SAFETY DATA SHEET

ANGUS CHEMICAL COMPANY

Product name : L-2-Amino-1-Butanol

Issue Date: 11/02/2017
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ANGUS CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	L-2-Amino-1-Butanol

Manufacturer or supplier's details

Company name of supplier	ANGUS CHEMICAL COMPANY
Address	1500 E. LAKE COOK ROAD Buffalo Grove IL 60089-6553
Customer Information Number	+1-847-808-3711
E-mail address	NAR_CC@ANGUS.COM
Emergency telephone number	**800-424-9300**

Recommended use of the chemical and restrictions on use

Recommended use	Chemical intermediate. Neutralizing agent. For industrial use. The ANGUS Chemical Company recommends that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact the Customer Information Group (see Section 1 of this data sheet).

2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	Category 4
Acute toxicity (Oral)	Category 4

Skin corrosion	Category 1
Serious eye damage	Category 1

GHS Label elements, including precautionary statements

Hazard pictograms

Signal word: Danger

Hazard statements:

Combustible liquid.

Harmful if swallowed.

Causes severe skin burns and eye damage.

Precautionary statements:

Prevention:
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
Wash contaminated clothing before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a substance.

Components

Chemical Name	CAS-No.	Concentration (% w/w)
Levo-2-Amino-1-butanol	5856-63-3	>= 95.0 %
2-(Methylamino)-1-butanol	27646-79-3	<= 2.0 %
Water	7732-18-5	<= 1.0 %

4. FIRST AID MEASURES

If inhaled	Move person to fresh air; if effects occur, consult a physician.
In case of skin contact	Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing. Seek medical attention if symptoms occur or irritation persists. Wash clothing before reuse. Suitable emergency safety shower facility should be immediately available.
In case of eye contact	Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.
If swallowed	Seek medical attention immediately. Do not induce vomiting. Give one cup (8 ounces or 240 ml) of water or milk if available and transport to a medical facility. Do not give anything by mouth unless the person is fully conscious.
Most important symptoms and effects, both acute and delayed	Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.
Protection of first-aiders	First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. No specific antidote. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if

lavage is done.
Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist.

5. FIREFIGHTING MEASURES

Suitable extinguishing media	Water fog or fine spray. Carbon dioxide fire extinguishers. Dry chemical fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
Specific hazards during firefighting	Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.
Hazardous combustion products	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon dioxide. Carbon monoxide. Nitrogen oxides.
Further information	Keep people away. Isolate fire and deny unnecessary entry. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Burning liquids may be extinguished by dilution with water.
Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Only trained and properly protected personnel must be involved in clean-up operations. Evacuate area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to section 7, Handling, for additional precautionary

	measures.
Environmental precautions	Spills or discharge to natural waterways is likely to kill aquatic organisms. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.
Methods and materials for containment and cleaning up	Contain spilled material if possible. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Advice on safe handling	Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Keep away from heat, sparks and flame. Do not swallow. Wash thoroughly after handling. Avoid breathing vapor or mist. Use with adequate ventilation. Do not get in eyes, on skin, on clothing. Keep container closed. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Conditions for safe storage	Keep containers tightly closed when not in use to prevent formation of carbonate salts. Store in a dry place. Store in original unopened container. Do not store in: Zinc. Galvanized containers. Aluminum. Copper. Copper alloys. Brass.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures	Local exhaust ventilation may be necessary for some operations. Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be

sufficient for most operations.

Personal protective equipment

Respiratory protection	Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter, type AP2.
Hand protection	Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Chlorinated polyethylene. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. Avoid gloves made of: Polyvinyl alcohol ("PVA"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Eye protection	Use chemical goggles.
Skin and body protection	Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquid.
Color	Colorless to yellow
Odor	Ammoniacal
Odor Threshold	No test data available
pH	> 12 (20 °C) Method: pH Electrode
Melting point/range	4 °C (39 °F)

