshold limit; Coefficient of Oil/Water Distribution is represented by **log K_{ow}** or **log K_{oc}** and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

U.S. and CANADA:

ACGIH: American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. **O**ccupational **S**afety and **H**ealth **A**dministration (**OSHA**). **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act **(SARA)**; the Canadian Domestic/Non-Domestic Substances List **(DSL/NDSL)**; the U.S. Toxic Substance Control Act **(TSCA)**; Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act **(CERCLA or Superfund)**; and various state regulations. This section also includes information on the precautionary warnings which appear on the material's package label. **OSHA** - U.S. Occupational Safety and Health Administration.

EUROPEAN and INTERNATIONAL:

The DFG: This is the Federal Republic of Germany's Occupation Health Agency, similar to the U.S. OSHA. **EU** is the European Community (formerly known as the **EEC,** European Economic Community). **EINECS:** This is the European Inventory of Now-Existing Chemical Substances. The **ARD** is the European Agreement Concerning the International Carriage of Dangerous Goods by Road and the **RID** are the International Regulations Concerning the Carriage of Dangerous Goods by Rail. **AICS** is the Australian Inventory of Chemical Substances.