



Environmental
Science &
Engineering, Inc.

April 5, 1994

STD 12

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HAZMAT
94 APR -6 AM 8:42

Ms. Susan L. Hugo
Senior Hazardous Materials Specialist
Alameda Health Care Services Agency
Department of Environmental Health
80 Swan Way, #200
Oakland, California 94621

**SUBJECT: SITE HEALTH AND SAFETY PLAN FOR PRELIMINARY SITE
ASSESSMENT
AUTOPRO, 5200 TELEGRAPH AVENUE
OAKLAND, ALAMEDA COUNTY, CALIFORNIA
ESE PROJECT NO. 6-94-5219**

Dear Ms. Hugo:

Environmental Science & Engineering, Inc. (ESE) presents the subject health & safety plan (HASP) in accordance with your March 28, 1994 request. The HASP addresses potential physical and chemical hazards associated with soil and ground water investigation to be performed by ESE at the site.

It is our intention to initiate site investigation at 8:00 am on Monday, April 11, 1994. Soils Exploration Services, Inc. of Vacaville, California will be the drilling subcontractor, who will work under the supervision of ESE personnel Bart Miller and Brian McAloon. Mr. Miller will act as site Health & Safety Officer.

The conditions presented in your March 28 correspondence are so noted, and ESE will make every attempt to comply in so far as they apply to the proposed scope of work for preliminary site assessment.

If you have any further questions or comments, please feel free to contact me at (510) 685-4053.

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Michael E. Quillin, RG 5315
Senior Hydrogeologist

Enclosure

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HEALTH AND SAFETY PLAN
for
TRI-STAR ENTERPRISES
AUTOPRO FACILITY
OAKLAND, CALIFORNIA



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- B. MATERIAL SAFETY DATA SHEETS (Optional)**

TABLES

- 2-1 Medical Examination--Monitoring Program**
- 5-1 Windchill Index**

1.0 GENERAL INFORMATION

1.1 INTRODUCTION

This Health and Safety Plan shall provide the safety and health requirements for general site work taking place under a contract with Tri-Star Enterprises. This Plan provides the structure for a Site-Specific Health and Safety Plan, and provides information which will apply to all Environmental Science & Engineering, Inc. (ESE) projects. Together, they comprise the Site Health and Safety Plan (HASP). This HASP will be considered complete only with an associated Site-Specific HASP.

The purpose of this HASP is to protect individuals, those working at the site, visitors, and the surrounding populace, and the environment during on site sampling and site characterization activities at petroleum hydrocarbon impacted sites. This plan includes preventive and protective measures against health hazards, fire and explosion hazards, and mechanical hazards which may exist or occur during field activities.

1.2 SITE INFORMATION

The General Information section of each Site-Specific Health and Safety Plan will provide the following information:

1. Name and Location of the Site;
2. Name of Individual Preparing the Plan, and Date of Preparation;
3. Brief Site History;
4. Investigative Objective and Work Plan;
5. Proposed Dates of Investigation; and
6. Assessment of Overall Worker and Public Health Hazards.

1.3 REGULATORY REQUIREMENTS:

Occupational Safety and Health Administration (OSHA) standards 29 Code of Federal Regulations (CFR) 1910 and 1926 apply to work under this site-specific HASP. Title 8 of California Code of Regulations (General Construction Safety Orders and General Safety Orders) must be complied with at California sites. Additional requirements are contained in Code of Federal Regulations title 40, Protection of the Environment.

2.0 PERSONNEL REQUIREMENTS

2.1 ORGANIZATION

The overall project organization as described in this document will be shown in the Site-Specific Health and Safety Plan, and will identify and show responsibilities for all key personnel, employees, and subcontractors.

2.2 ESE HEALTH AND SAFETY POLICY AND RESPONSIBILITY

It is the policy of the management of ESE and also a contract requirement that a safety plan be implemented at hazardous material contamination sites to protect individuals and the environment. All ESE personnel involved in work on these sites will conform and comply with all aspects of this safety program. Each and every individual is, and therefore must regard and conduct him/herself as, a member of the safety team and adhere to the prescribed site safety plan to ensure his/her own safety as well as that of fellow workers, visitors, and the public.

2.3 PERSONNEL RESPONSIBILITIES

For each site, the responsibilities of the Project Manager include:

1. Preparing an effective site safety plan for the project;
2. Categorizing and identifying for the project staff the levels of potential exposure and dangerous levels of hazardous materials possibly encountered on site;
3. Ensuring that adequate and appropriate safety training and equipment are available for project personnel; and
4. Arranging for medical examinations for specified project personnel.
5. Ensuring a qualified on-site field person is designated Site Safety Officer (SSO) and is present when work is in progress. Alternates may also be designated as needed, however, the project manager must ensure the designated (SSO) is familiar with the safety plan and his/her responsibilities.
6. Ensuring any subcontractors (i.e. drillers, excavators) get an advance copy of the Health and Safety Plan and a start-up safety briefing is scheduled.
7. Determining appropriate level of protection and exposure monitoring strategy for the project by task or phase.

Overall responsibility for safety during the site investigative activities rests with the Project Manager. To assist the Project Manager, a qualified Site Safety Officer will be appointed for each site.

The Site Safety Officer's (SSO's) responsibilities include:

1. Implementing all safety procedures and operations on site.
2. Conducting start-up safety briefing with project personnel and subcontractors. Ensure all necessary equipment and procedures are in place before start-up. Addressing any substandard conditions requiring correction prior to start up.
3. Updating equipment or procedures based upon new information gathered during the site inspection.
4. Upgrading or downgrading the levels of personal protection based upon site observations and/or measurements.
5. Determining and posting locations and routes to medical facilities and arranging emergency transportation to medical facilities (as required).
6. Controlling site entry and notifying (as required) local public emergency officers (i.e., police and fire departments) of the nature of the team's operations and making emergency telephone numbers available to all team members.
7. Ensuring that at least one member of the field team is available to stay behind and notify emergency services if the Site Safety Officer must enter an area of maximum hazard or entering this area only after notifying emergency services (police department).
8. Observing work party members for symptoms of on-site exposure or stress.
9. Arranging for the availability of on-site emergency medical care and first aid, as necessary.
10. Documenting field activities and incidents. Keeping Project Manager informed. Consulting with Health and Safety Officer as needed.

The Health and Safety Officer (HSO) is responsible for:

1. Assisting Project Manager with development of the site specific Health and Safety Plan.
2. Providing technical support during normal operations and upsets for hazard assessment, exposure monitoring, level of protection changes.
3. Reviewing and approving the site specific safety plan.

The responsibilities of all other on site personnel include:

1. Complying with all aspects of the project Safety plan, including strict adherence to the buddy system.
2. Obeying the orders of the Site Safety Officer.
3. Notifying the Site Safety Officer of hazardous or potentially hazardous incidents or working situations.

Subcontractors and other non-ESE site personnel are also responsible for complying with this plan and all applicable federal, state and local safety and environmental regulations and codes.

2.4 TRAINING

All ESE site personnel working on the hazardous material contamination site investigations will have completed a safety and health training course for hazardous waste site work meeting the requirements of 29CFR1910.120 and have worked at least 3 days of supervised on the job training. The course consists of an initial 40-hour session and annual refreshers of 8 hours. Subcontractors and visitors are required to provide proof of equivalent training. The field team leader will have completed an additional 8 hours of waste site supervisory training. For each location, specific training is given by the Project Manager or Site Safety Officer to inform employees of site-specific hazards. Additionally, at least one field team member will be trained to perform cardiopulmonary resuscitation (CPR) and first aid.

2.5 MEDICAL MONITORING PROGRAM

All ESE on site personnel, subcontractors, and visitors for this project will be required to have the medical examination outlined in Table 1. This examination is given annually and more often if specified by the attending physician. All medical examinations include certification by the physician of the employee's ability to wear a negative-pressure respirator and to perform strenuous work. If a person sustains an injury or contracts an illness related to work on site that results in lost work time, he must obtain written approval from a physician to regain access to the site.