	Method: Literature
Freezing point	-11 °C (12 °F) Method: Literature
Boiling point/boiling range	178 - 181 °C (352 - 358 °F) Method: Distillation
Flash point	88.9 °C (192.0 °F) Method: Setaflash Closed Cup ASTM D3828 Test Type: closed cup
Evaporation rate	No test data available
Flammability (solid, gas)	No data available.
Upper explosion limit	No test data available
Lower explosion limit	No test data available
Vapor Pressure	< 1.00 mmHg (25 °C) Method: Estimated.
Relative Vapor Density (air = 1)	3 Method: Estimated.
Relative density	0.94 (25 °C) Method: Pyknometer
Water solubility	soluble in water
Partition coefficient: n-octanol/water	log Pow: -0.45 Method: Measured Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Viscosity	
Viscosity, dynamic	30.8 cP (25 °C) Method: Literature (Brookfield Viscosity)
Viscosity, kinematic	no data available
Explosive properties	No data available.
Oxidizing properties	No data available.
Molecular weight	89.14 g/mol Method: Literature Active ingredient

Hygroscopic	yes

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity	No dangerous reaction known under conditions of normal use.
Chemical stability	Hygroscopic Stable under recommended storage conditions. See Storage, Section 7.
Conditions to avoid	Exposure to elevated temperatures can cause product to decompose. Product absorbs carbon dioxide from the air. Reaction with carbon dioxide may form carbonate salts. Avoid moisture.
Incompatible materials	Avoid contact with: Strong acids. Strong oxidizers. Avoid contact with metals such as: Zinc. Galvanized metals. Aluminum. Copper. Copper alloys. Brass. Avoid unintended contact with: Halogenated hydrocarbons.
Hazardous decomposition products	Decomposition products depend upon temperature, air supply and the presence of other materials.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Product:

Acute oral toxicity	Remarks: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract. LD50 (Rat, male and female): 1,800 mg/kg
Acute inhalation toxicity	Remarks: At room temperature, exposure to vapor is minimal

	due to low volatility. Vapor from heated material or mist may cause respiratory irritation. Remarks: The LC50 has not been determined.
Acute dermal toxicity	Remarks: Absorption has not been determined due to corrosivity. Remarks: The dermal LD50 has not been determined.

Skin corrosion/irritation

Product:

Result: Corrosive
Remarks: Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Serious eye damage/eye irritation

Product:

Result: Corrosive
Remarks: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.
Mist may cause eye irritation.

Respiratory or skin sensitization

Product:

Remarks: For similar material(s):
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks: For respiratory sensitization:
No relevant data found.

Carcinogenicity

Product:

No relevant data found.

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Teratogenicity

Product
2-Aminobutanol hydrochloride salt caused maternal toxicity leading to death of embryos when administered orally to pregnant rats in a reproductive screening study. No developmental effects were observed in this study.

Mutagenicity

Product
In vitro genetic toxicity studies were negative.

Reproductive toxicity

Product:
In animal studies, did not interfere with reproduction.

STOT - single exposure

Product:
Assessment: Material is corrosive. Material is not classified as a respiratory irritant; however, upper respiratory tract irritation or corrosivity may be expected.

Repeated dose toxicity

Product:
Remarks: In animals, effects have been reported on the following organs:
Liver.

Aspiration toxicity

Product:

Aspiration Hazard	Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:
Toxicity to fish

Remarks: Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50 (Leuciscus idus (Golden orfe)): 270 mg/l
Exposure time: 96.0 h
Test Type: static test
Method: OECD Test Guideline 203 or Equivalent

LC50 (Oncorhynchus mykiss (rainbow trout)): > 952 mg/l
Exposure time: 96.0 h
Test Type: static test

	Method: OECD Test Guideline 203 or Equivalent
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)): 115.00 mg/l Exposure time: 48.0 h Test Type: static test Method: OECD Test Guideline 202 or Equivalent
Toxicity to algae	ErC50 (Pseudokirchneriella subcapitata (green algae)): > 0.94 mg/l End point: Growth rate inhibition Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 201 or Equivalent
M-Factor (Acute aquatic toxicity)	1
Toxicity to bacteria	EC50 (activated sludge): 329.2 mg/l End point: Respiration rates. Exposure time: 3 h Test Type: static test Method: OECD 209 Test

Persistence and degradability

Product:

Biodegradability	Test Type: aerobic Inoculum: Sewage, domestic, non-adapted Concentration: 11 mg/l Biodegradation: 93 % Exposure time: 28 d Method: OECD Test Guideline 301F or Equivalent Remarks: 10-day Window: Pass
ThOD	2.690 mg/mg Method: Calculated.
Photodegradation	Sensitiser: OH radicals Rate constant: Degradation half life: 0.2 d Method: Estimated.

