



110433

Golder Associates Inc.

1951 Old Cuthbert Road, Suite 301
Cherry Hill, NJ 08034
Tel: (856) 616-8166
Fax: (856) 616-1874



ADDENDUM
REMEDIAL INVESTIGATION/
FEASIBILITY STUDY WORK PLAN
LIGHTMAN DRUM COMPANY SUPERFUND SITE
WINSLOW TOWNSHIP, NEW JERSEY

12/05

Prepared for:

Lightman Yard PRP Group

Prepared by:

Golder Associates Inc.
1951 Old Cuthbert Road, Suite 301
Cherry Hill, NJ 08034

DISTRIBUTION:

5 Copies	US Environmental Protection Agency
3 Copies	New Jersey Dept of Environmental Protection
10 Copies	Lightman Yard Group
2 Copies	Golder Associates Inc.

December 2005

Project No.: 013-6054

Golder Associates Inc.

1951 Old Cuthbert Road, Suite 301
Cherry Hill, NJ 08034
Telephone (856) 616-8166
Fax (856) 616-1874
www.golder.com



December 7, 2005

Project No.: 013-6054

VIA OVERNIGHT MAIL

Chief, New Jersey Superfund Branch
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007

Attn: Ms. Tanya Mitchell, Remedial Project Manager

**RE: ADDENDUM REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN
LIGHTMAN DRUM COMPANY SITE, WINSLOW TOWNSHIP, NEW JERSEY**

Dear Ms. Mitchell:

On behalf of the Lightman Yard PRP Group (Group), we enclose four copies of an Addendum to the Remedial Investigation/Feasibility Study Work Plan (Golder, 2002). The Addendum is submitted pursuant to comments from the United States Environmental Protection Agency (USEPA) on the Site Characterization Report dated November 16, 2005. Three copies of the Addendum have also been transmitted directly to the NJDEP.

Please do not hesitate to contact me if any questions arise during your review of this document.

Very truly yours,

GOLDER ASSOCIATES INC.

P. Stephen Finn, C.Eng.
Project Coordinator

PSF:bjb

G:\PROJECTS\013-6054 LIGHTMAN\WORK PLAN\WORKPLAN FOR ADD'L SAMPLING\COVER LETTER.DOC

cc: Michael J. van Itallie, Esq. USEPA Office of Regional Counsel (1 copy)
James P. De Noble, NJDEP (3 copies)

Lightman Yard PRP Group (via e-mail)

300402

TABLE OF CONTENTS

Cover Letter

Table of Contents

i

<u>SECTION</u>	<u>PAGE</u>
1.0 INTRODUCTION	1
2.0 SOIL SAMPLING	2
2.1 Soil Boring Locations	2
2.2 Sample Collection Procedures	2
2.3 Soil Sample Analysis	3
3.0 GROUNDWATER SAMPLING	4
4.0 WATER LEVEL MONITORING	5
5.0 PROJECT SCHEDULE	6

LIST OF TABLES

Table 1 Target Compounds/Analytes of Interest

LIST OF FIGURES

Figure 1 Soil Sampling Location Map
Figure 2 Groundwater Sampling Locations

LIST OF ATTACHMENTS

Attachment A Material Safety Data Sheet for "Oil Red O"

1.0 INTRODUCTION

The Remedial Investigation (RI) for the Lightman Drum Site (Site) was conducted between August 2002 and March 2005 pursuant to an approved Work Plan (Golder, 2002) and the results were summarized in the *Site Characterization Summary Report* (Golder, 2005). Pursuant to comments from the United States Environmental Protection Agency (USEPA) on the Site Characterization Report dated November 16, 2005, the following additional RI activities are defined in this Work Plan Addendum:

- Additional subsurface soil sampling in the saturated zone below the water table in the former waste storage tank area, the former unlined waste disposal pit area and a drum storage area to investigate the possibility of residual NAPL material in these areas that may continue to serve as a source of groundwater contamination;
- An additional round of groundwater sampling with analysis for TCL volatile organic compounds, TAL metals, and Natural Attenuation Parameters (NAPs). In addition, groundwater samples will be analyzed for 1,4-dioxane; and,
- Continuous water-level monitoring over a two week interval to assess any effect of area pumping on the groundwater downgradient of the Site.

The following sections of this Addendum provide a description of the proposed work, which will be conducted in accordance with the procedures specified in the approved Work Plan, including the Sampling and Analysis Plan (SAP) and the Health and Safety Plan (HASP). Where necessary, additional sampling procedures, analytical requirements, and health and safety information specific to the above activities are also provided herein.

