

Safety Data Sheet

Date of Issue/Date of Revision

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14-May-2024

Date of Previous Issue

27-June-2018 (Rev01/Ver.0)

SDS – ARK™ Tramadol Assay

Meets the requirements of Regulation (EC) No. 1907/2006 (REACH), Annex II, with changes introduced by Commission Regulation (EU) 2020/878, and Occupational Safety and Health Administration Standard Number 1910.1200 App D.

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY UNDERTAKING**1.1. Product Identifier:** ARK™ Tramadol Assay

Product Number: 5040-0001-00, 5040-0001-01, 5040-0001-02

(a) Other means of identification/synonyms

Antibody/Substrate Reagent 1 4040-0001-01, 4040-0001-04, 4040-0001-07

Enzyme Reagent 2 4040-0002-01, 4040-0002-04, 4040-0002-07

Product Type: Liquid Mixture

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

Invitro Diagnostic Kit Reagents for Professional users only

1.3. Details of the supplier of the safety data sheetCompany ARK Diagnostics, Inc.
48089 Fremont Blvd.
Fremont, CA 94538
USA

Telephone 1-510-270-6270

Fax 1-510-270-6298

Email: customersupport@ark-tdm.com**1.4. Emergency Telephone** 800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week**2. HAZARDS IDENTIFICATION****2.1. Classification of the substance or mixture**

This product is a reagent kit consisting of individual ingredients. The classification of material is not considered hazardous by the EC Regulation 1272/2008 and OSHA Hazard Communication (29CFR

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1910.1200)

2.2. OSHA/HCS Status:Regulation (EC)
1272/2008 [GHS]

ARK™ Tramadol Assay

This material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

GHS Label Elements:

Signal word:	ARK™ Tramadol Assay	No signal word.
Hazard statements:	ARK™ Tramadol Assay	No known significant effects or critical hazards.

Precautionary statements

Prevention:	ARK™ Tramadol Assay	Not applicable.
Response:	ARK™ Tramadol Assay	Not applicable.
Storage:	ARK™ Tramadol Assay	Not applicable.
Disposal:	ARK™ Tramadol Assay	Not applicable.
Supplemental label elements:	ARK™ Tramadol Assay	Not applicable.

Hazards not otherwise classified:	ARK™ Tramadol Assay	Not applicable.
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3. COMPOSITIONS/INFORMATION ON INGREDIENTS**Antibody/Substrate Reagent 1****GHS Classification**

The GHS classification of the mixture has not been determined. Not a hazardous mixture based on bridging principles of GHS classification (2005) of individual components and ingredients and regulation EC No 1272/2008

Components

Chemical name	CAS no. EC No	Concentration (%w/w)	Classification
Nicotinamide adenine dinucleotide,	20111-18-6 683-623-6	>0.1 to <5	Not a hazardous substance

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monosodium dihydrate			
Glucose 6 phosphate disodium hydrate	3671-99-6 222-938-1	>0.1 to <5	Not a hazardous substance
Sodium Chloride	9048-46-8 232-936-2	>0.1 to <5	Not a hazardous substance
Albumins, Blood Serum	9048-46-8 232-936-2	>0.1 to <5	Not a hazardous substance

Any concentration shown as a range is to protect confidentiality or is due to batch variation. Concentrations below 0.1%w/w for other ingredients are excluded per EC 1907/2006 and amended Annex II 2020/878.

Occupational Exposure limits are listed in Section 8

Enzyme Reagent 2

GHS Classification

Not a hazardous substance or mixture

Components

Chemical name	CAS no. EC No	Concentration (%w/w)	Classification
HEPES 4-(2-Hydroxyethyl) piperazine-1- ethanesulfonic acid	7365-45-9 230-907-9	>0.1 to <5	Not a hazardous substance
HEPES sodium salt 4-(2-Hydroxyethyl) piperazine-1- ethanesulfonic acid sodium salt	75277-39-3 278-169-7	>0.1 to <5	Not a hazardous substance
Sodium Chloride	9048-46-8 232-936-2	>0.1 to <5	Not a hazardous substance
Albumins, Blood Serum	9048-046-8	>0.1 to <5	Not a hazardous

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	232-936-2		substance
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Any concentration shown as a range is to protect confidentiality or is due to batch variation. Concentrations below 0.1%w/w for other ingredients are excluded per EC 1907/2006 and amended Annex II 2020/878. Occupational Exposure limits are listed in Section 8.