Bioaccumulative potential

Product:

Partition coefficient: n-octanol/water	log Pow: -0.45 Method: Measured Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Mobility in soil

Product:

Distribution among environmental compartments	Koc: < 1 Method: Estimated.

Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Other adverse effects

Product:

Ozone-Depletion Potential	Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device. Landfill. ANGUS HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL.

14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

UN/ID No.	UN 3267
Proper shipping name	Corrosive liquid, basic, organic, n.o.s. (Levo-2-Amino-1-butanol)
Class	8
Packing group	III
Labels	Corrosive
Packing instruction (cargo aircraft)	856
Packing instruction	852

(passenger aircraft)

IMDG-Code

UN number	UN 3267
Proper shipping name	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Levo-2-Amino-1-butanol)
Class	8
Packing group	III
Labels	8
EmS Code	F-A, S-B
Marine pollutant	no
Remarks	Stowage category A Alkalis

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

49 CFR (DOT) – NON BULK

UN/ID/NA number	3267
Proper shipping name	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.
Class	8
Packing group	III
Labels	Class 8 - Corrosive
ERG Code	153
Marine pollutant	no

49 CFR (DOT) - BULK

UN/ID/NA number	3267
Proper shipping name	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Levo-2-Amino-1-butanol)
Class	8
Packing group	III
Labels	Class 8 - Corrosive
ERG Code	153
Marine pollutant	no

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazards This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Combustible Liquid, Harmful by ingestion., Corrosive to skin

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

SARA 311/312 Hazards	Fire Hazard Acute Health Hazard
SARA 302	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Cas No.	Component
5856-63-3	Levo-2-Amino-1-butanol

New Jersey Right To Know

The following chemicals are listed because of the additional requirements of New Jersey law:

Cas No.	Component
5856-63-3	Levo-2-Amino-1-butanol
27646-79-3	2-(Methylamino)-1-butanol

California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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

United States TSCA Inventory
All Components OK

TSCA list:

No substances are subject to a Significant New Use Rule.

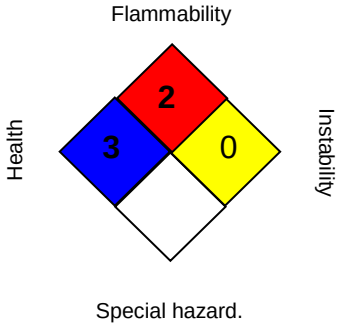
No substances are subject to TSCA 12(b) export notification requirements.

Remarks:
2-(Methylamino)-1-butanol is considered an impurity in this product and is therefore not required to be specifically listed on certain chemical control inventories such as TSCA.

16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	3
FLAMMABILITY	2
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

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US / EN

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may

not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Full text of other abbreviations

(Q)SAR - (Quantitative) Structure Activity Relationship; ASTM - American Society for the Testing of Materials; bw - Body weight; DIN - Standard of the German Institute for Standardisation; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative; DSL - Domestic Substances List (Canada); KECI - Korea Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); AICS - Australian Inventory of Chemical Substances; IECSC - Inventory of Existing Chemical Substances in China; ENCS - Existing and New Chemical Substances (Japan); ISHL - Industrial Safety and Health Law (Japan); PICCS - Philippines Inventory of Chemicals and Chemical Substances; NZIoC - New Zealand Inventory of Chemicals; TCSI - Taiwan Chemical Substance Inventory; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DOT - Department of Transportation; EHS - Extremely Hazardous Substance; HMIS - Hazardous Materials Identification System; MSHA - Mine Safety and Health Administration; NFPA - National Fire Protection Association; RCRA - Resource Conservation and Recovery Act; RQ - Reportable Quantity; SARA - Superfund Amendments and Reauthorization Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice; ERG - Emergency Response Guide; NTP - National Toxicology Program; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods