

**Di-tert-Butyl Polysulfide (TBPS 454)**

Version 1.11

Revision Date 2023-09-19

according to GB/T 16483 and GB/T 17519

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product information**

Product Name : Di-tert-Butyl Polysulfide (TBPS 454)  
Material : 1120381, 1072616, 1086440, 1086442, 1086441, 1024577,  
1024572, 1024785, 1024784, 1024573, 1024574, 1024576,  
1024578, 1024575, 1105172

**Company** : Chevron Phillips Chemical Company LP  
Specialty Chemicals  
10001 Six Pines Drive  
The Woodlands, TX 77380

**Local** : Chevron Phillips Chemicals (Shanghai) Corporation  
Room 1810-1812, Shanghai Mart,  
2299 Yan An Road (W),  
Shanghai, PRC 200336  
Tel: (86-21) 22157200

**Emergency telephone:****Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

**Transport:**

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090

Mexico CHEMTREC 01-800-681-9531 (24 hours)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Argentina: +(54)-1159839431

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)

Belgium: 070 245 245 (24 hours/day, 7 days/week)

Bulgaria: +359 2 9154 233

Croatia: +3851 2348 342 (24 hours/day, 7 days/week)

Cyprus: 1401

Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402

Denmark: Danish Poison Center (Giftlinjen): +45 8212 1212

Estonia: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Finland: 0800 147 111 09 471 977 (24 hours/day)

France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)

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Germany: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Greece: (0030) 2107793777 (24 hours/day, 7 days/week)  
 Hungary: +36-80-201-199 (24 hours/day, 7 days/week)  
 Iceland: 543 2222 (24 hours/day, 7 days/week)  
 Ireland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Italy: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic  
 Poisoning and Drug Information Center, Hipokrāta 2, Riga, Latvia, LV-1038, phone number +371  
 67042473. (24 hours.)  
 Liechtenstein: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Lithuania: +370 (85) 2362052  
 Luxembourg: (+352) 8002 5500 (24 hours/day, 7 days/week)  
 Malta: +356 2395 2000  
 The Netherlands: NVIC: +31 (0)88 755 8000  
 Norway: 22 59 13 00 (24 hours/day, 7 days/week)  
 Poland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Portugal: CIAV phone number: +351 800 250 250  
 Romania: +40213183606  
 Slovakia: +421 2 5477 4166  
 Slovenia: Phone number: 112  
 Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24  
 hours/day, 7 days/week)  
 Sweden: 112 – ask for Poisons Information

Responsible Department : Product Safety and Toxicology Group  
 E-mail address : SDS@CPChem.com  
 Website : www.CPChem.com

**SECTION 2: Hazards identification****Classification of the substance or mixture**

**GHS Classification and Labeling: Follow GB 13690, GB 15258 and GB 30000.2 to GB 30000.29 (GHS 2011)**

**Emergency Overview****Warning**

**Form:** liquid    **Physical state:** liquid    **Color:** Yellow    **Odor:** Mild, sweet

**Hazards** : May cause an allergic skin reaction. Very toxic to aquatic life.  
 Very toxic to aquatic life with long lasting effects.

**Classification**

: Skin sensitization, Category 1  
 Short-term (acute) aquatic hazard, Category 1  
 Long-term (chronic) aquatic hazard, Category 1

**Labeling**

Symbol(s) :



Signal Word :

: Warning

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- Hazard Statements : H317: May cause an allergic skin reaction.  
H410: Very toxic to aquatic life with long lasting effects.
- Precautionary Statements : **Prevention:**  
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.  
P272: Contaminated work clothing should not be allowed out of the workplace.  
P273: Avoid release to the environment.  
P280: Wear protective gloves.  
**Response:**  
P302+P352: IF ON SKIN: Wash with plenty of water.  
P333 + P313: If skin irritation or rash occurs: Get medical advice/ attention.  
P362+P364: Take off contaminated clothing and wash it before reuse.  
P391: Collect spillage.  
**Disposal:**  
P501: Dispose of contents/ container to an approved waste disposal plant.

**SECTION 3: Composition/information on ingredients**

- Synonyms : Tertiary-Butyl Polysulfide  
di-t-Butyl Polysulfide  
tert-Butyl Polysulfide  
Polysulfides, di-tert-Butyl  
CPChem TBPS 454
- Molecular formula : C<sub>8</sub>H<sub>18</sub>S<sub>x</sub> (x = average of 4.0)

Chemical name	CAS-No. / EINECS-No.	Concentration [wt%]
Di-tert-butyl Polysulfide	68937-96-2	90 - 100

**SECTION 4: First aid measures**

- General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance.
- If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
- In case of skin contact : If on skin, rinse well with water.
- In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

**Notes to physician**

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Symptoms : No data available.