4. FIRST AID MEASURES**4.1. Description of necessary first aid measures**

Eye contact:	If easy to do, remove contact lenses, if worn. Immediately flush eyes with copious amounts of water for at least 15 minutes. If irritation occurs or persists, notify medical personnel and supervisor.
Skin contact:	Wash exposed area with soap and water and remove contaminated clothing/shoes. If irritation occurs or persists, notify medical personnel and supervisor.
Inhalation:	Immediately move exposed subject to fresh air. If not breathing, give artificial respiration. If breathing is labored, administer oxygen. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. Immediately notify medical personnel and supervisor.
Ingestion:	If swallowed, call a physician immediately. Do not induce vomiting unless directed by medical personnel. Do not give anything to drink unless directed by medical personnel. Never give anything by mouth to an unconscious person. Notify medical personnel and supervisor.
Protection of first aid	The first aid procedure should be established in consultation with medical personnel responsible for industrial medicine. No action shall be taken involving any personal risk or without suitable training. It may be dangerous to perform mouth to mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
Responders:	See Section 8 for Exposure Controls/Personal Protection Recommendations.

4.2. Most important symptoms and effects both acute and delayed : See also sections 2 and 11.

Indication of

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immediate medical attention and special treatment needed if necessary:

Medical conditions aggravated by exposure: None known or reported. Treat symptomatically and supportively.

Potential acute health effects

Eye contact: No known significant effects or critical hazards.
Inhalation: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Skin contact: No known significant effects or critical hazards.
Ingestion: No known significant effects or critical hazards.

Overexposure signs/symptoms

Eye Contact: No specific data.
Inhalation: No specific data.
Skin contact: No specific data.
Ingestion: No specific data.

4.3. Indication of immediate medical attention and special treatment needed if necessary

Notes to physician: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested.
Specific treatments: No specific treatment.
Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. The first aid procedure should be established in consultation with physician responsible for industrial medicine

5. FIREFIGHTING MEASURES**5.1. Extinguishing media**

Suitable extinguishing media: In case of fire, use water spray (fog), foam, carbon dioxide or dry chemical as appropriate for surrounding

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fire and materials.

Unsuitable extinguishing media:

None known

5.2. Special hazards arising from the substance or mixture

Hazards from the substance or mixture

In a fire or if heated a pressure increase could occur resulting in the container to burst

Hazardous thermal decomposition products:

No specific data.

5.3. Advice for firefighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece

6. ACCIDENTAL RELEASE MEASURES**6.1. Personal precautions, protective equipment and emergency procedures**

For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders:

If specialized clothing is required to deal with the spillage, take note of any in Section 8 on suitable and unsuitable materials. See also the information in “For non-emergency personnel”.

6.2. Environmental precautions:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

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6.3. Methods and materials for containment and cleanup

Small spill:	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Large spill:	Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

6.4. Reference to other section(s)

See section 1 for emergency contact information

See Section 8 for information on appropriate personal protective equipment.

See Section 13 for additional waste treatment information and disposal

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Protective measures: Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2. Conditions for safe storage including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers

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that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

7.3. Specific End Uses Laboratory Reagents for Clinical Chemistry Analyzers

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**8.1. Control Parameters**

Antibody substrate Reagent 1

Contains no substances with occupational exposure limit values.

Enzyme Reagent 2

Contains no substances with occupational exposure limit values.

8.2. Exposure Controls

Appropriate engineering
Controls

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

The selected protective equipment have to satisfy the specifications of Regulations EU 2016/425 and the standard EN 374 derived from it.

Hand

Wear appropriate protective gloves to prevent skin contact.
Replace torn or punctured gloves promptly. Please observe the instructions regarding the permeability and breakthrough time provided by the supplier of gloves.

