



## Hazard Alert: Diesel Exhaust Fluid

**Location:** Widely found throughout BC's forest industry

**Date of Incident:** N/A

**Details, Recommended Preventative Actions:** Diesel Exhaust Fluid (DEF) is a product that has become more and more common in the forest industry. It is designed to help reduce levels of oxides of nitrogen that are emitted from diesel engines. These emissions are harmful to human health and to the environment as well.

DEF is injected into exhaust systems where it vaporizes and decomposes to form ammonia and carbon dioxide. The ammonia and exhaust gas pass through the catalyst and converts the mixture to nitrogen and water.

Diesel Exhaust Fluid is considered an eye and skin irritant and is not flammable. If your skin comes into contact with DEF, wash immediately with soap and water. For other health effects, please see the attached Material Safety Data Sheet (MSDS) for *TerraCair* DEF.

DEF has a freezing point of minus 12 degrees Celsius and should be stored at normal room temperature in a closed container away from incompatible materials. The low freezing point indicates that in extreme cold temperatures, the DEF will freeze. Equipment or vehicles that use Diesel Exhaust Fluid normally will have heaters in the reservoir, allowing them to work in cold environments.

Diesel Exhaust Fluid should be used in well-ventilated environments. Proper PPE should also be worn when handling DEF. Safety glasses with side shields and impervious gloves are manufacturer's recommendations.

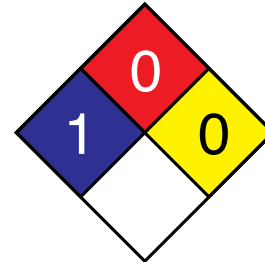
**For more information:** Refer to the MSDS for Diesel Exhaust Fluid, found starting on the next page.

## 1. Product and Company Identification

**Product Name** TerraCair® Ultrapure Diesel Exhaust Fluid  
**CAS #** Mixture  
**Product use** Diesel Exhaust NOx Reducing Agent  
**Manufacturer** Terra Industries Inc.  
 600 Fourth Street  
 Sioux City, Iowa 51101 US  
 Phone: 800-265-6643  
  
**CHEMTREC** 800-424-9300  
**CANUTEC** 613-996-6666

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/ 1
Flammability	0
Physical Hazard	0
Personal Protection	B



## 2. Hazards Identification

**Emergency Overview** CAUTION  
 EYE AND SKIN IRRITANT.

**Potential short term health effects**

<b>Routes of exposure</b>	Eye, Skin contact, Inhalation, Ingestion.
<b>Eyes</b>	May cause irritation.
<b>Skin</b>	May cause irritation.
<b>Inhalation</b>	May be harmful by inhalation. May cause respiratory tract irritation.
<b>Ingestion</b>	May cause stomach distress, nausea or vomiting.
<b>Target organs</b>	Eyes. Skin. Respiratory system.
<b>Signs and symptoms</b>	Symptoms may include redness, edema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

## 3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
Water	7732-18-5	67.5
Urea	57-13-6	32.5

## 4. First Aid Measures

**First aid procedures**

<b>Eye contact</b>	Flush with cool water. Remove contact lenses, if applicable, and continue flushing. Obtain medical attention if irritation persists.
<b>Skin contact</b>	Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.
<b>Inhalation</b>	If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.

**Ingestion**

Do not induce vomiting. Rinse mouth with water, then drink one or two glasses of water. Obtain medical attention. Never give anything by mouth if victim is unconscious, or is convulsing.

**Notes to physician**

Symptoms may be delayed.

**General advice**

If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Wear impervious gloves and safety glasses. Keep out of reach of children.

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## 5. Fire Fighting Measures

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**Flammable properties**

Not flammable by WHMIS/OSHA criteria.

**Extinguishing media**

**Suitable extinguishing media** Treat for surrounding material.

**Unsuitable extinguishing media** Not available

**Protection of firefighters**

Not available

**Specific hazards arising from the chemical** Not available

**Protective equipment for firefighters**

Firefighters should wear full protective clothing including self contained breathing apparatus.

**Hazardous combustion products**

May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Ammonia.

**Explosion data**

**Sensitivity to mechanical impact** Not available

**Sensitivity to static discharge**

Not available

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## 6. Accidental Release Measures

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**Personal precautions**

Keep unnecessary personnel away. Wear appropriate protective clothing.

**Methods for containment**

Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.

**Methods for cleaning up**

Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labeled containers.

Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice. Never return spills in original containers for re-use.

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## 7. Handling and Storage

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**Handling**

Use good industrial hygiene practices in handling this material.

**Storage**

Keep out of reach of children. Store in a closed container away from incompatible materials.

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## 8. Exposure Controls / Personal Protection

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### Exposure limits Ingredient(s)

### Exposure Limits

Urea

#### ACGIH-TLV

Not established

#### OSHA-PEL

Not established

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### Engineering controls

Ensure adequate ventilation, especially in confined areas. Use only under good ventilation conditions or with respiratory protection.