2.6 RECORDS DOCUMENTATION

Air monitoring data generated during the project will become part of the written record. Both medical and air monitoring data will be retained for the time period required by OSHA in various standards [29 CFR 1910.20(D)(i), 1910.20(D)(ii), 1910.1018, 1910.1025]. Training records are maintained in project files and on ESE's personal identification cards and are available for inspection at all times. Subcontractors are required to have similar documents available for inspection as required.

All personnel associated with work at a site will be required to sign a statement indicating that they have read, and will comply with the site safety plan. This signature page will also include information on their training and medical surveillance status.

Table 2.1

Medical Examination--Monitoring Program

Basic physical exam

Heart status and functions (EKG) baseline only except if >40

Chest X-ray (Roentgenogram posterior-anterior)

Pulmonary function--forced vital capacity, forced expiratory
volume at 1 second and reserve volume

Blood--full SMAC Series

Hemoglobin--cell counts, protein levels

Liver function--full enzyme profile

Renal function--BUN, Creatinine, Creatine/Creatinine ratio,
lipoprotein count and differential, uric acid

Urinalysis

Audiometry--audio spectrum response of ear

Eye--physical condition, visual acuity

Other laboratory tests may be ordered depending on actual or expected exposures and physician
recommendations.

The individuals listed in the Site-Specific Plan organization chart will be certified to wear respirator
protection in accordance with criteria from the ANSI Z88.2 and 29 CFR 1910.134.

3.0 HAZARD EVALUATION

3.1 CHEMICAL CONTAMINANTS

Potential site contaminants at petroleum contamination sites include gasoline, gasohol, motor oil, fuel oils (including kerosene, diesel fuel), and aviation grade gasoline. These materials may exist as free product in soil or on groundwater, and/or as contaminants to soil and water, and/or in tanks, piping, and systems.

Fuel products include materials in and around storage tanks, such as gasoline, kerosene, diesel, and their derivatives, xylene, toluene, benzene, tetraethyl lead (TEL), and chlorinated solvents. The chlorinated solvents include trichloroethylene and tetrachloroethylene.

3.2 PHYSICAL AND MECHANICAL HAZARDS

Activities on site may include site visits, soil gas sampling, headspace sampling, installation and sampling from monitor wells, installation of free product recovery systems, installation of groundwater recovery systems, installation of soil venting systems, installation of biological treatment systems, installation of air strippers, installation of carbon absorption units, removal of tanks, piping, and systems, and removal of contaminated soil.

Hazards associated with these activities are varied and include vehicle/pedestrian collisions, fire, collapse of excavation and trenching, handling of heavy materials and equipment operations resulting in contact and crushing type injuries, and use of air- and electrically-powered tools which may result in abrasions, contusions, lacerations, etc.

3.3 JOB HAZARD ANALYSIS AND RISK ASSESSMENT

The chemical contaminants which may be present and the hazardous activities which may be performed at the site will be identified through preliminary site assessment activities, such as site visits or records search. Based on this preliminary information, initial risk assessments will be made by the Site Safety Officer, in consultation with an ESE Regional Health and Safety Officer, defining hazards (both chemical and physical) to workers and other on site personnel, the surrounding populace, and the environment.

The identities of potential hazards and resultant initial risk assessments will be included in the Hazard Evaluation section of the Site-Specific Plan, will be reviewed daily, and will be updated as necessary by the Site Safety Officer. Updated information will be communicated to all other on site personnel immediately.

3.4 AIR MONITORING

An air monitoring program is fundamental to the safety of on site and off site personnel. Total organic vapor (TOV) levels associated with on site activities will be monitored with a Photoionization Detection (PID) instrument (Photovac® TIP or HNU PI-101). This instrument will be the primary source of information for upgrading personal protection. Calibration and maintenance of monitoring equipment will be in accordance with manufacturer recommendations.

The Site Safety Officer, or designee, will establish daily a background TOV prior to initiating on site activities. Under most circumstances, this level can be determined by taking multiple readings at representative locations along the perimeter of the site and averaging the results of sustained measurements. (A sustained measurement is defined as the arithmetic average of six readings taken at 10-second intervals.) If, due to site conditions, it appears that perimeter readings will not yield a truly representative background level, the Site Safety Officer or an ESE Regional Health and Safety Officer will be consulted for guidance.

Decisions to upgrade personal protection will be based on sustained breathing zone TOV that exceeds background levels. Breathing zone refers to the area from the top of the shoulders to the top of the head.

Explosivity levels associated with on site activities will be monitored with an explosimeter or combustible gas meter. This will be the primary source of information for determining the potential hazard due to explosion or fire in confined spaces and other enclosed areas with little or no ventilation. Prior to entry of any area which may contain an explosive or flammable atmosphere, the Site Safety Officer or designee will take representative readings of the suspect area. Representative readings include readings from top, middle, and lower levels of the area, and at various points at each level in larger areas. Areas in which any one reading exceeds 20% of the lower flammable limit will be considered potentially explosive, and will be vented to below 20% of the lower flammable limit before the introduction of any personnel or non-explosion proof powered equipment.

4.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment to be used at petroleum contamination sites will consist of several components. These components will protect the respiratory system, eyes and face, hands, feet, body, and head from a variety of chemical and physical hazards. Levels of personal protection will be categorized in accordance with the criteria described in accordance with the guidelines given in Section 3, Air Monitoring. Additional guidance for personal protective equipment can be found in the ESE Corporate Respiratory Protection Program, or can be obtained from an ESE Regional Health and Safety Officer.

Action levels for upgrading to the various protective levels and levels of personal protection required for the various tasks to be performed on each site, as well as any special site requirements, will be given in the Personal Protective Equipment section of the Site-Specific Plan.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL A

1. Open-circuit, pressure-demand, self-contained breathing apparatus (SCBA);
2. Totally encapsulated suit;
3. Gloves, inner (surgical type);
4. Gloves, outer, chemical protective;
5. Boots, chemical protective, steel toe and shank; and
6. Booties, chemical protective.

CRITERIA

1. Sites known to contain hazards which:
 - a. Require the highest level of respiratory protection (as previously stated),
 - b. Will cause illness as a result of personal exposure,
 - c. Permit a reasonable determination that personal exposure could occur to any part of the body; or
2. Sites for which the Project Manager and/or Site Safety Officer make a reasonable determination that, based on the lack of information to the contrary, the site may be described as previously stated.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL B

1. Open-circuit, pressure-demand SCBA;
2. Chemical protective
 - a. Overalls and long-sleeved jacket, or
 - b. Coveralls;
3. Gloves, inner (surgical type);
4. Gloves, outer, chemical protective;
5. Boots, chemical protective, steel toe and shank;
and
6. Booties, chemical protective.

CRITERIA

1. Sites known to contain hazards which:
 - a. Require the highest level of respiratory protection (as previously stated),
 - b. Will cause illness as a result of personal exposure,
 - c. Permit a reasonable determination that personal exposure to areas of the body not covered by Level B protective clothing is unlikely; and
2. Sites for which the Project Manager and/or Site Safety Officer make a reasonable determination that, based on the lack of information to the contrary, the site may be described as previously stated.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL C

1. Full face-piece, air-purifying respirator (high-efficiency particulate/organic vapor cartridges);
2. Emergency escape oxygen pack (carried);
3. Chemical protective (Tyvek® is the minimum protection)
 - a. Overalls and long-sleeved jacket, or
 - b. Coveralls, or
 - c. Apron;
4. Gloves, inner (surgical type) (Latex);
5. Gloves, outer, chemical protective (Nitrile);
6. Boots, chemical protective (neoprene or NBR), steel toe and shank; and
7. Booties, chemical protective (Latex).

CRITERIA

1. Sites known to contain hazards which:
 - a. Do not require a level of respiratory protection greater than the level afforded by air-purifying respirators (nominal protection of 10), as previously stated;
 - b. Will cause illness as a result of personal exposure; or
 - c. Permit a reasonable determination that personal exposure to areas of the body not covered by Level C protective clothing is unlikely; and
2. Sites for which the Project Manager and/or Site Safety Officer make a reasonable determination that, based on the lack of information to the contrary, the site may be described as previously stated.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL D

1. Coveralls, cotton;
2. Boots/shoes, safety;
3. Safety glasses;
4. Hard hat with optional face shield (where overhead hazards exist); and
5. Air-purifying respirator (readily available).