Eye

Wear Safety Glasses complying with approved standards commensurate with risk assessment indicating possibility of liquid splashes.

Skin and Body

Appropriate clothing preferably a lab coat as protective suit. Personal protective equipment for the body should be selected based on the task being performed and the risks involved in handling the product. Appropriate footwear and any additional skin protection should be selected during the performance of the tasks.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice.
Wash hands, forearms and face thoroughly after handling chemical

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Respiratory Protection	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Ensure proper training and fitting before use. No personal respiratory protective equipment is normally required during the handling of this product.
Environmental exposure controls:	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties**

Antibody/Substrate Reagent R1

Appearance:	Clear Liquid	
Color	Colorless	
Odor	Odorless	
Odor threshold	Not relevant due to nature of product information identified	
pH	5.0 to 8.0	
Melting point/freezing point	Not relevant due to nature of product	Initial boiling point and
boiling range	Not relevant due to nature of product	Flash point
Does not Flash		
Evaporation rate	No data available	
Flammability (liquids)	Does not sustain Combustion	
Upper/lower flammability or explosive limits	No information identified	
Vapor pressure	No information identified	

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Vapor density	No information identified
Relative density	No information identified
Water solubility	Miscible in water
Solvent solubility	No information identified
Partition Coefficient (n-octanol/water)	No information identified
Auto-Ignition temperature	No information identified
Decomposition temperature	No information identified
Viscosity	No data available
Explosive properties	Not Explosive
Oxidizing properties	The substance or mixture is not classified as oxidizing

Enzyme Reagent R2

Appearance:	Clear Liquid
Color	Colorless
Odor	Odorless
Odor threshold	Not relevant due to nature of product information identified
pH	7.0 to 8.0
Melting point/freezing point	Not relevant due to nature of product
Initial boiling point and boiling range	Not relevant due to nature of product
Flash point	Does not Flash
Evaporation rate	No data available
Flammability (liquids)	Does not sustain Combustion
Upper/lower flammability or explosive limits	No information identified
Vapor pressure	No information identified

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Vapor density	No information identified
Relative density	No information identified
Water solubility	Miscible in water
Solvent solubility	No information identified
Partition Coefficient (n-octanol/water)	No information identified
Auto-Ignition temperature	No information identified
Decomposition temperature	No information identified
Viscosity	No data available
Explosive properties	Not Explosive
Oxidizing properties	The substance or mixture is not classified as oxidizing

9.2. Other information

Molecular weight	Not Applicable, Homogeneous Mixture
Molecular formula	Not Applicable Homogeneous Mixture
Particle Characteristics	Particle size not applicable
Burning Time	Not relevant due to nature of product
Burning Rate	Not relevant due to nature of product
Heat of reaction	Not relevant due to nature of product
Heat of combustion	Not relevant due to nature of product
Flow time (ISO 2431)	Not relevant due to nature of product

10. STABILITY AND REACTIVITY

- 10.1. Reactivity** No specific test data related to reactivity available for this product or its ingredients. No dangerous reaction known under conditions of normal use.
- 10.2. Chemical Stability** The product is stable when stored as recommended.
- 10.3 Possibility of hazardous reactions** Not expected to occur

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10.4 Conditions to avoid No thermal hazard.

Avoid temperatures $\geq 32^{\circ}\text{C}$ to preserve biochemical integrity.

10.5 Incompatible materials: No information identified.

10.6 Hazardous decomposition products No information identified.

11. TOXICOLOGICAL INFORMATION**11.1. Information on hazard classes**

Acute Toxicity Not classified based on available information

Irritation/Skin Corrosion Not classified based on available information

Serious Eye damage/Injury Not classified based on available information

Sensitization Not classified based on available information

Mutagenicity Not classified based on available information

Carcinogenicity Not classified based on available information

IARC No ingredient of this product present at levels greater than or equal to 0.1% w/w is identified as probable, possible or confirmed human carcinogen

OSHA No component of this product present at levels greater than or equal to 1% w/w is on OSHA's list of regulated carcinogens

NTP No ingredient of this product present at levels greater than or equal to 0.1% w/w is identified as a known or potential carcinogen.