CompuChem, a division of Liberty Analytical, of Cary, North Carolina (CompuChem), the previously approved laboratory for the project, will be the primary provider of analytical services. CompuChem is a participant in the USEPA Contract Laboratory Program (CLP). Microseeps, Inc. of Pittsburgh, Pennsylvania (Microseeps) will provide specialist analytical services for select natural attenuation parameters (i.e., light hydrocarbons) and Chemtech of Mountainside, New Jersey, will provide specialist analytical services for 1,4-dioxane.

2.0 SOIL SAMPLING

2.1 Soil Boring Locations

The purpose of this investigation is to assess the presence of residual NAPL soil contamination in the saturated zone at specific potential source areas. To accomplish this, eight additional soil borings are to be conducted at the Site at the locations shown on Figure 1. Three borings will be located in the former waste storage tank area near monitoring wells MW-2A/2B, two borings will be located in the former southwest Drum Storage Area near monitoring wells MW-8A/8B, and three borings will be located in the former Unlined Waste Storage Pit area.

2.2 Sample Collection Procedures

The soil borings will be conducted utilizing Geoprobe or similar direct push methods, so as to obtain continuous core samples for visual description and sampling purposes. Continuous 4-foot samples will be collected commencing approximately 3 feet above the water table (based on water levels in adjacent wells). The actual depth of soil samples collected from each boring will depend upon field observations. Each core sample will be screened at 6-inch intervals with a PID as described in the SAP. Each boring will extend to a minimum of 20 feet below the water table and will continue until PID readings are below background or a maximum depth of 40 feet below the water table is reached.

Representative portions of each 2-foot section of soil core will be placed in a re-sealable plastic bag. The soil sample will be agitated and then left to equilibrate for 10 minutes. The headspace volatiles will be measured by inserting a PID probe into an open corner of the bag. If the PID reading is greater than 50 ppm, the sample will be screened for the presence of NAPL through the use of the hydrophobic dye "Oil Red O". "Oil Red O" is a hydrophobic dye that turns red in the presence of the key site analytes tetrachlorethene (PCE) and trichloroethene (TCE). "Oil Red O" must be handled with care to avoid accidental ingestion, inhalation, or dermal contact (see Attachment A). Additional PPE (safety goggles and dust respirator) must therefore be worn while preparing for and conducting the hydrophobic dye tests. The dye tests will be conducted as follows:

- A trace amount of "Oil Red O" powder will be added to a clear 40 ml. glass vial with a Teflon® liner on the cap using a stainless steel spatula;

- Approximately 5 g of sample soil will be added to the prepared vial with the stainless steel knife and another 5 g to an untreated vial for quality control purposes;
- Approximately 15-20 ml of potable water will be added to each vial such that the soil sample is saturated, prior to tightly sealing and shaking vigorously; and,
- The color of the samples will then be observed to assess the potential presence of NAPL.

Three samples for laboratory analysis will be taken from each boring: one sample will be taken from the bottom of the boring and two samples will be taken from discrete 2-foot intervals that indicate the greatest potential for NAPL based on field screening. In the event that screening does not indicate NAPL presence, the upper samples will be collected at the water table and a mid point depth interval. Each soil sample will be collected with an EnCore® sampler, as described in Section A.2.7.2.1 of the SAP.

2.3 Soil Sample Analysis

Each soil sample will be analyzed for TCL/VOC analytes as shown in Table 1 and for 1,4-dioxane. The most impacted sample, based on field screening, or the sample collected at the water table in the event screening does not identify potential NAPL, will also be analyzed for TAL metals. Sample collection requirements, holding times, quality assurance/quality control samples, sample shipping, and other analysis requirements will be as specified in the SAP. 1,4-Dioxane will be analyzed using EPA SW846 analytical method 8270.

3.0 GROUNDWATER SAMPLING

Groundwater samples will be taken from the twenty-three (23) existing monitoring wells that were sampled in the RI and from the office supply well. Prior to sampling, water level measurements will be taken in each of the monitoring wells and piezometers and low-flow purging and sampling techniques will be used in accordance with the SAP. The office supply well will be sampled from the exterior spigot, if practical; otherwise it will be sampled from the interior tap as described in the SAP.