### Personal protective equipment

#### Eye / face protection

Wear safety glasses with side shields.

#### Hand protection

Impervious gloves. Nitrile, Viton, Butyl.

#### Skin and body protection

As required by employer code.

#### Respiratory protection

Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.

#### General hygiene considerations

Avoid breathing vapors. Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands before breaks and immediately after handling the product.

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## 9. Physical & Chemical Properties

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### Appearance

Clear.

### Color

Colorless

### Form

Liquid

### Odor

Slight ammonia

### Physical state

Liquid

### pH

9.8 - 10.0

### Freezing point

-12°C

### Boiling point

104°C

### Density

9.1 lbs. / USG - 4.13 kg / 3.785L

### Specific gravity

1.087-1.093 @ 20°C

### Solubility (H2O)

100%

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## 10. Chemical Stability & Reactivity Information

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### Chemical stability

Stable under recommended storage conditions.

### Conditions to avoid

Do not mix with any other chemical or product.

### Incompatible materials

Acids. Oxidizers. Alkalis.

### Hazardous decomposition products

May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Ammonia.

### Possibility of hazardous reactions

Hazardous polymerization does not occur.

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## 11. Toxicological Information

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### Component analysis - LC50

Ingredient(s)	LC50
Urea	Not available

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### Component analysis - Oral LD50

Ingredient(s)	LD50
Urea	11,500 - 13,000 mg/kg mouse; 14,300 - 15,000 mg/kg rat; 510 mg/kg cattle.

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### Effects of acute exposure

<b>Eye</b>	May cause irritation.
<b>Skin</b>	May cause irritation.
<b>Inhalation</b>	Not available
<b>Ingestion</b>	May cause stomach distress, nausea or vomiting.
<b>Sensitization</b>	Non-hazardous by WHMIS/OSHA criteria.
<b>Chronic effects</b>	Non-hazardous by WHMIS/OSHA criteria.
<b>Carcinogenicity</b>	Non-hazardous by WHMIS/OSHA criteria.
<b>Mutagenicity</b>	Non-hazardous by WHMIS/OSHA criteria.
<b>Reproductive effects</b>	Non-hazardous by WHMIS/OSHA criteria.
<b>Teratogenicity</b>	Non-hazardous by WHMIS/OSHA criteria.

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## 12. Ecological Information

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**Ecotoxicity** Components of this product have been identified as having potential environmental concerns.

### Ecotoxicity - Freshwater Fish Species Data

Urea 57-13-6 96 Hr LC50 Barillius barna: >9100 mg/L

### Ecotoxicity - Microtox Data

Urea 57-13-6 24HrEC50 Daphnia magna straus:>10000mg/L

<b>Environmental effects</b>	Not available
<b>Aquatic toxicity</b>	Not available
<b>Persistence / degradability</b>	Not available
<b>Bioaccumulation / accumulation</b>	Not available
<b>Partition coefficient</b>	Not available
<b>Mobility in environmental media</b>	Not available
<b>Chemical fate information</b>	Not available
<b>Other adverse effects</b>	Not available

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## 13. Disposal Considerations

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<b>Waste codes</b>	Not available
<b>Disposal instructions</b>	Review federal, provincial, and local government requirements prior to disposal.
<b>Waste from residues / unused products</b>	Not available
<b>Contaminated packaging</b>	Not available

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## 14. Transport Information

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### U.S. Department of Transportation (DOT)

Not regulated as dangerous goods.

### Transportation of Dangerous Goods (TDG - Canada)

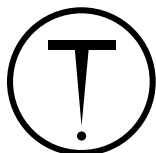
Not regulated as dangerous goods.

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## 15. Regulatory Information

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<b>Canadian federal regulations</b>	This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
<b>US Federal regulations</b>	The product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.
<b>Occupational Safety and Health Administration (OSHA)</b>	
<b>29 CFR 1910.1200 hazardous chemical</b>	Yes
<b>Superfund Amendments and Reauthorization Act of 1986 (SARA)</b>	
<b>Hazard categories</b>	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
<b>Section 302 extremely hazardous substance</b>	No
<b>Section 311 hazardous chemical</b>	Yes
<b>Clean Air Act (CAA)</b>	Not available
<b>Clean Water Act (CWA)</b>	Not available
<b>Safe Drinking Water Act (SDWA)</b>	Not available
<b>Drug Enforcement Agency (DEA)</b>	Not available
<b>Food and Drug Administration (FDA)</b>	Not available
<b>WHMIS status</b>	Controlled
<b>WHMIS classification</b>	<b>Class D - Division 2B</b>
<b>WHMIS labeling</b>	



**State regulations**

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

**Inventory name**

<b>Country(s) or region</b>	<b>Inventory name</b>	<b>On inventory (yes/no)*</b>
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

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## 16. Other Information

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**Disclaimer**

Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

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<b>Prepared by</b>	Terra Industries Inc. 800-265-6643