Di-(2-Hydroxyethyl) Disulfide

Product information

Product Name: Di-(2-Hydroxyethyl) Disulfide
Material: 1121425, 1116603, 1107391, 1088334, 1077080, 1070368, 1079211, 1086445, 1086807, 1077079, 1097790, 1027449, 1024827

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

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

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

**Danger**

**Form:** Liquid  
**Physical state:** Liquid  
**Color:** Colorless to light yellow  
**Odor:** Pungent

**Hazards:**  
Toxic if swallowed. Toxic in contact with skin. Causes serious eye irritation. May cause an allergic skin reaction. May cause damage to organs through prolonged or repeated exposure if swallowed. Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

**Classification**

- Acute toxicity, Category 3, Oral
- Acute toxicity, Category 3, Dermal
- Serious eye damage/eye irritation, Category 2A
- Skin sensitization, Category 1
- Specific target organ toxicity - repeated exposure, Category 2, Oral, Kidney, Liver
- Short-term (acute) aquatic hazard, Category 2
- Long-term (chronic) aquatic hazard, Category 2

**Labeling**

**Symbol(s):**

- ! skull and crossbones, exclamation mark
- ! toxic symbol, flame
- ! skin sensitization symbol

**Signal Word:** Danger

**Hazard Statements:**

- H301 + H311: Toxic if swallowed or in contact with skin.
- H317: May cause an allergic skin reaction.
- H319: Causes serious eye irritation.
- H373: May cause damage to organs (Kidney, Liver) through prolonged or repeated exposure if swallowed.
- H411: Toxic to aquatic life with long lasting effects.

**Precautionary Statements**

**Prevention:**

- P260: Do not breathe dust/fume/gas/mist/vapor/spray.
- P264: Wash skin thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P272: Contaminated work clothing should not be allowed out of the workplace.
- P273: Avoid release to the environment.
- P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

- P302+P352: IF ON SKIN: Wash with plenty of water.
- P302 + P352 + P312: IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/doctor if you feel unwell.
- P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P314: Get medical advice/ attention if you feel unwell.
- P333 + P313: If skin irritation or rash occurs: Get medical advice/ attention.

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P337 + P313: If eye irritation persists: Get medical advice/attention.
P361+P364: Take off immediately all contaminated clothing and wash it before reuse.
P391: Collect spillage.

Storage:
P405: Store locked up.

Disposal:
P501: Dispose of contents/container to an approved waste disposal plant.

SECTION 3: Composition/information on ingredients

Synonyms: Dithiodiglycol, DiHEDS
Molecular formula: C4H10O2S2

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No. / EINECS-No.</th>
<th>Concentration [wt%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dithiodiglycol</td>
<td>1892-29-1</td>
<td>88</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

General advice: Move out of dangerous area. Consult a physician. 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: Immediately flush eye(s) with plenty of water. 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. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

SECTION 5: Firefighting measures

Flash point: Not applicable

Autoignition temperature: 285 °C (545 °F)
Method: EU Method A.15

Suitable extinguishing media: Water spray. Carbon dioxide (CO2). Dry chemical.
### Di-(2-Hydroxyethyl) Disulfide

**SAFETY DATA SHEET**  
**Version 1.5**  
**Revision Date 2019-10-10**

<table>
<thead>
<tr>
<th>Property</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsuitable extinguishing media</td>
<td>High volume water jet.</td>
</tr>
<tr>
<td>Specific hazards during firefighting</td>
<td>Do not allow run-off from fire fighting to enter drains or water courses.</td>
</tr>
<tr>
<td>Special protective equipment for fire-fighters</td>
<td>Wear self-contained breathing apparatus for firefighting if necessary.</td>
</tr>
<tr>
<td>Further information</td>
<td>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.</td>
</tr>
<tr>
<td>Fire and explosion protection</td>
<td>Normal measures for preventive fire protection.</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Carbon oxides. Sulfur oxides.</td>
</tr>
</tbody>
</table>

### 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 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. Observe label precautions. 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 airborned 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: Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, 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.