CRITERIA

Sites where the Project Manager and/or Site Safety Officer make a reasonable determination that hazards due to exposure to hazardous materials are unlikely.

ADDITIONAL PERSONAL PROTECTION

In addition to personal protective equipment, field personnel having duties on or near the hazard site should have ready access to:

1. A fully stocked industrial-size first-aid kit;
2. An eyewash kit; and
3. At least 6 gallons of potable water in a pressurized container to permit decontamination in event of accidental skin or eye contact with chemicals.

5.0 STANDARD WORK PRACTICES

5.1 GENERAL SAFETY RULES:

In addition to the specific requirements of the Site-Specific Plan, common sense should prevail at all times. The following general safety rules and practices will be in effect at the site.

1. The site will be suitably marked or barricaded as necessary to prevent unauthorized visitors, but will not hinder emergency services if needed.
2. All open holes, trenches, and obstacles will be properly barricaded in accordance with local site needs. These needs will be determined by proximity to traffic ways, both pedestrian and vehicular, and site of the hole, trench, or obstacle. If holes are required to be left open during nonworking hours, they will be adequately decked over or barricaded and sufficiently lighted.
3. Prior to conducting any digging or boring operations, underground utility locations will be identified. The site representative and local utility authorities will be contacted to provide locations of underground utility lines and product piping. All boring, excavation, and other site work will be planned and performed with consideration for underground lines.
4. Smoking and ignition sources in the vicinity of flammable or contaminated material is prohibited.
5. Drilling, boring, movement and use of cranes and drilling rigs, erection of towers, movement of vehicles and equipment, and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures, including signs, lights, canopies, buildings, and other structures and construction, and natural features such as trees, boulders, bodies of water, and terrain.
6. When working in areas where flammable vapors may be present, particular care must be exercised with tools and equipment that may be sources of ignition. All tools and equipment so provided must be properly bonded and/or grounded.
7. Approved and appropriate safety equipment, as specified in this site-specific HASP, such as eye protection, hard hats, foot protection, and respirators, must be worn in areas where required by the site-specific HASP. In addition, eye protection must be worn when handling free product, contaminated soil or water, or fill dirt.
8. Beards that interfere with respirator fit are not allowed within the site boundaries. This is necessary because all site personnel may be called upon to use respirator protection in some situations, and beards do not allow for proper respirator fit.
9. No smoking, eating, or drinking will be allowed in the contaminated areas.
10. Tools and hands must be kept away from the face.
11. Personnel must shower at the end of the shift or as soon as possible after leaving the site.
12. Each sample must be treated and handled as though it were extremely toxic.
13. Tank pit excavations must be sampled cautiously, using a remote sampling device or securing samples from excavated soil, and the pit should be entered only as a last resort and only if it is properly shored or sloped. The pit may meet the criteria for a confined space, in which case any entry must be made in accordance with NIOSH recommended Confined Space Entry Procedures. No confined space entry except by written procedure approved by the Health and Safety Officer.
14. Persons with long hair and/or loose-fitting clothing that could become entangled in power equipment are not permitted in the work area.
15. Horseplay is prohibited in the work area.
16. Working while under the influence of intoxicants, narcotics, or controlled substances is prohibited.

5.2 WORK LIMITATIONS:

HOURS

Work shall be limited to daylight hours and during normal weather conditions. Extremes in temperature and weather condition (i.e., wind and lightning) will restrict working hours.

HEAT STRESS

For monitoring the body's recuperative ability toward excess heat, the following techniques will be used as a screening mechanism. Monitoring of personnel wearing protective clothing will commence when the ambient temperature is 70 degrees Fahrenheit (°F) or above. When temperatures exceed 85°F, workers will be monitored after every work period. Monitoring will include visual observations for signs of heat stress and measurement of radial pulse rate for 30 seconds at the beginning of each rest period. If the heart rate exceeds 110 beats per minute (beats/min) at the beginning of a rest period, the next work period will be shortened by 10 minutes, and the rest period stays the same. If the pulse rate is 100 beats/min at the beginning of the next rest period, the following work cycle will be shortened another 10 minutes.

Also, good hygienic standards must be maintained by frequent change of clothing and daily showering. Clothing should be permitted to dry during rest periods. If skin problems occur, consult medical personnel.

COLD STRESS

The human body "senses" cold as a result of two factors, the air temperature and the wind velocity. Cooling of the flesh increases rapidly as wind velocity goes up. Frostbite can occur at relatively mild temperatures if wind penetrates the body insulation. For example, when the air temperature is 40°F and the wind velocity is 30 miles per hour (mph), the exposed skin would perceive an equivalent still air temperature of 13°F. Table 5-1 illustrates windchill indices and the associated hazards to exposed flesh. Precautions will be taken to minimize exposed flesh, and layered clothing will be provided, as appropriate.

Table 5-1.

Windchill Index

Windspeed (mph)	Actual Thermometer Reading (°F)										
	50	40	30	20	10	0	-10	-20	-30	-40	
Calm	50	40	30	20	10	0	-10	-20	-30	-40	
5		48	37	27	16	6	-5	-15	-26	-36	-47
10		40	28	16	4	-9	-21	-33	-46	-58	-70
15		36	22	9	-5	-18	-36	-45	-58	-72	-85
20		32	18	4	-10	-25	-39	-53	-67	-82	-96
25		30	16	0	-15	-29	-44	-59	-74	-88	-104
30		28	13	-2	-18	-33	-48	-63	-79	-94	-109
35		27	11	-4	-20	-35	-49	-67	-82	-98	-113
40		26	10	-6	-21	-37	-53	-69	-85	-100	-116

Source: National Safety Council, 1982.

5.3 ACCIDENT PREVENTION PLAN/ACCIDENT REPORTING:

The purpose of the Safety Plan is to prevent accidents and minimize the impact of an accident if one should occur.

All accidents must be reported to the Site Safety Officer immediately. Prompt reporting is essential to the prevention of future incidents in addition to the well-being of the affected individual or individuals. The Site Safety Officer will notify the Project Manager of any serious accidents. The Site Safety Officer or other key members of the field team will be trained in first aid and CPR. First aid will be administered to affected personnel under the direction of the Site Safety Officer. For serious accidents, the nearest ambulance service will be contacted for transport of injured personnel to the nearest medical facility (see Section 6.0). The Site Safety Officer will have established contact and liaison with medical authorities (see Section 6.0) whose personnel will be knowledgeable of the activities of the field team. Telephone numbers and addresses of ambulance and medical services will be posted on site.

A formal report of any OSHA-recordable accident will be filed with ESE. All reports must be received within 2 working days.

5.4 WORK ZONES AND DECONTAMINATION PROCEDURES:

Work zones will be established in accordance with guidance provided in Figure 5-1. These zones may be modified to fit applicable field conditions; however, proposed modifications must be approved by the Project Manager and Site Safety Officer prior to being implemented in the field.

Personnel decontamination will be initiated on site. Disposable clothing will be removed and stored in designated containers. If additional decontamination is necessary, based on preliminary or subsequent risk assessment by the Site Safety Officer in consultation with ESE Regional Safety and Health Officer, additional decontamination procedures will be implemented. Site specific decontamination procedures will be listed in the Site-Specific Plan.

All heavy equipment will be decontaminated on site. Water in the form of steam cleaning and/or pressure washing may be used to remove any visual contamination from drilling equipment and backhoe.

5.5 SITE SECURITY AND ENTRY:

Site security measures, including barricading, fencing, and lighting, and any special site entry procedures will be described in the Section 5 of the Site-Specific Plan.

6.0 EMERGENCY INFORMATION AND CONTINGENCY PLANS

All emergency information, including phone numbers, site resources, and routes to emergency medical care, will be maintained on site in the Site-Specific Plan by each field team.