Groundwater samples will be analyzed for TCL/TAL analytes using a 25 mL purge so as to achieve low reporting limits as indicated in Table 1. Groundwater will also be analyzed for Natural Attenuation Parameters¹ and 1,4-dioxane, using the methods described above. Sample collection requirements, holding times, quality assurance/quality control samples, sample shipping, and other analysis requirements will be as specified in the SAP.

¹ Natural Attenuation Parameters include: total alkalinity, chloride, sulfate, sulfide, nitrate, nitrite, total phosphate, light hydrocarbons (methane, ethane, and ethene), total organic carbon (TOC), and dissolved organic carbon (DOC).

4.0 WATER LEVEL MONITORING

Continuous water level monitoring will be conducted over a two week period to evaluate any effects of area pumping on groundwater downgradient of the Site. To complete this survey, an In-Situ TROLL™ transducer/datalogger will be installed in monitoring well MW-18 to record groundwater levels at 10 minute intervals. Water levels will also be measured manually at the well at the beginning and end of the monitoring period for confirmation purposes. The transducer will be calibrated to manufacturer's specifications.

5.0 PROJECT SCHEDULE

Golder Associates anticipates initiating the additional sampling within 30 days following approval of this Work Plan. The additional data and analytical results will be incorporated into the final Remedial Investigation Report and the Baseline Risk Assessment.

TABLE 1
TARGET COMPOUNDS/ANALYTES OF INTEREST
LIGHTMAN DRUM ADDITIONAL SAMPLING WORK PLAN

TARGET PARAMETERS FOR RI	GROUNDWATER REPORTING LIMITS [ug/l]	SOIL REPORTING LIMITS [ug/kg]
Volatile Organic Compounds		
Dichlorodifluoromethane	0.5	10
Chloromethane	0.5	10
Bromomethane	0.5	10
Vinyl chloride	0.5	10
Chloroethane	0.5	10
Trichlorofluoromethane	0.5	10
1,1,2-Trichloro-1,2,2-trifluoroethane	0.5	10
Methyl acetate	0.5	10
Methylene chloride	0.5	10
Acetone	10	10
Carbon disulfide	0.5	10
<i>tert</i> -Butyl methyl ether	0.5	10
1,1-Dichloroethene	0.5	10
1,1-Dichloroethane	0.5	10
<i>cis</i> -1,2-Dichloroethene	0.5	10
<i>trans</i> -1,2-Dichloroethene	0.5	10
Chloroform	0.5	10
1,2-Dichloroethane	0.5	10
2-Butanone	10	10
Bromochloromethane	0.5	10
1,1,1-Trichloroethane	0.5	10
Cyclohexane	0.5	10
Carbon Tetrachloride	0.5	10
Bromodichloromethane	0.5	10
1,2-Dichloropropane	0.5	10
<i>cis</i> -1,3-Dichloropropene	0.5	10
Trichloroethene	0.5	10
Methylcyclohexane	0.5	10
Dibromochloromethane	0.5	10
1,1,2-Trichloroethane	0.5	10
Benzene	0.5	10
<i>trans</i> -1,3-Dichloropropene	0.5	10
Bromoform	0.5	10
4-Methyl-2-pentanone	10	10
2-Hexanone	10	10
Tetrachloroethene	0.5	10
Isopropylbenzene	0.5	10
1,1,2,2-Tetrachloroethane	0.5	10
1,2-Dibromoethane	0.5	10
Toluene	0.5	10
Chlorobenzene	0.5	10
Ethylbenzene	0.5	10
Styrene	0.5	10