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: Personal protection through wearing a tightly closed chemical protection suit and a self-contained breathing apparatus. Remove and wash contaminated clothing before re-use. Skin should be washed after contact. Footwear protecting against chemicals.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

SECTION 9: Physical and chemical properties

**Information on basic physical and chemical properties**

**Appearance**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless to light yellow</td>
</tr>
</tbody>
</table>

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**Safety data**

- **Odor**: Pungent

- **Flash point**: Not applicable

- **Lower explosion limit**: No data available

- **Upper explosion limit**: No data available

- **Oxidizing properties**: No

- **Autoignition temperature**: 285 °C (545 °F)
  Method: EU Method A.15

- **Molecular formula**: C4H10O2S2

- **Molecular weight**: 154.26 g/mol

- **pH**: Not applicable

- **Freezing point**: 5 °C (41 °F)

- **Boiling point/boiling range**: Not applicable

- **Vapor pressure**: 0.00 Pa
  at 37.8 °C (100.0 °F)
  Method: OECD Test Guideline 104 estimated

- **Relative density**: 1.25
  at 15.6 °C (60.1 °F)

- **Density**: 1.29 G/ML

- **Water solubility**: > 1,000 g/l
  at 20 °C (68 °F)
  Method: OECD Test Guideline 105

- **Partition coefficient: n-octanol/water**: log Pow: -0.3
  at 20 °C (68 °F)
  Method: OECD Test Guideline 107

- **Viscosity, kinematic**: 50 cSt
  at 40 °C (104 °F)

- **Relative vapor density**: 2.69
  (Air = 1.0)

- **Evaporation rate**: No data available

- **Percent volatile**: > 99 %

**SECTION 10: Stability and reactivity**
Chemical stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions: Hazardous polymerization does not occur.

Further information: No decomposition if stored and applied as directed.

Conditions to avoid: No data available.

Materials to avoid: Avoid oxidizing agents.

Hazardous decomposition products: Carbon oxides

Sulfur oxides

Other data: No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Di-(2-Hydroxyethyl) Disulfide

Acute oral toxicity: Acute toxicity estimate: 196.59 mg/kg

Method: Calculation method

Acute inhalation toxicity

Dithiodiglycol: LC50: > 10.1 mg/l

Exposure time: 4 h

Species: Rat

Sex: male and female

Test atmosphere: vapor

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Acute dermal toxicity: Acute toxicity estimate: 586.36 mg/kg

Method: Calculation method

Skin irritation

Dithiodiglycol: No skin irritation

Eye irritation

Dithiodiglycol: Eye irritation

Sensitization

Dithiodiglycol: The product is a skin sensitizer, sub-category 1B.

Repeated dose toxicity
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Dithiodiglycol

Species: Rat, male
Sex: male
Application Route: oral gavage
Dose: 0, 5, 20, 75 mg/kg
Exposure time: 30 d
Number of exposures: Daily
NOEL: 20 mg/kg
Lowest observable effect level: 75 mg/kg
Method: OECD Guideline 422
Target Organs: Kidney, Liver

Species: Rat, female
Sex: female
Application Route: oral gavage
Dose: 0, 5, 20, 75 mg/kg
Exposure time: 42 d
Number of exposures: Daily
NOEL: 20 mg/kg
Method: OECD Guideline 422

Genotoxicity in vitro

Dithiodiglycol

Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: Chromosome aberration test in vitro
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Result: Ambiguous

Reproductive toxicity

Dithiodiglycol

Species: Rat
Sex: male
Application Route: oral gavage
Dose: 0, 5, 20, 75 mg/kg bw
Exposure time: 30 d
Number of exposures: Daily
Method: OECD Guideline 422
NOAEL Parent: 20 mg/kg
NOAEL F1: 20 mg/kg
Fertility and developmental toxicity tests did not reveal any effect on reproduction.
Species: Rat  
Sex: female  
Application Route: oral gavage  
Dose: 0, 5, 20, 75 mg/kg bw  
Exposure time: 42 d  
Number of exposures: Daily  
Method: OECD Guideline 422  
NOAEL Parent: 20 mg/kg  
NOAEL F1: 20 mg/kg  
Fertility and developmental toxicity tests did not reveal any effect on reproduction.

