SECTION 1  CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

National Cooperative Refinery Association
1391 Iron Horse Road
McPherson, KS 67460
(316) 241-2340

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SUBSTANCE: NO. 2 Diesel Fuel

TRADE NAMES/SYNONYMS:
ASTM D396; DIESEL OIL; HOME HEATING OIL; NO. 2 FUEL OIL; NUMBER 2 BURNER FUEL;
00456 TEXACO DIESEL FUEL 2 (TEXACO); FUEL OIL NO. 2; STCC 4915112; NCR10100;
RTECS LS8930000

CHEMICAL FAMILY: petroleum, hydrocarbons

CREATION DATE: Sep 12 1994
REVISION DATE: Oct 19 2011

SECTION 2  COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: NO. 2 FUEL OIL
CAS NUMBER: 68476-30-2
EC NUMBER (EINECS): 270-671-4
PERCENTAGE: >99

COMPONENT: SULFUR
CAS NUMBER: 7704-34-9
EC NUMBER (EINECS): 231-722-6
PERCENTAGE: 500 PPM AND 15 PPM

SECTION 3  HAZARDS IDENTIFICATION
NFPA RATINGS (SCALE 0-4): HEALTH=2  FIRE=2  REACTIVITY=0

EMERGENCY OVERVIEW:
PHYSICAL DESCRIPTION: Light blue to green, clear, bright liquid with a mild petroleum odor.
MAJOR HEALTH HAZARDS: skin irritation, central nervous system depression
PHYSICAL HAZARDS: Combustible liquid and vapor.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, nausea, vomiting, headache, symptoms of drunkenness
LONG TERM EXPOSURE: no information on significant adverse effects
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: liver damage
EYE CONTACT:
SHORT TERM EXPOSURE: mild irritation
LONG TERM EXPOSURE: no information on significant adverse effects
INGESTION:
SHORT TERM EXPOSURE: vomiting, digestive disorders, difficulty breathing, symptoms of drunkenness
LONG TERM EXPOSURE: no information on significant adverse effects

CARCINOGEN STATUS:
OSHA: No
NTP: No
IARC: No

SECTION 4 FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN contacto: 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.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: Get medical attention immediately.

NOTE TO PHYSICIAN: For ingestion, consider gastric lavage.

SECTION 5 FIRE FIGHTING MEASURES
FIRE AND EXPLOSION HAZARDS: 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: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. 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.

FLASH POINT: 126-205 F (52-96 C) (CC)
LOWER FLAMMABLE LIMIT: 0.6%
UPPER FLAMMABLE LIMIT: 7.5%
AUTOIGNITION: 495 F (257 C)
FLAMMABILITY CLASS (OSHA): II

SECTION 6    ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL 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

SECTION 8     EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
NO. 2 FUEL OIL:
MINERAL OIL MIST:
  5 mg/m³ OSHA TWA
  5 mg/m³ ACGIH TWA
  10 mg/m³ ACGIH STEL
  5 mg/m³ NIOSH recommended TWA 10 hour(s)
  10 mg/m³ NIOSH recommended STEL
  5 mg/m³ UK OES TWA
  10 mg/m³ UK OES STEL

MEASUREMENT METHOD: Particulate filter; Carbon tetrachloride; Infrared spectrometry; NIOSH IV # 5026

HYDROGEN SULFIDE:
  20 ppm OSHA ceiling
  50 ppm OSHA peak 10 minute(s) (once if no other measurable exposure occurs)
  10 ppm (14 mg/m³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
  15 ppm (21 mg/m³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
  10 ppm ACGIH TWA
  15 ppm ACGIH STEL
  10 ppm (15 mg/m³) NIOSH recommended ceiling 10 minute(s)
  14 mg/m³ (10 ml/m³) DFG MAK (peak limitation category-V)
  10 ppm (14 mg/m³) UK OES TWA
  15 ppm (21 mg/m³) UK OES STEL

MEASUREMENT METHOD: Charcoal tube; Ammonium hydroxide/Hydrogen peroxide; Ion chromatography; NIOSH IV # 6013

VENTILATION: Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing. Remove any chemical soaked clothing immediately.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: 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 cartridge 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 full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Any self-contained breathing apparatus with a full facepiece.