The phone list will include the following numbers:

AMBULANCE:

FIRE DEPARTMENT:

HOSPITAL (primary):

HOSPITAL (secondary):

POISON CONTROL CENTER:

POLICE:

TOXIC WASTE AND OIL SPILL:

CLIENT CONTACT:

AGENCY CONTACT:

PROJECT MANAGER:

CORPORATE SAFETY AND HEALTH OFFICER:

The list of site resources will include fire extinguishers, first aid equipment, eyewash units, communications (telephone), emergency personal protective equipment, spill containment equipment and materials, and any other special equipment, supplies or resources.

6.1 INJURY CONTINGENCY PLAN

First aid equipment will be kept on site during all site activities. Additionally, one member of the field team will be trained in first aid. Emergency telephone numbers for ambulance and poison control will be maintained on site in a readily accessible location. Names, addresses, and routes to two emergency medical care providers (hospitals or emergency clinics) will be verified prior to any site activity, and will be listed in the Site-Specific Plan. Maps showing the location of the site, the emergency medical care providers, and hotels and restaurants (if any) used by the field team should be provided in each vehicle. In the event of an injury that cannot be treated on site, the injured person will be immediately transported to the medical provider either by support vehicle or ambulance on determination by the Site Safety Officer, Project Manager, and/or first aid provider.

6.2 FIRE CONTROL AND CONTINGENCY PLAN

No smoking will be allowed during field activities. Fire extinguishers will be available at sites for use on small fires. All samples must be treated as flammable or explosive. The Site Safety Officer will have available the telephone number of the nearest fire station and local law enforcement agencies in case of a major fire emergency.

6.3 SPILL CONTROL AND CONTINGENCY PLAN

In the event of a spill, the Site Safety Officer will be notified immediately. The important factors are that no personnel are overexposed to vapors, gases, or mists and that the liquid does not ignite. Waste spillage must not be allowed to contaminate any local water source. Small dikes will be erected to contain spills, if necessary, until proper disposal can be completed. Subsequent to cleanup activities, the Site Safety Officer will survey the area to ensure that no toxic or explosive vapors remain.

6.4 OFF SITE INCIDENT CONTINGENCY PLAN

The Site Safety Officer will provide field team members with emergency medical care information similar to that kept on site in event of an off site emergency, such as a motor vehicle accident, food poisoning, or other injury sustained off the site.

6.5 COMMUNITY THREAT CONTINGENCY PLAN

The potential for exposure to the surrounding community will be assessed in conjunction with the preliminary site assessment.

The Site Safety Officer will consult with a representative of the local emergency services agency (police or fire department, in accordance with local governmental procedures), and will outline procedures in the Site-Specific Plan to be followed in the event of an emergency threat to the surrounding populace. Situations requiring specified procedures include fire, explosion, accidental ingestion, large spills consisting of free product, and accumulation of potentially explosive vapors off site.

The Site-Specific Plan will identify individuals who will respond to reports of non-emergency community threats arising from site activities. This non-emergency response will include sampling of air, wells and ground water, and soil. Situations requiring specified procedures include small spills and presence of existing concentrations of potentially explosive vapors on site.

APPENDIX A

**SITE-SPECIFIC
HEALTH & SAFETY
INFORMATION**

A. GENERAL PROJECT INFORMATION

SITE: AUTOPRO FACILITY **DATE PREPARED:** 04-04-94

LOCATION: 5200 Telegraph Avenue, Oakland, California

PREPARED BY: Bart Miller

OBJECTIVE (S) AND WORKPLAN: Subsurface investigation at former gasoline, diesel fuel, and waste oil UST site. Soil boring and monitoring well installation.

PROPOSED DATE(S) OF ON-SITE WORK: April 11, 1994 - April 12, 1994

BRIEFING DATE(S): April 11, 1994 **BACKGROUND REVIEW:** April 4, 1993

COMPLETE: x

PRELIMINARY: —

-----**PROJECT H.A.S.P. SUMMARY**-----

LEVEL(S) OF PROTECTION: A B C D x MIXED MODIFIED x

OVERALL HAZARD ESTIMATE: HIGH MODERATE LOW x

UNKNOWN

ADDITIONAL DOCUMENTATION: TLV TABLE FULL HASP x METHODS

OTHER

B. SITE/MATERIAL CHARACTERISTICS

MATERIAL/WASTE TYPE(S): LIQUID SOLID GAS SLUDGE

MATERIAL PRESENT IN: DRUMS TANKS OPEN OTHER

CHARACTERISTICS: IGNITABLE CORROSIVE TOXIC REACTIVE

RADIOACTIVE VOLATILE UNKNOWN OTHER _____

FACILITY TYPE: Automobile servicing CLOSED OPEN

FACILITY SIZE: 6,500 square feet

TOPOGRAPHY: Flat, urban location

PRINCIPAL DISPOSAL METHOD AND LOCATION(S): Soil cuttings, purge water, and rinseates will be stored at site in DOT-rated 55-gallon capacity drums pending receipt analytical results.

C. HAZARD EVALUATION

INSTRUCTIONS: Evaluate principal hazards expected at this site. Be specific; complete all entries.

HAZARDS

Physical: HEAVY MACHINERY WITH MOVING PARTS, EXPOSURE TO AMBIENT CONDITIONS.

Chemical: POTENTIAL EXPOSURE TO SOIL, RINSEATES, AND FUMES IMPACTED OR ASSOCIATED WITH GASOLINE, DIESEL FUEL, AND WASTE OIL.

Biological: ALLERGIES AND INSECT BITES/STINGS.

CORRECTIVE ACTIONS

Physical: SITE SAFETY MEETING AND HAZARD IDENTIFICATION PRIOR TO WORK. USE OF HARDHATS, STEEL-TOED BOOTS, GLOVES, AND, IF NECESSARY, EAR AND EYE PROTECTION, BUDDY SYSTEM.

Chemical: SITE SAFETY MEETING PRIOR TO WORK. USE OF RUBBER GLOVES WHEN HANDLING SOIL, NONDECONTAMINATED EQUIPMENT, AND RINSEATES. ENSURE WORKERS FULLY CLOTHED. MONITOR SOIL SAMPLES AND BREATHING ZONE FOR VOLATILE ORGANIC COMPOUNDS ASSOCIATED WITH PETROLEUM HYDROCARBONS USING A PHOTOIONIZATION DETECTOR.

Biological: SITE SAFETY MEETING PRIOR TO WORK. FIRST AID KIT IN THE FIELD DURING SITEWORK.

D. WORK PLAN INSTRUCTIONS

PERSONAL PROTECTION REQUIRED:

Level of protection: A ___ B ___ C ___ D X MIXED ___ MODIFICATIONS ___

For MIXED levels of protection describe areas and levels: _____

For MODIFICATIONS identify action levels: USE OR PERSONAL AIR PURIFYING RESPIRATORS WITH ORGANIC CHEMICAL CARTRIDGES IF CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS IN THE BREATHING ZONE EXCEEDS 50 PPM AS MEASURED USING A PHOTOIONIZATION DETECTOR.

ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT (PPE): TYVEK SUITS IF REQUIRED.

MONITORING EQUIPMENT: PID X FID ___ TOXIC GAS ___ OXYGEN ___
DETECTOR TUBES ___ EXPLOSIMETER ___ PERSONAL MONITOR ___

OTHER INSTRUMENTS: N/A

EQUIPMENT CALIBRATION: PID CALIBRATED DAILY WITH STANDARD GAS IMMEDIATELY PRIOR TO SITE WORK

MONITORING STRATEGY: MEASUREMENTS OF AREA AND BREATHING ZONE TO BE TAKEN CONTINUOUSLY. IF LEVELS ARE CONSISTANTLY LESS THAN 5 PPM THEN THE FREQUENCY OF MONITORING WILL DECREASED TO HOURLY UNLESS CONDITIONS CHANGE (ODOR LEVELS, ETC.).