**Di-(2-Hydroxyethyl) Disulfide**

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

**Di-(2-Hydroxyethyl) Disulfide**

**Further information**: Solvents may degrease the skin.

### SECTION 12: Ecological information

#### Toxicity to fish

Dithiodiglycol  
LC50: > 100 mg/l  
Exposure time: 96 h  
Species: *Cyprinus carpio* (Carp)  
*static test Method: OECD Test Guideline 203*

#### Toxicity to daphnia and other aquatic invertebrates

Dithiodiglycol  
EC50: 4.4 mg/l  
Exposure time: 48 h  
Species: *Daphnia magna* (Water flea)  
*static test Method: OECD Test Guideline 202*

#### Toxicity to algae

Dithiodiglycol  
ErC50: > 100 mg/l  
Exposure time: 72 h  
Species: *Pseudokirchneriella subcapitata* (algae)  
Growth inhibition *Method: OECD Test Guideline 201*  
EyC50: 45 mg/l  
Exposure time: 72 h  
Species: *Pseudokirchneriella subcapitata* (algae)  
Growth inhibition *Method: OECD Test Guideline 201*

#### Toxicity to bacteria

Dithiodiglycol  
EC50: 612 mg/l  
Exposure time: 3 h  
Growth rate
Species: Bacteria  
Respiration inhibition
Method: OECD Test Guideline 209

Biodegradability

Dithiodiglycol : aerobic
Result: Not readily biodegradable.
20 %
Testing period: 28 d
Method: OECD Test Guideline 310

Additional ecological information

Ecotoxicology Assessment

Short-term (acute) aquatic hazard
Dithiodiglycol : Toxic to aquatic life.

Long-term (chronic) aquatic hazard
Dithiodiglycol : 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)
UN2810, TOXIC, LIQUIDS, ORGANIC, N.O.S., (DITHIODIGLYCOL), 6.1, III

SDS Number:100000014145 10/12
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

Classification and Labeling of Commonly Used Dangerous Chemical Substances: Primary label: Toxic Material.

Notification status

Europe REACH: On the inventory, or in compliance with the inventory
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 NDSL: This product contains one or several components listed in the Canadian NDSL.
Australia AICS: On the inventory, or in compliance with the inventory
New Zealand NZIoC: On the inventory, or 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.

Philippines PICCS: On the inventory, or in compliance with the inventory
China IECSC: On the inventory, or in compliance with the inventory
Taiwan TCSI: On the inventory, or in compliance with the inventory
SECTION 16: Other information

Further information

Legacy SDS Number : 96130

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 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

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal Dose 50%</td>
</tr>
<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
</tr>
<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
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<tr>
<td>NFPA</td>
<td>National Fire Protection Agency</td>
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<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
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<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
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<td>CNS</td>
<td>Central Nervous System</td>
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<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
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<td>CAS</td>
<td>Chemical Abstract Service</td>
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<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
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<td>EOSCA Generic Exposure Scenario Tool</td>
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<td>Occupational Safety &amp; Health Administration</td>
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<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
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<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
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<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
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<tr>
<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
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<td>PRNT</td>
<td>Presumed Not Toxic</td>
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<td>GHS</td>
<td>Globally Harmonized System</td>
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<td>Resource Conservation Recovery Act</td>
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<td>Greater Than or Equal To</td>
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<td>Short-term Exposure Limit</td>
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<td>IC50</td>
<td>Inhibition Concentration 50%</td>
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<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act.</td>
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<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
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<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
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<td>TWA</td>
<td>Time Weighted Average</td>
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<td>Japan, Inventory of Existing and New Chemical Substances</td>
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<td>Toxic Substance Control Act</td>
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<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
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<td>Workplace Hazardous Materials Information System</td>
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