Conclusion Summary:

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Reproductive Toxicity Not available

Teratogenicity Not available

Conclusion Summary:

Specific target organ toxicity (STOT) (single exposure) Not available

Specific target organ toxicity (multiple exposure) Not available

Aspiration hazard Not available.

Potential acute health effects:

Eye contact No known significant effects or critical hazards.

Inhalation No known significant effects or critical hazards.

Skin contact No known significant effects or critical hazards.

Ingestion No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact No known significant effects or critical hazards.

Inhalation No known significant effects or critical hazards.

Skin contact No known significant effects or critical hazards.

Ingestion No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure**Short term exposure**

Potential immediate effects Not available

Potential delayed effects Not available

Long term exposure

Potential immediate effects Not available

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Potential delayed effects Not available

Potential chronic health effects Not available

Conclusion/Summary

General No known significant effects or critical hazards

Carcinogenicity No known significant effects or critical hazards

Mutagenicity No known significant effects or critical hazards

Teratogenicity No known significant effects or critical hazards

Developmental effects No known significant effects or critical hazards

Fertility effects No known significant effects or critical hazards

Numerical measures of toxicity

Acute toxicity measurement Not available.

11.2. Information on other hazards

Endocrine disrupting properties Not available

To the best of our knowledge, the chemical, physical and toxicological properties of the mixtures have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION**12.1. Toxicity** No data available for R1 and R2 mixture**HEPES**

Toxicity to daphnia and other aquatic invertebrates 48h Static test EC50- Daphnia magna (water flea) >100mg/L (OECD Test Guideline 202)

Toxicity to algae Static test NOEC – Pseudokirchneriella subcapitata (green algae) > 100mg/L 72h (OECD Test Guideline 201)

Remarks – refers to pure substance (HEPES) not mixture

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- 12.2. Persistence and degradability** Biodegradability Aerobic exposure 28d Results 0% Not readily biodegradable (OECD Test Guideline 301D)
Remarks: Refers to pure substance data not available for mixture.
- 12.3. Bio accumulative potential** Data not available
- 12.4. Mobility in soil**
Soil/water partition coefficient (K_{oc})
- 12.5. Results of PBT a vPvB assessment** PBT/vPvB assessment not available
- 12.6. Endocrine disrupting properties** No data available
- 12.7. Other adverse effects** No known significant effects or critical hazards.

13. DISPOSAL CONSIDERATIONS

Disposal methods Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residue. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14. TRANSPORT INFORMATION

Transport Based on available data, this product/mixture is not regulated as a hazardous material/dangerous good under EU ADR/RID US DOT, Canada TDG, IATA or IMDG.

- 14.1. UN Number** None assigned.
- 14.2. UN Proper Shipping Name** None assigned, not regulated as a dangerous good
- 14.3. Transport hazard classes and packaging group**

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UNRTDG, IATA_DGR, IMDG-Code	None assigned, not regulated as a dangerous good Not regulated as a dangerous good
14.4. Packing Group	No packing group assigned
14.5. Environmental Hazards	Not determined for mixture
14.6. Special precautions for users	Mixture not fully tested – avoid exposure.
14.7. Maritime transport in bulk	Not applicable
14.8. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code	Not applicable
14.9. Domestic regulation 49 CFR	Not assigned, Not regulated as a dangerous good

15. REGULATORY INFORMATION**15.1 Safety, health and environmental regulations/legislation specific for the substance and mixture**

This SDS complies with the requirements under the US, EU and GHS (EU CLP – Regulation EC No 1272/2008) guidelines. Consult your local or regional authorities for more information.

REACH – Candidate List of Substances of very High Concern for Authorization (Article 59) – Not Applicable

REACH – List of Substances subject to Authorization (Annex XIV) - Not Applicable

REACH – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) -Not Applicable

Regulation EC No 1005/2009 on substances that deplete the ozone layer -Not Applicable

Regulation EC No 850/2004 on persistent organic pollutants -Not Applicable

Regulation(EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals -Not Applicable

U.S. Federal regulations TSCA 8(a) CDR Exempt/Partial exemption: Not determined

United States inventory TSCA 8(b) Not determined

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Clean Air Act Section 112: Not listed

Hazardous Air pollutants (HAPs)**Clean Air Act**

Class I and II Substances This product neither contains nor was manufactured with a Class I or Class II ODS as defined by the US Clean Air Act Section 602 (40 CFR 82)

This product does not contain any hazardous air pollutants (HAP) as identified by the US clean Air Act Section 112 (40 CFR 11).