DECONTAMINATION PROCEDURES: IF REQUIRED, EQUIPMENT AND PERSONNEL DECONTAMINATION AREAS WILL BE DESIGNATED BY THE SITE SAFETY OFFICER AT THE START OF THE SITE WORK. ALL TOOLS WILL BE ADEQUATELY CLEANED PRIOR TO FINAL REMOVAL FROM THE WORK ZONE, TO PREVENT THE TRANSFER OF CONTAMINATION FROM THE WORK SITE TO A CLEAN AREA. PROTECTIVE CLOTHING WILL BE CHANGED ON A DAILY BASIS OR AT THE DISCRETION OF THE SITE SAFETY OFFICER. ALL DISPOSEABLE PROTECTIVE CLOTHING WILL BE PLACED IN PLASTIC BAGS AND PROPERLY DISPOSED. EXCAVATED SOIL WILL BE DRUMMED AND PLACED AT A DESIGNATED AREA AT THE SITE PENDING RECEIPT OF CHEMICAL ANALYSES RESULTS.

SITE CONTROL MEASURES: A 25-FOOT EXCLUSION ZONE WILL BE ESTABLISHED USING TRAFFIC CONES AND/OR CAUTION TAPE. VISITORS WISHING TO ENTER THE EXCLUSION ZONE MUST HAVE 40-HOUR OSHA HEALTH AND SAFETY TRAINING, HAZARDOUS CHEMICAL WORKER MEDICAL SURVEILLANCE, AND MUST HAVE READ AND SIGNED THIS HASP.

SPILL CONTAINMENT PROCEDURES: NO PRODUCT, PURGE WATER, RINSEATES, OR ANY OTHER HAZARDOUS LIQUIDS WILL LEAVE THE SITE UPON COMPLETION OF SITEWORK. ALL LIQUIDS WILL BE STORED AT A DESIGNATED, PROTECTED AREA PENDING RECEIPT OF ANALYTICAL RESULTS FOR PROPER DISPOSAL OR RECYCLING.

NOTES: N/A

E. EMERGENCY PROCEDURES

FIRE OR EXPLOSION: EVACUATE AREA AND CALL 911. ASSIST INJURED ONLY WHEN SAFE TO DO SO. PROVIDE FIRST AID/CPR.

INJURY: CALL 911. ASSIST VICTIM(S) ONLY WHEN SAFE TO DO SO. PROVIDE FIRST AID/CPR.

WEATHER: PROVIDE PLENTY OF WATER AND LIQUIDS ON HOT DAY TO PREVENT HYPERTHERMIA. ENSURE ADEQUATE CLOTHING ON COLD DAY TO PREVENT HYPOTHERMIA AND ON SUNNY DAY TO PREVENT SUNBURN. TAKE REGULAR REST PERIODS IF REQUIRED.

OTHER:

CHEMICAL EXPOSURE ACTIONS:
(See Appendix B for Optional Material Safety Data Sheets)

EMERGENCY TELEPHONE NUMBERS

POLICE/FIRE/AMBULANCE: 911

POISON CONTROL: (800) 523-2222

ESE CONCORD OFFICE: (510) 685-4053

CHEMTREC: (800) 424-9300

UNDERGROUND SERVICE ALERT: (800) 642-2444

PROJECT CONTACTS

AGENCY CONTACT: Alameda County Health Care Services Agency (510) 271-4530

SITE CONTACT: Mr. George Tuma, AUTOPRO (510) 653-8646

CLIENT CONTACT: Mr. Ondrej Kojnok, TRI-STAR Enterprises (408) 866-0112

E. EMERGENCY PRECAUTIONS

PRIMARY HOSPITAL/INFIRMARY:

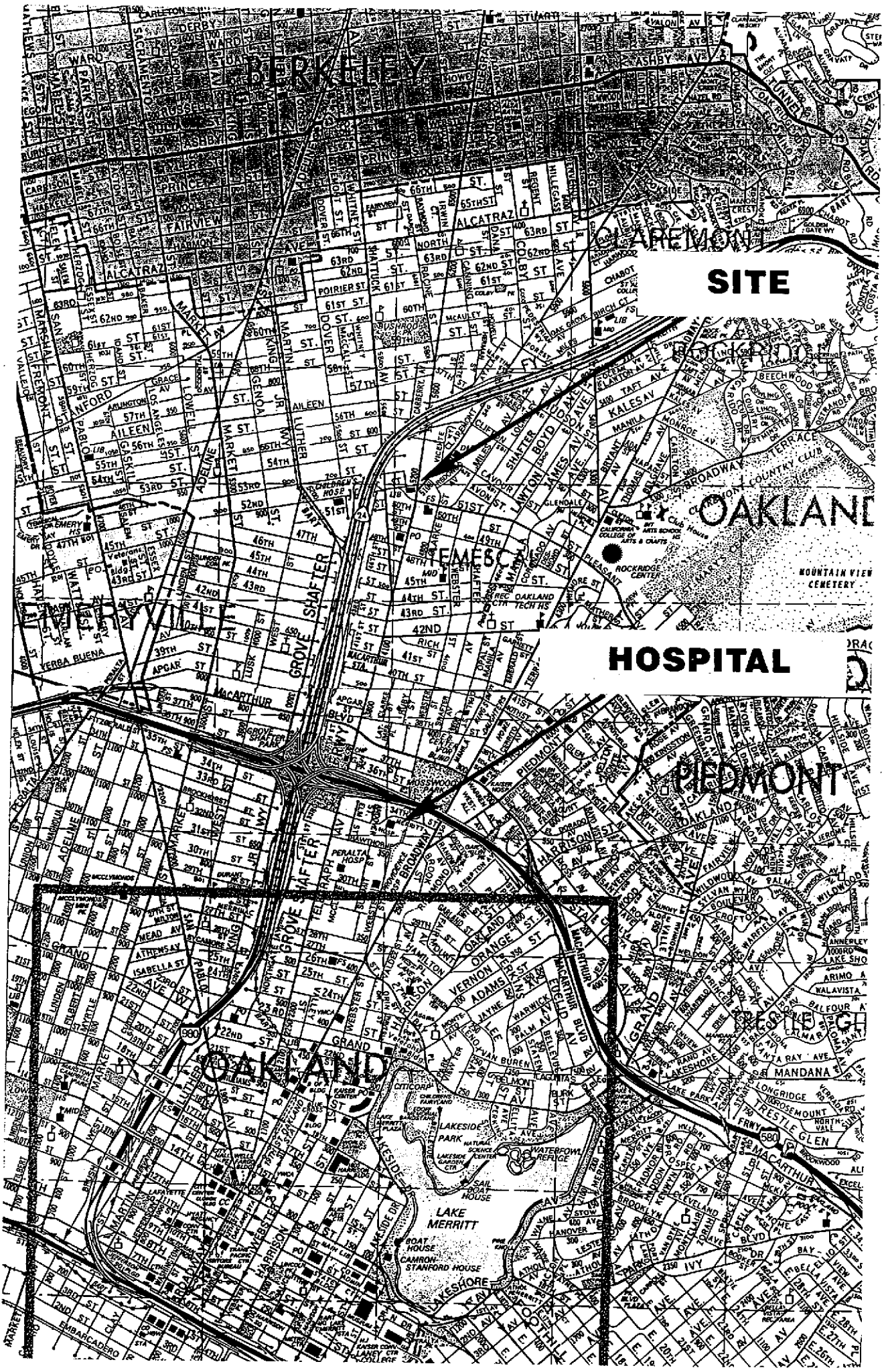
Name: SUMMIT MEDICAL CENTER

Address: 350 HAWTHORNE AVENUE, OAKLAND, CALIFORNIA

Telephone Number: (510) 655-4000 (non-emergency)

Directions from site to emergency unit: Take Telegraph Avenue south to 34th Street and proceed left. Proceed to 34th Street and Webster. Emergency ward located at 34th Street and Webster.

