**Section 1 - PRODUCT AND COMPANY IDENTIFICATION**

**Synonyms**
DIESEL OIL; HOME HEATING OIL; NO. 2 FUEL OIL; NUMBER 2 BURNER FUEL; FUEL OIL NO. 2

**Material Name:** ULSD NO. 2 FUEL OIL

**Manufacturer Information**
National Cooperative Refinery Association  
EMERGENCY RESPONSE  
1391 Iron Horse Road  
McPherson, KS 67460  
Phone: (620) 241-2340

**Chemical Family**
petroleum hydrocarbons

**Product Use**
fuel, oils

**Section 2 - HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW**
- **Color:** blue to green light-colored
- **Odor:** mild odor, petroleum odor
- **Health Hazards:** skin irritation, aspiration hazard, central nervous system depression
- **Physical Hazards:** Flash back hazard. Combustible liquid and vapor.

**POTENTIAL HEALTH EFFECTS**

**Inhalation**
- **Short Term:** irritation, nausea, vomiting, headache, drowsiness, dizziness, loss of coordination, unconsciousness
- **Long Term:** irritation

**Skin**
- **Short Term:** irritation
- **Long Term:** irritation

**Eye**
- **Short Term:** irritation
- **Long Term:** irritation

**Ingestion**
- **Short Term:** nausea, vomiting, diarrhea, stomach pain, headache, drowsiness, dizziness, loss of coordination, aspiration hazard
- **Long Term:** no information on significant adverse effects

**Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

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</table>
**Section 4 - FIRST AID MEASURES**

**Inhalation**
If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

**Skin**
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

**Eyes**
Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**Ingestion**
Aspiration hazard. DO NOT induce vomiting. If vomiting occurs, keep head lower than hips to help prevent aspiration. Get immediate medical attention. Give artificial respiration if not breathing.

**Note to Physicians**
For inhalation, consider oxygen.

**Section 5 - FIRE FIGHTING MEASURES**

NFPA Ratings: Health: 2 Fire: 2 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

**Flammable Properties**
Moderate fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive above flash point.

**Extinguishing Media**
regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

**Fire Fighting Measures**
Move container from fire area if it can be done without risk. Dike for later disposal. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

**Section 6 - ACCIDENTAL RELEASE MEASURES**

**Occupational spill/release**
Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
**Section 7 - HANDLING AND STORAGE**

**Handling Procedures**

**Storage Procedures**
Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355 Part B). See original container for storage recommendations. Keep separated from incompatible substances.

**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Component Exposure Limits**

**FUEL OIL NO. 2 (68476-30-2)**

**ACGIH:** 100 mg/m³ TWA (as total hydrocarbons, inhalable fraction and vapor)
Skin - potential significant contribution to overall exposure by the cutaneous route

**Ventilation**
Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

**PERSONAL PROTECTIVE EQUIPMENT**

**Eyes/Face**
Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**Protective Clothing**
Wear appropriate chemical resistant clothing. Remove any chemical soaked clothing immediately.

**Glove Recommendations**
Wear appropriate chemical resistant gloves.

**Respiratory Protection**
Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.
Any chemical cartridge respirator with organic vapor cartridge(s).
Any chemical respirator with a full facepiece and organic vapor cartridge(s).
Any air-purifying respirator with a full facepiece and an organic vapor canister.

**For Unknown Concentrations or Immediately Dangerous to Life or Health**
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

**Section 9 - PHYSICAL AND CHEMICAL PROPERTIES**
**Section 10 - STABILITY AND REACTIVITY**

**Chemical Stability**
Stable at normal temperatures and pressure.

**Conditions to Avoid**
Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers. Dangerous gases may accumulate in confined spaces.

**Materials to Avoid**
oxidizing materials
FUEL OIL NO. 2:
STRONG OXIDIZERS: Incompatible.

**Decomposition Products**
oxides of carbon, oxides of sulfur
Thermal decomposition products: oxides of sulfur, carbon.

**Possibility of Hazardous Reactions**
Will not polymerize.

**Section 11 - TOXICOLOGICAL INFORMATION**

**Component Analysis - LD50/LC50**
The components of this material have been reviewed in various sources and the following selected endpoints are published:

**FUEL OIL NO. 2 (68476-30-2)**
Oral LD50 Rat: 12 g/kg; Dermal LD50 Rabbit: 4720 µL/kg; Dermal LD50 Rabbit: >2000 mg/kg; Inhalation LC50 Rat: 4.6 mg/L/4H

**SULFUR (7704-34-9)**
Inhalation LC50 Rat: >9.23 mg/L/4H; Oral LD50 Rat: >3000 mg/kg; Dermal LD50 Rabbit: >2000 mg/kg
RTECS Acute Toxicity (selected)
The components of this material have been reviewed, and RTECS publishes the following endpoints:

**FUEL OIL NO. 2 (68476-30-2)**
- Oral: 12 gm/kg oral rat LD50
- Skin: 4720 ul/kg skin rabbit LD50

**Acute Toxicity Level**

**FUEL OIL NO. 2 (68476-30-2)**
- Slightly Toxic: dermal absorption, ingestion.

**SULFUR (7704-34-9)**
- Highly Toxic: inhalation.

Component Carcinogenicity

**FUEL OIL NO. 2 (68476-30-2)**
- ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**FUEL OIL NO. 2 (68476-30-2)**
- 100 mg/30 second(s) eyes rabbit mild; 500 mg/24 hour(s) skin rabbit moderate; 500 ul/24 hour(s) skin rabbit moderate

**Local Effects**

**FUEL OIL NO. 2 (68476-30-2)**
- Irritant: skin.

**SULFUR (7704-34-9)**
- Irritant: inhalation, skin, eye.

Target Organs

**FUEL OIL NO. 2 (68476-30-2)**
- Central nervous system.

One sample tested by skin application produced skin carcinoma and papillomas in mice (see also, additional data below).

RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

**FUEL OIL NO. 2 (68476-30-2)**
- 243 gm/kg skin mouse TDLo (97 week(s))

Animal studies have confirmed an association between the induction of cancer, primarily of the lung, and inhalation exposure to whole diesel exhaust. Limited epidemiologic evidence also suggests an association between occupational exposure to diesel engine emissions and lung cancer (NIOSH, 1988).

**HEALTH EFFECTS**

**Inhalation - Acute Exposure**

**FUEL OIL NO. 2:** Inhalation hazard is low unless heated or misted. High concentrations of mist or vapor may cause respiratory tract irritation and central nervous system depression with symptoms of headache, dizziness, nausea, vomiting, anorexia, incoordination, unconsciousness and even asphyxiation.

**Inhalation - Chronic Exposure**

**FUEL OIL NO. 2:** Prolonged or repeated exposure may cause irritation.

**Skin Contact - Acute Exposure**

**FUEL OIL NO. 2:** Direct contact may cause irritation. A study on three different no. 2 fuel oils reported that they were all moderately irritating to rabbit skin causing moderate erythema and edema.
Skin Contact - Chronic Exposure
FUEL OIL NO. 2: Repeated or prolonged contact may cause defatting of the skin leading to dermatitis and may cause irritation of hair follicles and block the sebaceous glands. Repeated applications to the rabbit skin produced mortality ranging from 0 to 100% from doses of 1 to 10 ml/kg. All samples caused weight loss, anorexia and various degrees of dermal irritation. Necropsy revealed necrotic pyodermas, renal and hepatic congestion and at the highest dose level, multifocal hepatic necrosis. The primary causes of death were depression and anorexia induced by dermal irritation with infection rather than systemic toxicity. Skin application with one sample of fuel oil no. 2 produced skin carcinomas and papillomas in mice.

Eye Contact - Acute Exposure
FUEL OIL NO. 2: In a study on three different no. 2 fuel oils, application to rabbit eyes resulted in only mild irritation.

Eye Contact - Chronic Exposure
FUEL OIL NO. 2: Repeated and prolonged exposure may cause irritation.

Ingestion - Acute Exposure
FUEL OIL NO. 2: Lung damage may occur if aspirated into the lungs and may be fatal. Symptoms may include coughing, difficulty breathing, cyanosis, and pulmonary edema. May cause nausea, vomiting, cramps, diarrhea and possibly central nervous system depression. A study on three different no. 2 fuel oils reported oral LD50 values in rats ranging from 12.0 to 17.5 gm/kg. Mortality generally occurred 2-3 days after dosing. Necropsy revealed hemorrhagic gastroenteritis, gastrointestinal tympani, and pneumonia with abscission. The cause of death was believed to be physical trauma rather than metabolidyfunction.

Ingestion - Chronic Exposure
FUEL OIL NO. 2: No data available.

*** Section 12 - ECOLOGICAL INFORMATION ***
Component Analysis - Aquatic Toxicity
FUEL OIL NO. 2 (68476-30-2)
Fish: 96 Hr LC50 Pimephales promelas: 35 mg/L [flow-through]
SULFUR (7704-34-9)
Fish: 96 Hr LC50 Brachydanio rerio: 866 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: <14 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: >180 mg/L [static]

*** Section 13 - DISPOSAL CONSIDERATIONS ***
Disposal Methods
Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components.

*** Section 14 - TRANSPORT INFORMATION ***
US DOT Information
Shipping Name: Diesel fuel
UN/NA #: UN1202 Hazard Class: 3 Packing Group: III
Required Label(s): 3
TDG Information
Shipping Name: Diesel fuel
UN #: UN1202  Hazard Class: 3  Packing Group: III
Required Label(s): 3

ADR Information
Shipping Name: Diesel fuel
UN #: UN1202  Hazard Class: 3  Packing Group: III
Required Label(s): 3

ADR Tunnel Code Restrictions
SULFUR (7704-34-9)
E (UN1350; UN2448)

RID Information
Shipping Name: Diesel fuel
UN #: UN1202  Hazard Class: 3  Packing Group: III
Required Label(s): 3

IATA Information
Shipping Name: Diesel fuel
UN #: UN1202  Hazard Class: 3  Packing Group: III
Required Label(s): 3

ICAO Information
Shipping Name: Diesel fuel
UN #: UN1202  Hazard Class: 3  Packing Group: III
Required Label(s): 3

IMDG Information
Shipping Name: Diesel fuel
UN #: UN1202  Hazard Class: 3  Packing Group: III

** * * Section 15 - REGULATORY INFORMATION * * **

U.S. Federal Regulations
None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C)
Acute Health: Yes  Chronic Health: No  Fire: Yes  Pressure: No  Reactive: No
U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

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Not regulated under California Proposition 65

Canada

Germany Water Classification

SULFUR (7704-34-9)
Number 842, not considered hazardous to water

SULFUR (7704-34-9)
Number 753, hazard class 1 - low hazard to waters

EU Marking and Labelling

Symbols

F Highly flammable
Xn Harmful

Risk Phrases

R11 Highly flammable.
R40 Limited evidence of a carcinogenic effect.

Component Analysis - Inventory

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** Section 16 - OTHER INFORMATION **

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; 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; UEL - Upper Explosive Limit; US - United States
Full text of R phrases in Section 3

R36 Irritating to eyes.
R37 Irritating to respiratory system.
R38 Irritating to skin.
R40 Limited evidence of a carcinogenic effect.

Other Information

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