



CROSBY & OVERTON, INC.

8430 AMELIA STREET • OAKLAND, CA 94621

(800) 821-0424 • (415) 633-0336

FAX (415) 633-0759

SITE MITIGATION PROJECT

AT

138 RUUS LANE, HAYWARD, CA

Prepared For: CYNTHIA PALACIO
Community Preservation Director
City of Hayward
25151 Clawiter Road
Hayward, CA 94545-2731

Written By:

KELLY DRAKE
HAZ. MAT SUPERVISOR
ASBESTOS - MANAGER

Written By:

DAVE SADOFF
PROJECT ENV. GEOLOGIST

Reviewed By:

STEVE HANCOCK
GENERAL MANAGER

June 7, 1991



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June 5, 1991

Cynthia Palacio
City of Hayward
25151 Clawiter Road
Hayward, California 94545-2731

RE: Request for proposal concerning cleanup and disposal of
Hazardous and Non Hazardous waste located at 138 Ruus Lane
Hayward, California.

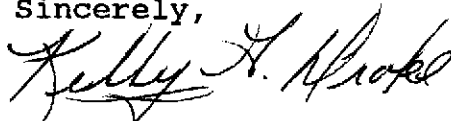
Dear Mrs. Palacio;

Crosby & Overton, Inc. appreciates this opportunity to
respond to your request for quotation for the cleanup of
hazardous and non hazardous wastes located at 138 Ruus Lane
in Hayward, California.

Crosby & Overton, Inc. has been in the hazardous materials
field for 40 years. Professionals at our Oakland Facility
include Chemical Engineers, Geologists, Engineering &
Hazardous Material Technicians, Industrial Hygienist, and
Asbestos Specialists. This broad base of professional
personnel has over 70 cumulative years of experience in
hazardous materials management and site remediation in
Northern California.

The documented experience of Crosby & Overton's
professionals, as well as our vast equipment and materials
inventory (to support our site Remediation & Hazardous
Material Management Projects) enables us to use the most
innovative, cost-effective methods possible. We look
forward to working with the city of Hayward on this and
future projects.

Sincerely,



Kelly Drake
Hazardous Material Supervisor &
Asbestos Manager

Response to request for proposal
"Concerning cleanup and disposal of Hazardous
wastes located at 138 Ruus Lane, Hayward."

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INTRODUCTION

SUBJECT: Property clean-up at 138 Ruus Lane, Hayward, CA

On May 23, 1991 Crosby & Overton, Inc., specifically Steve Hancock, Kelly Drake and Dave Sadoff attended a jobwalk/site survey at the J. Hohener property, located at 138 Russ Lane in Hayward, California. The results of that first survey inspection indicated that a more detailed and intense survey was needed to identify all of the hazardous substances and wastes that were found on site. It is apparent that over the past few years this site has been used as a storage yard for old vehicles, scrap metals, scrap lumber, tires and other miscellaneous items. All of these items are intermingled with hundreds of containers of hazardous substances, both liquid and solid. These containers are, but not limited to 55-gallon drums, 30-gallon drums, 5-gallon cans, (pails), 1-gallon containers, (cans, jars) and various quart and pint containers, vehicle gas and diesel fuel tanks, underground and above-ground gas and fuel tanks. This clean-up project will be painstaking in the fact that these hazardous substances are buried either in, under or around the scrap and rubbish piles. In addition there were hazardous substances and materials found in several buildings, storage containers, camp trailers and even in the old vehicles.

Due to the gross intermingling of all of these materials, basic demolition and clean-up techniques will not be feasible. For instance should you bulldoze in or over one of the scrap or rubbish piles one or several liquid hazardous substances could be broken open or crushed causing an uncontrolled release of either the soil and the water table for many years to come. Additionally, should these materials be scooped up and placed into bins, boxes or trucks and disposed into a regular household garbage landfill, these same incidents could occur. Local landfills are generally not permitted to handle hazardous wastes or substances. The only way to properly mitigate this site is to use trained personnel to sort out and separate the hazardous from the non-hazardous materials found at this

property. The site mitigation process at this location should be approached both carefully and professionally to insure no further environmental impact. Crosby & Overton, Inc. offers this introduction and conclusion and hereby outlines elsewhere in this package the procedures/prices to a successful mitigation of this property.