Remarks: See Figure A



SITE

HOSPITAL

PIEDMONT

OAKLAND

ROCKRIDGE

MACARTHUR

LAKE MERRITT

APPENDIX B

**MATERIAL
SAFETY DATA
SHEETS**



MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶ 52,303-3

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24 HOUR EMERGENCY ASSISTANCE			GENERAL MSDS ASSISTANCE		
SHELL: 713-473-9461 CHEMTREC: 800-424-9300			SHELL: 713-241-4819		
ACUTE HEALTH * + 2	FIRE 2	REACTIVITY 0	HAZARD RATING ▶ LEAST - 0 SLIGHT - 1 MODERATE - 2 HIGH - 3 EXTREME - 4		
*For acute and chronic health effects refer to the discussion in Section III					



SECTION I		NAME
PRODUCT ▶	SHELL AUTO DIESEL	
CHEMICAL NAME ▶	DIESEL OIL	
CHEMICAL FAMILY ▶	PETROLEUM HYDROCARBON	
SHELL CODE ▶	31100	

SECTION II-A		PRODUCT/INGREDIENT	
NO.	COMPOSITION	CAS NUMBER	PERCENT
P	SHELL AUTO DIESEL	68334-30-5	100

SECTION II-B		ACUTE TOXICITY DATA		
NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50	
P	NOT AVAILABLE			

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT

BASED ON ESSENTIALLY SIMILAR PRODUCT TESTING LIQUID IS PRACTICALLY NONIRRITATING TO THE EYES.

SKIN CONTACT

BASED ON ESSENTIALLY SIMILAR PRODUCT TESTING LIQUID IS PRESUMED TO BE MODERATELY IRRITATING TO THE SKIN. PROLONGED OR REPEATED LIQUID CONTACT CAN RESULT IN DEFATTING AND DRYING OF THE SKIN WHICH MAY RESULT IN SEVERE IRRITATION AND DERMATITIS. MAY CAUSE MILD SKIN SENSITIZATION. RELEASE DURING HIGH PRESSURE USAGE MAY RESULT IN INJECTION OF OIL INTO THE SKIN CAUSING LOCAL NECROSIS.

INHALATION

INHALATION OF VAPORS OR MIST MAY CAUSE MILD IRRITATION TO THE UPPER RESPIRATORY TRACT. HIGH CONCENTRATIONS MAY RESULT IN CENTRAL NERVOUS SYSTEM DEPRESSION. INHALATION OF HIGH LEVELS OF MIST MAY RESULT IN CHEMICAL PNEUMONITIS.

INGESTION

INGESTION OF PRODUCT MAY RESULT IN VOMITING; ASPIRATION (BREATHING) OF VOMITUS INTO THE LUNGS MUST BE AVOIDED AS EVEN SMALL QUANTITIES MAY RESULT IN ASPIRATION PNEUMONITIS.

SIGNS AND SYMPTOMS

IRRITATION AS NOTED ABOVE. SKIN SENSITIZATION (ALLERGY) MAY BE EVIDENCED BY RASHES, ESPECIALLY HIVES. EARLY TO MODERATE CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION MAY BE EVIDENCED BY GIDDINESS.

PROTECTIVE CLOTHING

NO SPECIAL EYE PROTECTION IS ROUTINELY NECESSARY. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WEAR CHEMICAL RESISTANT GLOVES AND OTHER CLOTHING AS REQUIRED TO MINIMIZE CONTACT.

ADDITIONAL PROTECTIVE MEASURES

USE EXPLOSION-PROOF VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS.

SECTION XI ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES

CAUTION. COMBUSTIBLE. *** LARGE SPILLS *** ELIMINATE POTENTIAL SOURCES OF IGNITION. WEAR APPROPRIATE RESPIRATOR AND OTHER PROTECTIVE CLOTHING. SHUT OFF SOURCE OF LEAK ONLY IF SAFE TO DO SO. DIKE AND CONTAIN. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND, OR OTHER SUITABLE MATERIAL; PLACE IN NON-LEAKING CONTAINERS AND SEAL TIGHTLY FOR PROPER DISPOSAL. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE; DISPOSE OF FLUSH SOLUTION AS ABOVE. *** SMALL SPILLS *** TAKE UP WITH AN ABSORBENT MATERIAL AND PLACE IN NON-LEAKING CONTAINERS FOR PROPER DISPOSAL.

SECTION XII SPECIAL PRECAUTIONS

KEEP LIQUID AND VAPOR AWAY FROM HEAT, SPARKS AND FLAME. SURFACES THAT ARE SUFFICIENTLY HOT MAY IGNITE EVEN LIQUID PRODUCT IN THE ABSENCE OF SPARKS OR FLAME. EXTINGUISH PILOT LIGHTS, CIGARETTES AND TURN OFF OTHER SOURCES OF IGNITION PRIOR TO USE AND UNTIL ALL VAPORS ARE GONE. VAPORS MAY ACCUMULATE AND TRAVEL TO IGNITION SOURCES DISTANT FROM THE HANDLING SITE; FLASH-FIRE CAN RESULT. KEEP CONTAINERS CLOSED WHEN NOT IN USE. USE (ONLY) WITH ADEQUATE VENTILATION. CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, CAN CONTAIN EXPLOSIVE VAPORS. DO NOT CUT, DRILL, GRIND, WELD OR PERFORM SIMILAR OPERATIONS ON OR NEAR CONTAINERS. WASH WITH SOAP AND WATER BEFORE EATING, DRINKING, SMOKING OR USING TOILET FACILITIES. LAUNDRER CONTAMINATED CLOTHING BEFORE REUSE.

AL

SECTION XIII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION:
COMBUSTIBLE LIQUID

D.O.T. PROPER SHIPPING NAME:
FUEL OIL, NA 1993

SECTION XIV OTHER REGULATORY CONTROLS

THIS PRODUCT IS LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES.

IN ACCORDANCE WITH SARA TITLE III, SECTION 313, THE EDS SHOULD ALWAYS BE COPIED AND SENT WITH THE MSDS.

SECTION XV SPECIAL NOTES

THIS REVISION INCORPORATES THE FINDINGS OF DIESEL EXHAUST CARCINOGENICITY INTO SECTION VI.

PRODUCT NAME: SHELL AUTO DIESEL

MSDS 52,303-3
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THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

DATE PREPARED: NOVEMBER 06, 1989

BE SAFE

READ OUR PRODUCT
SAFETY INFORMATION ...AND PASS IT ON
(PRODUCT LIABILITY LAW
REQUIRES IT)

J. C. WILLETT

SHELL OIL COMPANY
PRODUCT SAFETY AND COMPLIANCE
P. O. BOX 4320
HOUSTON, TX 77210



ENVIRONMENTAL DATA SHEET

EDS NUMBER ▶ 52,303

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PRODUCT ▶	SHELL AUTO DIESEL
PRODUCT CODE ▶	31100

SECTION I		PRODUCT/COMPOSITION	
NO.	COMPONENT	CAS NUMBER	PERCENT
P	SHELL AUTO DIESEL	68334-30-5	100

SECTION II		SARA TITLE III INFORMATION			
NO.	EHS RQ (LBS) (*1)	EHS TPQ (LBS) (*2)	SEC 313 (*3)	313 CATEGORY (*4)	311/312 CATEGORIES (*5)
P					H-1, H-2, P-3

-----FOOTNOTES-----

- *1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SEC.302
- *2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
- *3 = TOXIC CHEMICAL, SEC 313
- *4 = CATEGORY AS REQUIRED BY SEC 313 (40 CFR 372.65 C), MUST BE USED ON TOXIC RELEASE INVENTORY FORM
- *5 = HAZARD CATEGORY FOR SARA SEC. 311/312 REPORTING

HEALTH	H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD	H-2 = DELAYED (CHRONIC) HEALTH HAZARD
PHYSICAL	P-3 = FIRE HAZARD	P-4 = SUDDEN RELEASE OF PRESSURE HAZARD
	P-5 = REACTIVE HAZARD	

-----SECTION III ENVIRONMENTAL RELEASE INFORMATION-----

UNDER EPA-CWA, THIS PRODUCT IS CLASSIFIED AS AN OIL UNDER SECTION 311. SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.