TABLE 1
TARGET COMPOUNDS/ANALYTES OF INTEREST
LIGHTMAN DRUM ADDITIONAL SAMPLING WORK PLAN

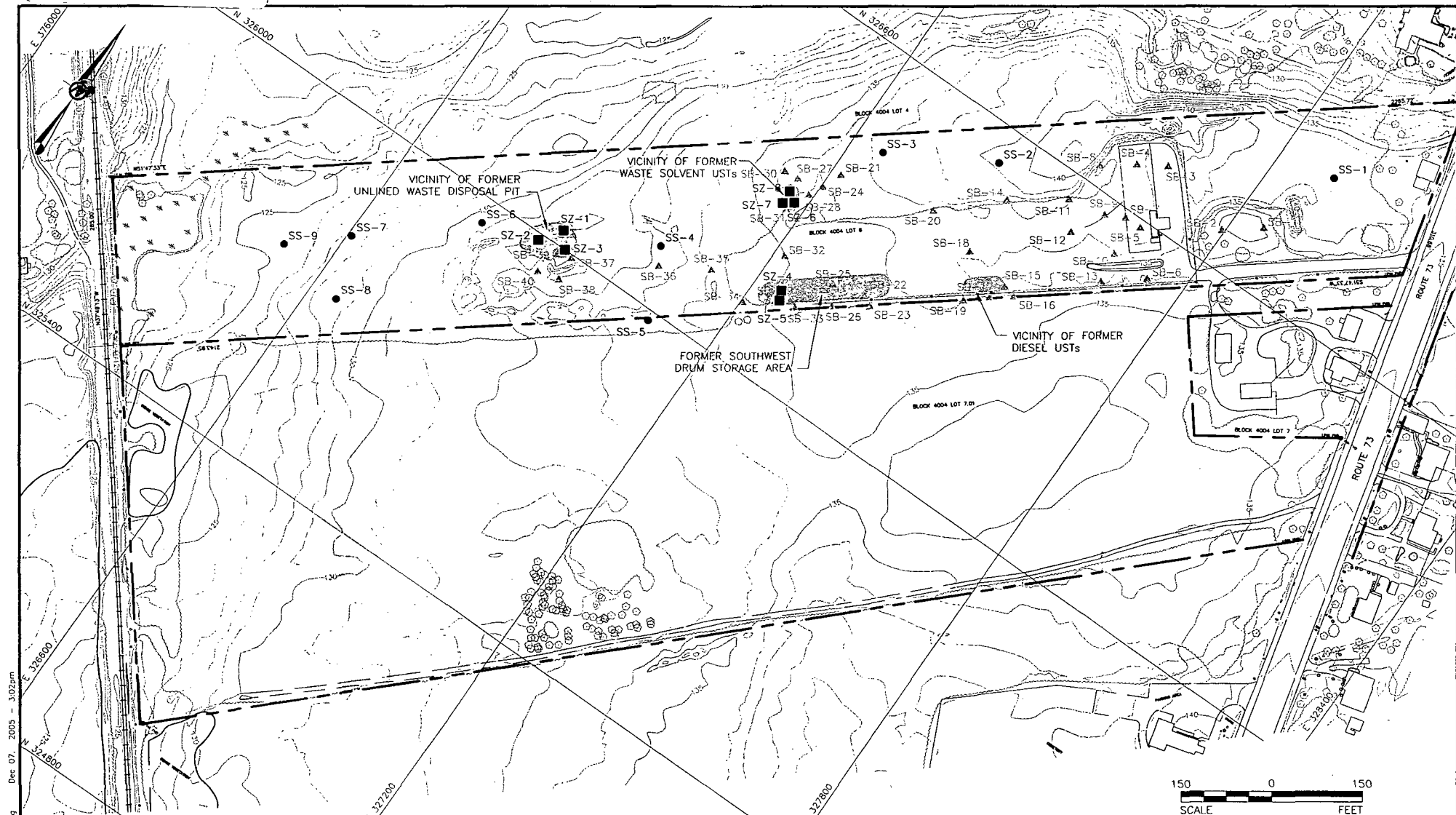
TARGET PARAMETERS FOR RI	GROUNDWATER REPORTING LIMITS [ug/l]	SOIL REPORTING LIMITS [ug/kg]
Xylenes (total)	0.5	10
1,3-Dichlorobenzene	0.5	10
1,4-Dichlorobenzene	0.5	10
1,2-Dichlorobenzene	0.5	10
1,2-Dibromo-3-chloropropane	0.5	10
1,2,4-Trichlorobenzene	0.5	10
1,4-Dioxane	2	66
Target Analyte List	[ug/l]	[mg/kg]
Aluminum	200	40
Antimony	60	12
Arsenic	10	2
Barium	200	40
Beryllium	5	1
Cadmium	5	1
Calcium	5000	1000
Chromium	10	2
Cobalt	50	10
Copper	25	5
Iron	5000	1000
Lead	3	0.6
Magnesium	5000	1000
Manganese	15	3
Mercury	0.2	0.1
Nickel	40	8
Potassium	5000	1000
Selenium	5	1
Silver	10	2
Sodium	5000	1000
Thallium	10	2
Vanadium	50	10
Zinc	20	4
Cyanide	10	2

The Reporting Limits shown for the Target Analyte List are the maximum reporting limits that may be used for an undiluted sample. The laboratory will report results down to to the Instrument Detection Limit (IDL) which are generated every quarter.