Risks : No data available.

Treatment : No data available.

**SECTION 5: Firefighting measures**

Flash point : 103°C (217°F)  
Method: ASTM D 93

Autoignition temperature : 225°C (437°F)  
at 1,005.20 - 1,009.40 hPa  
Information given is based on data obtained from similar substances.

Unsuitable extinguishing media : High volume water jet.

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Fire and explosion protection : Normal measures for preventive fire protection.

Hazardous decomposition products : Carbon oxides. Sulfur oxides.

**SECTION 6: Accidental release measures**

Personal precautions : Use personal protective equipment.

Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

**SECTION 7: Handling and storage****Handling**

Advice on safe handling : Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For

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personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

**Storage**

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Electrical installations / working materials must comply with the technological safety standards.

**SECTION 8: Exposure controls/personal protection**

Not applicable

**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

Respiratory protection : If ventilation or other engineering controls are not adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure, a supplied-air NIOSH approved respirator may be appropriate. If exposure to harmful levels of airborne material may occur, a NIOSH approved respirator that provides protection may be appropriate, such as: A positive pressure, air-supplying respirator may be appropriate if there is potential for uncontrolled release, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.

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- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Remove and wash contaminated clothing before re-use. Skin should be washed after contact. Footwear protecting against chemicals.
- Hygiene measures : Wash hands before breaks and at the end of workday.

**SECTION 9: Physical and chemical properties****Information on basic physical and chemical properties****Appearance**

- Form : liquid  
 Physical state : liquid  
 Color : Yellow  
 Odor : Mild, sweet

**Safety data**

- Flash point : 103°C (217°F)  
 Method: ASTM D 93
- Lower explosion limit : No data available
- Upper explosion limit : No data available
- Oxidizing properties : No
- Autoignition temperature : 225°C (437°F)  
 at 1,005.20 - 1,009.40 hPa  
 Information given is based on data obtained from similar substances.
- Thermal decomposition : 144 °C
- Molecular formula : C<sub>8</sub>H<sub>18</sub>S<sub>x</sub> (x = average of 4.0)
- Molecular weight : 242.5 g/mol
- pH : Not applicable
- Melting point/range : -11°C (12°F)  
 at 103.25 hPa  
 Information given is based on data obtained from similar substances.
- Freezing point : No data available
- Boiling point/boiling range : 172-180°C (342-356°F)  
 (5%-50%), Decomposes
- Vapor pressure : 15.60 Pa  
 at 20°C (68°F)

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Information given is based on data obtained from similar substances.

Density	: 1.0697 G/ML at 20°C (68°F)
Water solubility	: Insoluble
Partition coefficient: n-octanol/water	: log Pow: 5.6 Information given is based on data obtained from similar substances.
Solubility in other solvents	: Soluble in hexane and white spirits.
Viscosity, dynamic	: 10 cP at 20°C (68°F)
Relative vapor density	: 1 (Air = 1.0)
Evaporation rate	: Not applicable
Percent volatile	: > 99 %
Conductivity	: No data available

**SECTION 10: Stability and reactivity**

<b>Reactivity</b>	: Stable under recommended storage conditions.
<b>Chemical stability</b>	: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
<b>Possibility of hazardous reactions</b>	
<b>Hazardous reactions</b>	: Hazardous reactions: Hazardous polymerization does not occur.
<b>Conditions to avoid</b>	: No data available.
<b>Thermal decomposition</b>	: 144 °C
<b>Hazardous decomposition products</b>	: Carbon oxides Sulfur oxides
<b>Other data</b>	: No decomposition if stored and applied as directed.

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**SECTION 11: Toxicological information****Acute oral toxicity**

Di-tert-butyl Polysulfide : LD50: > 2,000 mg/kg  
Species: Rat  
Sex: male and female  
Method: OECD Test Guideline 401  
Information given is based on data obtained from similar substances.

**Acute dermal toxicity**

Di-tert-butyl Polysulfide : LD50: > 2,000 mg/kg  
Sex: male and female  
Method: OECD Test Guideline 402  
Information given is based on data obtained from similar substances.

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**Skin irritation** : May cause skin irritation and/or dermatitis.

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**Eye irritation** : Vapors may cause irritation to the eyes, respiratory system and the skin.

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**Sensitization** : Causes sensitization.

**Repeated dose toxicity**

Di-tert-butyl Polysulfide : Species: Rat  
Application Route: Oral  
NOEL: 100 mg/kg  
Method: OECD Test Guideline 407  
Target Organs: Blood  
Information given is based on data obtained from similar substances.