This product does not contain any chemicals listed under the US Clean Air Act Section 112® for Accidental Release Prevention (40 CFR 68)

This product does not contain any chemicals listed under the US Clean Air Act Section 111 SOCMi Intermediate or Final VOC's (40 CFR 60).

Clean Water Act

This product does not contain any Hazardous Substances listed under the US Clean Water Act Section 311

This product does not contain any toxic pollutants listed under US Clean Water Act Section 307

This product does not contain any priority pollutants related to the US Clean Water Act

15.2 Chemical Safety Assessment

A Chemical Safety Assessment is not required for this substance when it is used in the specified application.

DEA List I Chemicals Not listed

Precursor Chemicals Not listed

DEA List II Chemicals

Essential Chemicals Not listed

SARA 302/304

Composition/information on ingredients No products were found.

SARA 304RQ: Not applicable.

SARA 311/312

Classification: Not applicable

Composition/information on ingredients: No products were found.

US State regulations

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Massachusetts	None of the components are listed
Maine	None of the components are listed
New York	None of the components are listed.
New Jersey	None of the components are listed.
Pennsylvania	None of the components are listed.
California	None of the components are listed.

Canada inventory: The substances are listed in the DSL and do not meet the criteria of CEPA

European Inventory: On the C&L inventory of ECHA

International regulations

International lists:	Australia inventory (AIIC):	Not determined
	Brazil:	Not determined
	China inventory (IECSC):	Not determined
	Japan inventory:	Not determined
	Korea inventory:	Not determined
	Malaysia inventory (EHS Register):	Not determined
	New Zealand Inventory of Chemicals (NZIoC):	Not determined
	Philippines inventory (PICCS):	Not determined
	Taiwan inventory (CSNN):	Not determined

16. OTHER INFORMATION

Revision #, Date of Effectivity: Refer to the Header of this document (The Effective Date is the same as the Revision Date.)

Key to Abbreviations:

AIIC = Australian Inventory of Chemicals

ACGIH=American Conference of Governmental Industrial Hygienists

ADR/RID=European Agreement Concerning the International Carriage of Dangerous goods by Road/Rail;

AIHA=American Industrial Hygiene Association

ATE=Acute Toxicity Estimate

BCF=Bioconcentration Factor

CAS=Chemical Abstract Services

CEPA = Canadian Environmental Agency

CLP=Classification, Labelling and Packaging of Substances and Mixtures

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DNEL=Derived No Effect Level

DSL = Domestic Substances List

EINECS=European Inventory of New and Existing Chemical Substances

EU=European Union

GHS=Global Harmonized System of Classification and Labelling of Chemicals

IARC=International Agency for Research on Cancer

IATA=International Air Transport Association

IBC=Intermediate Bulk Container

IDLH=Immediately Dangerous to Life or Health

IMDG=International Maritime Dangerous Goods

LOEL=Lowest Observed Effect Level

LOAEL=Lowest Observed Adverse Effect Level

LogPow=logarithm of the octanol/water partition coefficient

MARPOL 73/78=International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978. (Marpol=marine pollution)

NIOSH=National Institute of Occupational Health and Safety

NOEL=No Observed Effect Level

NOAEL=No Observed Adverse Effect Level

NTP=National Toxicology Program

OEL=Occupational Exposure Limit

OSHA=Occupational Safety and Health Administration

PNEC=Predicted No Effect Concentration

SARA=Superfund Amendments and Reauthorization Act

STEL=Short Term Exposure Limit

TDG=Transportation of Dangerous Goods

TSCA=Toxic Substances Control Act

TWA=Time Weighted Average

UN= United Nations

WHMIS=Workplace Hazardous Materials Information System

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