SITE HISTORY

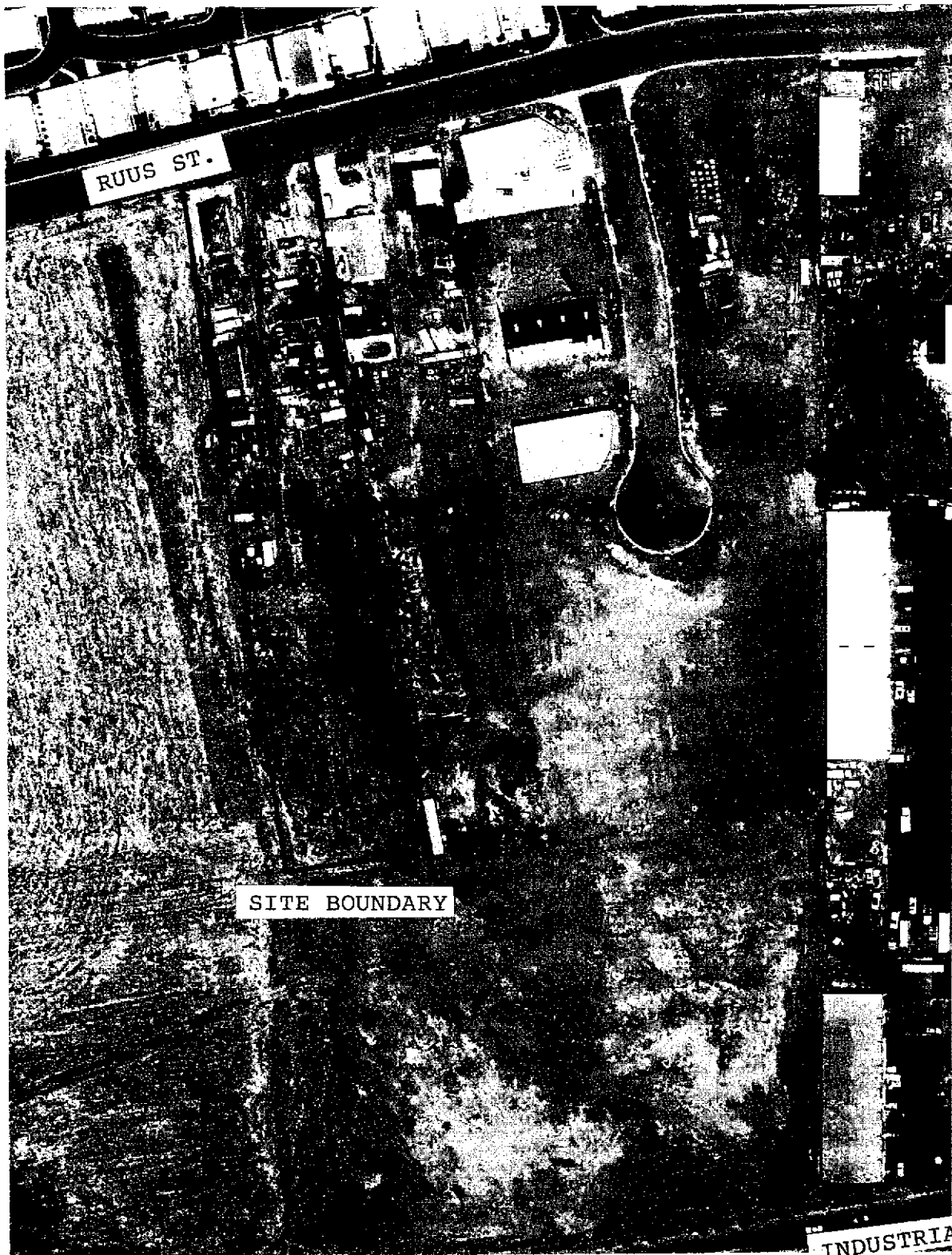
The site's property boundary existed in its present configuration since before 1947. It remained free of debris and vehicles until 1959. In the years between 1959 and 1981, the lot accumulated what appear to be mostly cars, truck/trailers, and structures.