Practical Quantitation Limits will vary on an individual sample basis depending upon dilution, percent solids, and sample matrix considerations.

Specific method with cadmium

300412



LEGEND

- ▲ SOIL BORING LOCATION
- SURFACE SOIL SAMPLING LOCATION
- PROPOSED SATURATED SOIL SAMPLING LOCATION

REFERENCES

- 1.) BASE MAP TAKEN FROM FILE 2702-01.DWG, TITLED "PLAN OF SURVEY", PROVIDED BY JAMES M. STEWART, INC.
- 2.) SOIL BORING AND SOIL SAMPLE LOCATIONS SURVEYED BY JAMES M. STEWART, INC., NOVEMBER 2002.



FILE No. 0136054J001
PROJECT No. 013-6054 REV. 0

SCALE	AS SHOWN
DATE	12/07/05
DESIGN	DSL
CADD	RG
CHECK	RJI
REVIEW	PSF


**SOIL SAMPLING AND
BASE TOPOGRAPHY MAP**

LIGHTMAN DRUM SITE

FIGURE 1

THIS IS AN OVERSIZED DOCUMENT.
 IT IS AVAILABLE FOR REVIEW AT:
 U.S. EPA, REGION 2 SUPERFUND RECORDS CENTER
 290 BROADWAY, 18TH FLOOR,
 NEW YORK, NY 10007.



REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW		
PROJECT								
LIGHTMAN DRUM SITE WINSLOW TOWNSHIP, NEW JERSEY								
TITLE								
GROUNDWATER SAMPLING LOCATIONS								
			PROJECT No.		013-6054			
			FILE No.		0136054J002			
			DESIGN	DSL	11/28/05	SCALE	AS SHOWN	REV. 0
			CADD	RG	12/07/05	FIGURE 2		
			CHECK	RJI	12/07/05			
REVIEW		PSF	12/07/05					

ATTACHMENT A
MATERIAL SAFETY DATA SHEET FOR "OIL RED O"

Material Safety Data Sheet

Oil red o (cert)

ACC# 60709

Section 1 - Chemical Product and Company Identification

MSDS Name: Oil red o (cert)**Catalog Numbers:** AC416510000, AC416510250, BP112 10, BP112-10, BP11210**Synonyms:** CI Solvent Red 27; D&C Red #18; 2-Naphthalenol**Company Identification:**

Fisher Scientific

1 Reagent Lane

Fair Lawn, NJ 07410

For information, call: 201-796-7100**Emergency Number:** 201-796-7100**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
1320-06-5	Oil red O	100	215-295-3

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: Not available.

Caution! May cause irritation. The toxicological properties of this material have not been fully investigated.**Target Organs:** No data found.

Potential Health Effects

Eye: No information regarding eye irritation and other potential effects was found. Contact may cause transient eye irritation.**Skin:** No information regarding skin irritation and other potential effects was found.**Ingestion:** The toxicological properties of this substance have not been fully investigated.**Inhalation:** The toxicological properties of this substance have not been fully investigated.**Chronic:** No information found.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.**Skin:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Combustion generates toxic fumes.

Extinguishing Media: For small fires, use water spray, dry chemical, carbon dioxide or chemical foam.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a cool, dry, well-ventilated area away from incompatible substances. Keep containers tightly closed.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Oil red O	none listed	none listed	none listed

OSHA Vacated PELs: Oil red O: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid
Appearance: Not available.
Odor: none reported
pH: Not available.
Vapor Pressure: Negligible.
Vapor Density: Not available.
Evaporation Rate: Negligible.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Not available.
Specific Gravity/Density: Not available.
Molecular Formula: C₂₆H₂₄N₄O
Molecular Weight: 408.50

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: High temperatures, incompatible materials.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 1320-06-5 unlisted.
LD50/LC50:
Not available.
Carcinogenicity:
CAS# 1320-06-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: No information reported.
Physical: No information available.

Other: None.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Please contact Fisher Scientific for shipping information	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 1320-06-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 1320-06-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

<https://fscimage.fishersci.com/msds/60709.htm>

12/1/2005

300418

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

Not available.

Risk Phrases:

Safety Phrases:

WGK (Water Danger/Protection)

CAS# 1320-06-5: No information available.

Canada - DSL/NDSL

CAS# 1320-06-5 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of Not controlled..

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 8/24/1997

Revision #4 Date: 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.