-----SECTION IV RCRA INFORMATION-----

UNDER EPA - RCRA (40 CFR 261.21), IF THIS PRODUCT BECOMES A WASTE MATERIAL, IT WOULD BE IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

PRODUCT NAME: SHELL AUTO DIESEL

EDS 52,303
PAGE 2

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

DATE PREPARED: OCTOBER 15, 1987

SHELL OIL COMPANY
ENVIRONMENTAL AFFAIRS
P. O. BOX 4320
HOUSTON, TX 77210

FOR ADDITIONAL INFORMATION ON THIS ENVIRONMENTAL DATA PLEASE CALL
(713) 241-2252

FOR EMERGENCY ASSISTANCE PLEASE CALL
SHELL: (713) 473-9461
CHEMTREC: (800) 424-9300



MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

51,191-6

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24 HOUR EMERGENCY ASSISTANCE			GENERAL MSDS ASSISTANCE		
SHELL: 713-473-9461 CHEMTREC: 800-424-9300			SHELL: 713-241-4819		
ACUTE HEALTH * + 2	FIRE 4	REACTIVITY 0	HAZARD RATING ▶ LEAST - 0 SLIGHT - 1 MODERATE - 2 HIGH - 3 EXTREME - 4		
*For acute and chronic health effects refer to the discussion in Section III					



SECTION I	NAME
PRODUCT ▶	SR 2000(R) (SUPER REGULAR UNLEADED GASOLINE)
CHEMICAL NAME ▶	PETROL
CHEMICAL FAMILY ▶	HYDROCARBON
SHELL CODE ▶	02180

SECTION II-A		PRODUCT/INGREDIENT	
NO.	COMPOSITION	CAS NUMBER	PERCENT
P	SR 2000 (SUPER REGULAR UNLEADED GASOLINE)	MIXTURE	100
1	ALKANES, CYCLOALKANES, ALKENES AND AROMATIC HYDROCARBONS	MIXTURE	BALANCE
2	TOLUENE	108-88-3	0-25
3	XYLENE	1330-20-7	0-25
4	BENZENE	71-43-2	0-5
5	N-HEXANE	110-54-3	0-3
6	TERT-BUTYL METHYL ETHER	1634-04-4	0-11

SECTION II-B		ACUTE TOXICITY DATA	
NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50
P	>5 GM/KG (RAT)	>2 GM/KG (RABBIT)	>5 MG/L/4HR (RAT)

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT

BASED ON PRODUCT TESTING PRODUCT IS MINIMALLY IRRITATING TO THE EYES.

SKIN CONTACT

PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DEFATTING AND DRYING OF THE SKIN RESULTING IN SKIN IRRITATION AND DERMATITIS.

INHALATION

THIS PRODUCT MAY CAUSE IRRITATION TO THE NOSE, THROAT AND RESPIRATORY TRACT AND ADDITIONALLY, MAY PRODUCE LIVER AND KIDNEY DAMAGE. HIGH VAPOR CONCENTRATIONS MAY PRODUCE CNS DEPRESSION.

INGESTION

THIS PRODUCT MAY BE HARMFUL OR FATAL IF SWALLOWED. INGESTION OF PRODUCT MAY RESULT IN VOMITING; ASPIRATION (BREATHING) OF VOMITUS INTO THE LUNGS MUST BE AVOIDED AS EVEN SMALL QUANTITIES MAY

RESULT IN ASPIRATION PNEUMONITIS.

SIGNS AND SYMPTOMS

IRRITATION AS NOTED ABOVE. EARLY TO MODERATE CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION MAY BE EVIDENCED BY GIDDINESS, HEADACHE, DIZZINESS AND NAUSEA; IN EXTREME CASES, UNCONCIOUSNESS AND DEATH MAY OCCUR. ASPIRATION PNEUMONITIS MAY BE EVIDENCED BY COUGHING, LABORED BREATHING AND CYANOSIS (BLUISH SKIN); IN SEVERE CASES DEATH MAY OCCUR. KIDNEY DAMAGE MAY BE EVIDENCED BY CHANGES IN URINE OUTPUT, URINE APPEARANCE OR EDEMA (SWELLING FROM FLUID RETENTION). LIVER DAMAGE MAY BE EVIDENCED BY LOSS OF APPETITE, JAUNDICE (YELLOWISH SKIN COLOR) AND SOMETIMES PAIN IN THE UPPER ABDOMEN ON THE RIGHT SIDE.

AGGRAVATED MEDICAL CONDITIONS

PREEXISTING EYE, SKIN, AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. IMPAIRED LIVER AND KIDNEY FUNCTION(S) FROM PREEXISTING DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT.

OTHER HEALTH EFFECTS

THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) HAS DETERMINED THAT GASOLINE IS POSSIBLY CARCINOGENIC TO HUMANS (GROUP 2B). IT HAS BEEN REPORTED THAT CHRONIC INHALATION EXPOSURE TO AN UNLEADED MOTOR GASOLINE, WHICH WAS FULLY VAPORIZED, HAS PRODUCED KIDNEY AND LIVER CANCERS IN SOME LABORATORY RODENTS. THE STUDIES WERE SPONSORED BY THE AMERICAN PETROLEUM INSTITUTE. THE API TEST MATERIAL USED WAS BLENDED TO REPRESENT A TYPICAL UNLEADED MOTOR GASOLINE. BENZENE IS LISTED BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER AND OSHA AS A CHEMICAL CAUSALLY ASSOCIATED WITH CANCER IN HUMANS.

SEE SECTION VI FOR SUPPLEMENTAL INFORMATION.

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

NO.	PEL/TWA	OSHA		TLV/TWA	ACGIH		OTHER
		PEL/CEILING			TLV/STEL		
P	300 PPM			300 PPM		500 PPM	500 PPM*
2	100 PPM			100 PPM		150 PPM	150 PPM*
3	100 PPM			100 PPM		150 PPM	150 PPM*
4	1 PPM			10 PPM			5 PPM*
5	50 PPM			50 PPM			

*OSHA PEL/STEL. **CLASSIFIED BY ACGIH AS A "SUSPECTED HUMAN CARCINOGEN" (A2).

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT

FLUSH WITH WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SKIN CONTACT

FLUSH WITH WATER WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. FOLLOW BY WASHING WITH SOAP AND WATER. DO NOT REUSE CLOTHING OR SHOES UNTIL CLEANED. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.

INHALATION

REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET MEDICAL ATTENTION.

INGESTION

DO NOT INDUCE VOMITING. IF VOMITING OCCURS SPONTANEOUSLY KEEP HEAD BELOW HIPS TO PREVENT ASPIRATION OF LIQUID INTO THE LUNGS. GET MEDICAL ATTENTION.*

NOTE TO PHYSICIAN

*IF MORE THAN 2.0 ML PER KG HAS BEEN INGESTED AND VOMITING HAS NOT OCCURRED, EMESIS SHOULD BE INDUCED WITH MEDICAL SUPERVISION. KEEP VICTIM'S HEAD BELOW HIPS TO PREVENT ASPIRATION. IF SYMPTOMS SUCH AS LOSS OF GAG REFLEX, CONVULSIONS OR UNCONSCIOUSNESS OCCUR BEFORE EMESIS, GASTRIC LAVAGE USING A CUFFED ENDOTRACHEAL TUBE SHOULD BE CONSIDERED.

SECTION VI SUPPLEMENTAL HEALTH INFORMATION

INFORMATION ON PRODUCT:

A CHRONIC INHALATION STUDY (REFERENCED IN SECTION III) SUPPORTED BY THE AMERICAN PETROLEUM INSTITUTE FOUND THAT FULLY VAPORIZED UNLEADED GASOLINE EXPOSURE PRODUCED DOSE-RELATED INCIDENCES OF KIDNEY CANCER IN MALE RATS. GASOLINE EXPOSURE ALSO PRODUCED AN INCREASE OF LIVER CANCER AT THE HIGHEST DOSE (2056 PPM) IN FEMALE MICE. EXPOSURES WERE FOR 6 HRS/DAY, 5 DAYS/WEEK FOR A TOTAL OF 27 MONTHS. THE RELATIONSHIP AND SIGNIFICANCE TO MAN OF THE RESULTS OF THIS STUDY ARE NOT KNOWN.

INHALATION STUDIES ON GASOLINE VAPORS HAVE CAUSED CENTRAL NERVOUS SYSTEM EFFECTS IN DOGS AT 10,000 PPM.