1981 photographs of this site show that approximately one-third of the property covered with cars, truck/trailers, or structures.

The 1985 photos show approximately one-half of the lot covered with mostly cars and truck/trailers. The vehicles are located mostly along the eastern property boundary and extend over three-quarters of the way to the southern property boundary.

By 1990 the lot is accessible only along a median roadway which extends little more than half-way along the length of the property. Interspersed between the cars and trailers are large areas filled with unidentified debris. Additional cars, truck\trailers, and miscellaneous debris are now visible on the western adjoining property.

MHW/mhw



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FIGURE	1981 AERIAL
JOB NUMBER:	N/A
DATE:	6-7-91
DRAWN BY:	MHW



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FIGURE	1985 AERIAL
JOB NUMBER:	N/A
DATE:	N/A
DRAWN BY:	MHW



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FIGURE	1990 AERIAL
JOB NUMBER:	N/A
DATE:	6-7-91
DRAWN BY:	MHW

SITE DESCRIPTION

SITE PHOTOS
SITE MAP

SITE DESCRIPTION

The site is located at 1384 Ruus Lane, Hayward, CA (see site plan). The site is bounded to the North by Ruus Lane, to the East by Business and Residence, to the South by a vacant dirt lot and the West by a field (see aerial photos). The subject property is rectangular in shape, approximately 161' wide at the North boundry, 750' in length and approximately 22' wide at the Southern boundry (see site map). Features on the site included structures, vegetation and debris. Included in the debris is solid and liquid hazardous materials. Examples of debris on site are shown in plates 1,2,3, and panaramic 1 and 2.



View south
corner
reference
site map
area 1



View south-
east
reference
site map
area 2



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plate 1

DATE: 6/7/91

JOB NUMBER: proposal

DRAWN BY: ma





View from north-east to south-east
reference site map area panoramic 1.



View form west to north reference
site map area panoramic 2.



View north
reference
site map
area 6.



View south
reference
site map
area 4.