SECTION 9  PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION: Light blue to green, clear, bright liquid with a mild petroleum odor.
BOILING POINT: 302-698 F (150-370 C)
FREEZING POINT: 21 F (-6 C)
VAPOR PRESSURE: 2.6 mmHg @ 50 C
VAPOR DENSITY (air=1): >1
SPECIFIC GRAVITY (water=1): <1
WATER SOLUBILITY: insoluble
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: 0.11 ppm
EVAPORATION RATE: slower than ether
VISCOSITY: 2-3.6 cSt @ 38 C
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

SECTION 10  STABILITY AND REACTIVITY

REACTIVITY: 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.

INCOMPATIBILITIES: oxidizing materials

FUEL OIL NO. 2:
  STRONG OXIDIZERS: Incompatible.

HAZARDOUS DECOMPOSITION:
  Thermal decomposition products: oxides of sulfur, carbon

POLYMERIZATION: Will not polymerize.
SECTION 11  TOXICOLOGICAL INFORMATION

NO. 2 FUEL OIL:

IRRITATION DATA:
- 500 mg/24 hour(s) skin-rabbit moderate; 500 ul/24 hour(s) skin-rabbit moderate; 100 mg/30 second(s) eyes-rabbit mild

TOXICITY DATA:
- >5 gm/kg skin-rat LD50; 12 gm/kg oral-rat LD50; 4720 ul/kg skin-rabbit LD50; 100 ml/kg/12 day(s) continuous skin-rabbit TDLo; 100 ml/kg/2 week(s) intermittent skin-rabbit TDLo

CARCINOGEN STATUS: IARC: Human Inadequate Evidence, Animal Limited Evidence, Group 3
- One sample tested by skin application produced skin carcinoma and papillomas in mice (see also, additional data below).

LOCAL EFFECTS:
- Irritant: skin

ACUTE TOXICITY LEVEL:
- Slightly Toxic: dermal absorption, ingestion

TARGET ORGANS: central nervous system

TUMORIGENIC DATA:
- 243 gm/kg skin-mouse TDLo/97 week(s) intermittent

ADDITIONAL DATA: 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.

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 3 different no. 2 fuel oils reported that they were all moderately irritating to rabbit skin causing moderate erythema and edema.
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 3 different no. 2 fuel oils, application to rabbit eyes resulted in only mild irritation.

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 3 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 abscissation. The cause of death was believed to be physical trauma rather than metabolidysfunction.

CHRONIC EXPOSURE:
FUEL OIL NO. 2: No data available.

SECTION 12 ECOLOGICAL INFORMATION
Not available

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

SECTION 14 TRANSPORT INFORMATION
U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Diesel fuel
ID NUMBER: UN1202
HAZARD CLASS OR DIVISION: 3
PACKING GROUP: III

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

LAND TRANSPORT ADR/RID:
PROPER SHIPPING NAME: Gas oil or Diesel fuel or Heating oil, light
(flashpoint more than 61C and not more than 100C)/GAS OIL or DIESEL FUEL
or HEATING OIL, LIGHT (flashpoint more than 61C and not more than 100C)
UN NUMBER: UN1202
ADR/RID CLASS: 3
CLASSIFICATION CODE: F1
PACKING GROUP: III

AIR TRANSPORT IATA/ICAO:
PROPER SHIPPING NAME: Diesel fuel
UN/ID NUMBER: UN1202
IATA/ICAO CLASS: 3
PACKING GROUP: III

MARITIME TRANSPORT IMDG:
PROPER SHIPPING NAME: Gas oil
UN NUMBER: UN1202
IMDG CLASS: 3
PACKING GROUP: III

SECTION 15  REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
HYDROGEN SULFIDE: 100 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
HYDROGEN SULFIDE: 500 LBS TPQ

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):
HYDROGEN SULFIDE: 100 LBS RQ

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):
ACUTE: Yes
CHRONIC: Yes
FIRE: Yes
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65):
HYDROGEN SULFIDE

OSHA PROCESS SAFETY (29CFR1910.119):
HYDROGEN SULFIDE: 1500 LBS TQ

STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:
EC CLASSIFICATION (ASSIGNED):
Carcinogen Category 3

EC Classification may be inconsistent with independently-researched data.

DANGER/HAZARD SYMBOL:
Xn Harmful

EC RISK AND SAFETY PHRASES:
R 40 Limited evidence of a carcinogenic effect.
S 2 Keep out of reach of children.
S 36/37 Wear suitable protective clothing and gloves.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

SECTION 16 OTHER INFORMATION

MSDS SUMMARY OF CHANGES

SECTION 15 REGULATORY INFORMATION

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