**Genotoxicity in vitro**

Di-tert-butyl Polysulfide : Test Type: Ames test  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative

Test Type: Mouse lymphoma assay  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: positive

**Genotoxicity in vivo**

Di-tert-butyl Polysulfide : Test Type: In vivo micronucleus test  
Species: Mouse  
Cell type: Bone marrow  
Route of Application: Oral



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Exposure time: 2 d  
 Dose: 2000 mg/kg/d  
 Method: OECD Test Guideline 474  
 Result: negative

**Reproductive toxicity**

Di-tert-butyl Polysulfide : Species: Rat  
 Sex: male and female  
 Application Route: Oral  
 Method: OECD Guideline 421  
 Fertility and developmental toxicity tests did not reveal any effect on reproduction.  
 Information given is based on data obtained from similar substances.

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**Aspiration toxicity** : No aspiration toxicity classification.

**CMR effects**

Di-tert-butyl Polysulfide : Carcinogenicity: Not available  
 Teratogenicity: Animal testing did not show any effects on fetal development.  
 Reproductive toxicity: Animal testing did not show any effects on fertility.

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**Further information** : No data available.

**SECTION 12: Ecological information****Toxicity to fish**

Di-tert-butyl Polysulfide : LC50: > 0.088 mg/l  
 Exposure time: 96 h  
 static test Analytical monitoring: yes  
 Method: OECD Test Guideline 203  
 No toxicity at the limit of solubility.  
 Information given is based on data obtained from similar substances.

**Toxicity to daphnia and other aquatic invertebrates**

Di-tert-butyl Polysulfide : EC50: 0.24 mg/l  
 Exposure time: 48 h  
 Species: Daphnia magna (Water flea)  
 static test Analytical monitoring: yes  
 Method: OECD Test Guideline 202  
 Information given is based on data obtained from similar substances.

**Toxicity to algae**

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Di-tert-butyl Polysulfide : EC50: 0.838 mg/l  
 Exposure time: 96 h  
 Species: Pseudokirchneriella subcapitata (microalgae)  
 static test Analytical monitoring: yes  
 Method: OECD Test Guideline 201  
 Information given is based on data obtained from similar substances.

**M-Factor**

Polysulfides, di-tert-Bu : M-Factor (Acute Aquat. Tox.) 1  
 M-Factor (Chron. Aquat. Tox.) 1

**Toxicity to bacteria**

Di-tert-butyl Polysulfide : NOEC: 45.1 mg/l  
 Respiration inhibition

**Biodegradability**

Di-tert-butyl Polysulfide : aerobic  
 Result: Not readily biodegradable.  
 13 %  
 Testing period: 28 d  
 Method: OECD Test Guideline 301B  
 Information given is based on data obtained from similar substances.

**Bioaccumulation**

Di-tert-butyl Polysulfide : Species: Lepomis macrochirus (Bluegill sunfish)  
 Exposure time: 14 d  
 Temperature: 22 °C  
 Bioconcentration factor (BCF): 188  
 Method: OECD Test Guideline 305  
 Does not bioaccumulate.

**Mobility**

Di-tert-butyl Polysulfide : No data available

**Results of PBT assessment**

Di-tert-butyl Polysulfide : No conclusion can be reached based on available information.  
 Further testing proposed.

Additional ecological information : Very toxic to aquatic life with long lasting effects.

**Ecotoxicology Assessment****Short-term (acute) aquatic hazard**

Di-tert-butyl Polysulfide : Very toxic to aquatic life.

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Long-term (chronic) aquatic hazard  
Di-tert-butyl Polysulfide : Very toxic to aquatic life with long lasting effects.

**SECTION 13: Disposal considerations**

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

**SECTION 14: Transport information**

**The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).**

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III, (103 °C c.c.), MARINE POLLUTANT, (DI-TERT-BUTYL POLYSULFIDE)

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III, (-)

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**

90, UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-

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BUTYL POLYSULFIDE), 9, III

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)**

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DI-TERT-BUTYL POLYSULFIDE), 9, III

**Maritime transport in bulk according to IMO instruments****SECTION 15: Regulatory information****Notification status**

Europe REACH	:	This product is in full compliance according to REACH regulation 1907/2006/EC.
Switzerland CH INV	:	On the inventory, or in compliance with the inventory
United States of America (USA) TSCA	:	On or in compliance with the active portion of the TSCA inventory
Canada DSL	:	All components of this product are on the Canadian DSL
Australia AIIC	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	Not in compliance with the inventory
Japan ENCS	:	Not in compliance with the inventory
Korea KECI	:	A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance or the exported amount does not exceed the minimum threshold quantity of the non-registered substance(s).
Philippines PICCS	:	On the inventory, or in compliance with the inventory
Taiwan TCSI	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

**SECTION 16: Other information****Further information**

Legacy SDS Number : 627080

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

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

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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.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AIIC	Australian Inventory of Industrial Chemicals	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%	ATE	Acute toxicity estimate