UNLEADED GASOLINE WAS EVALUATED FOR GENETIC ACTIVITY IN ASSAYS USING MICROBIAL CELLS, CULTURED MAMMALIAN CELLS AND RATS (BONE MARROW). THE RESULTS WERE ALL NEGATIVE. UNLEADED GASOLINE WAS CONSIDERED NON-MUTAGENIC UNDER THESE CONDITIONS.

INFORMATION ON GASOLINE CONSTITUENTS:

LABORATORY ANIMALS EXPOSED BY VARIOUS ROUTES TO HIGH DOSES OF XYLENE SHOWED EVIDENCE OF EFFECTS IN THE LIVER, KIDNEYS, LUNGS, SPLEEN, HEART AND ADRENALS. RATS EXPOSED TO XYLENE VAPOR DURING PREGNANCY SHOWED EMBRYO/FETOTOXIC EFFECTS. MICE EXPOSED ORALLY TO DOSES PRODUCING MATERNAL TOXICITY ALSO SHOWED EMBRYO/FETOTOXIC EFFECTS. PROLONGED AND REPEATED EXPOSURES TO HIGH CONCENTRATIONS OF XYLENE HAVE RESULTED IN HEARING LOSS IN LABORATORY RATS.

WHILE THERE IS NO EVIDENCE THAT INDUSTRIALLY ACCEPTABLE LEVELS OF TOLUENE VAPORS (E.G., THE TLV) HAVE PRODUCED CARDIAC EFFECTS IN HUMANS, ANIMAL STUDIES HAVE SHOWN THAT INHALATION OF HIGH LEVELS OF TOLUENE PRODUCED CARDIAC SENSITIZATION. SUCH SENSITIZATION MAY CAUSE FATAL CHANGES IN HEART RHYTHMS. THIS LATTER EFFECT WAS SHOWN TO BE ENHANCED BY HYPOXIA OR THE INJECTION OF ADRENALIN-LIKE AGENTS. PROLONGED AND REPEATED EXPOSURES TO HIGH CONCENTRATIONS OF TOLUENE HAVE RESULTED IN HEARING LOSS IN LABORATORY RATS.

BENZENE IS A CANCER HAZARD. PROLONGED AND REPEATED EXPOSURE MAY CAUSE SERIOUS INJURY TO BLOOD FORMING ORGANS AND IS ASSOCIATED WITH ANEMIA AND CERTAIN FORMS OF LEUKEMIA IN MAN. ANIMAL STUDIES ON BENZENE DEMONSTRATED IMMUNOTOXICITY, TESTICULAR EFFECTS AND ALTERATIONS IN REPRODUCTIVE CYCLES, EVIDENCE OF CHROMOSOMAL DAMAGE OR OTHER CHROMOSOMAL CHANGES, AND EMBRYO/FETOTOXICITY BUT NOT TERATOGENICITY.

STUDIES ON N-HEXANE IN LABORATORY ANIMALS HAVE SHOWN MILD, TRANSITORY EFFECTS ON THE SPLEEN AND BLOOD (WHITE BLOOD CELLS), AND EVIDENCE OF LUNG DAMAGE. IN ADDITION, FETOTOXICITY HAS BEEN DEMONSTRATED AT LEVELS PRODUCING MATERNAL TOXICITY. AT HIGH LEVELS, INHALATION EXPOSURE HAS RESULTED IN TESTICULAR AND EPIDIDYMAL ATROPHY.

INGESTION OF TERT-BUTYL METHYL ETHER (MTBE) INDUCED CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION IN RATS. EXPOSURE TO MTBE VAPORS PRODUCED EMBRYO/FETOTOXICITY (INCLUDING AN INCREASED INCIDENCE IN CLEFT PALATE AT THE HIGHEST DOSE) IN MICE AT LEVELS PRODUCING MATERNAL TOXICITY. NO SUCH EFFECTS WERE NOTED IN A SIMILAR STUDY IN RABBITS. MTBE TESTED POSITIVE IN THE MOUSE LYMPHOMA ASSAY IN THE PRESENCE OF METABOLIC ACTIVATION.

THE HANDLING PROCEDURES AND SAFETY PRECAUTIONS IN THIS MSDS SHOULD BE FOLLOWED TO MINIMIZE EMPLOYEE EXPOSURE.

SECTION VII PHYSICAL DATA

BOILING POINT: 100-425 APPROX. (DEG F)	SPECIFIC GRAVITY: 0.72-0.76 (H2O=1)	VAPOR PRESSURE: 7-14.5 PSI (MM HG) (REID)
MELTING POINT: NOT AVAILABLE (DEG F)	SOLUBILITY: NEGLIGIBLE (IN WATER)	VAPOR DENSITY: 3.5 (AIR=1)
EVAPORATION RATE (N-BUTYL ACETATE = 1): NOT AVAILABLE		% VOLATILE BY VOL= 100 (@ 415 DEG. F)



ENVIRONMENTAL DATA SHEET

EDS NUMBER ▶ 51,191-4

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PRODUCT ▶ SR 2000(R) (SUPER REGULAR UNLEADED GASOLINE)

PRODUCT CODE ▶ 02180

SECTION I		PRODUCT/COMPOSITION	
NO.	COMPONENT	CAS NUMBER	PERCENT
P	SR 2000 (SUPER REGULAR UNLEADED GASOLINE)	MIXTURE	100
1	ALKANES, CYCLOALKANES, ALKENES AND AROMATIC HYDROCARBONS	MIXTURE	BALANCE
2	TOLUENE	108-88-3	0-25
3	XYLENE	1330-20-7	0-25
4	BENZENE	71-43-2	0-5
5	N-HEXANE	110-54-3	0-3
6	TERT-BUTYL METHYL ETHER	1634-04-4	0-11
7	PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	0-5
8	CYCLOHEXANE	110-82-7	0-1
9	ETHYLBENZENE	100-41-4	0-3
10	NAPHTHALENE	91-20-3	0-1

SECTION II		SARA TITLE III INFORMATION			
NO.	EHS RQ (LBS) (*1)	EHS TPQ (LBS) (*2)	SEC 313 (*3)	313 CATEGORY (*4)	311/312 CATEGORIES (*5)
P					H-1, H-2, P-3
2			YES		
3			YES		
4			YES		
6			YES		
7			YES		
8			YES		
9			YES		
10			YES		

FOOTNOTES

- *1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SEC.302
- *2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
- *3 = TOXIC CHEMICAL, SEC 313
- *4 = CATEGORY AS REQUIRED BY SEC 313 (40 CFR 372.65 C), MUST BE USED ON TOXIC RELEASE INVENTORY FORM
- *5 = HAZARD CATEGORY FOR SARA SEC. 311/312 REPORTING

HEALTH	H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD	H-2 = DELAYED (CHRONIC) HEALTH HAZARD
PHYSICAL	P-3 = FIRE HAZARD	P-4 = SUDDEN RELEASE OF PRESSURE HAZARD
	P-5 = REACTIVE HAZARD	

SECTION III ENVIRONMENTAL RELEASE INFORMATION

UNDER EPA-CWA, THIS PRODUCT IS CONSIDERED AN OIL UNDER SECTION 311. SPILLS INTO OR LEADING TO SURFACE WATERS THAT CAUSE A SHEEN MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.

THIS MATERIAL IS COVERED BY CERCLA'S PETROLEUM EXCLUSION, THEREFORE, RELEASES TO AIR, LAND OR WATER ARE NOT REPORTABLE UNDER EPA-CERCLA ("SUPERFUND").

SECTION IV

RCRA INFORMATION

UNDER EPA - RCRA (40 CFR 261.21), IF THIS PRODUCT BECOMES A WASTE MATERIAL, IT WOULD BE AN IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

DATE PREPARED: APRIL 11, 1990

SHELL OIL COMPANY
ENVIRONMENTAL AFFAIRS
P. O. BOX 4320
HOUSTON, TX 77210

FOR ADDITIONAL INFORMATION ON THIS ENVIRONMENTAL DATA PLEASE CALL
(713) 241-2252

FOR EMERGENCY ASSISTANCE PLEASE CALL
SHELL: (713) 473-9461
CHEMTREC: (800) 424-9300