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Plate 2

DATE: 6/7/91

JOB NUMBER : proposal

DRAWN BY: ma



View into blue structure in above photograph.
reference site map area 5



View south-west. reference site map area 3



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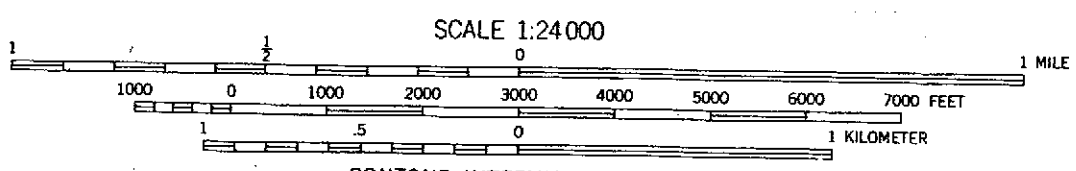
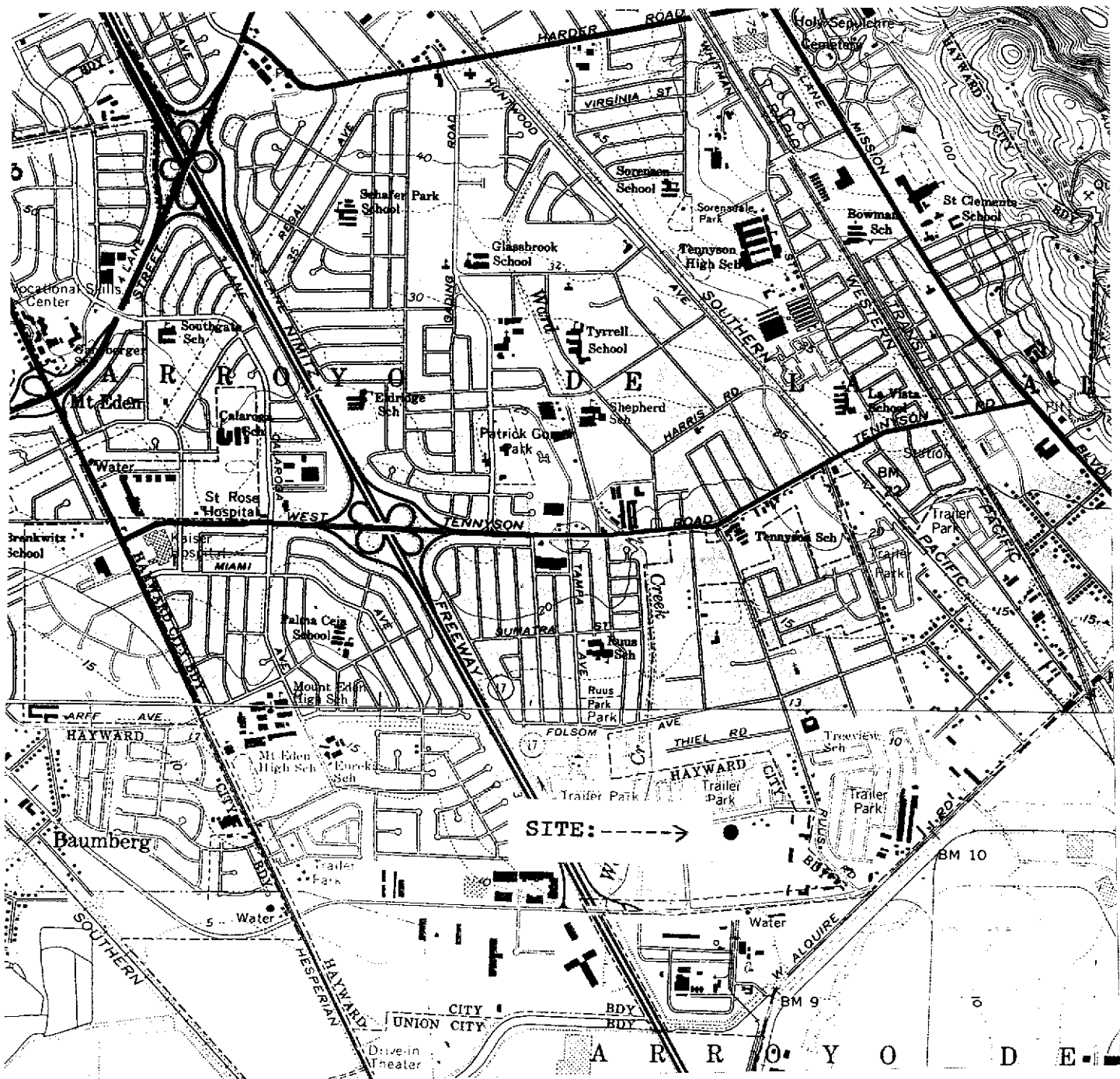
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Plate 3

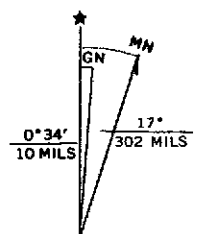
DATE: 6/7/91

JOB NUMBER : proposal

DRAWN BY: ma



SCALE 1:24 000
 CONTOUR INTERVAL 20 FEET
 DOTTED LINES REPRESENT 5-FOOT CONTOURS
 NATIONAL GEODETIC VERTICAL DATUM OF 1929



UTM GRID AND 1980 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



CROSBY & OVERTON, INC.
 8430 AMELIA STREET • OAKLAND, CA 94621

Site Plan

DATE: 6/7/91

JOB NUMBER: proposal

DRAWN BY: ma

SCOPE OF WORK:

*NOTE: Crosby & Overton, Inc. is a fully licensed, permitted and insured environmental management company that also possesses an "A" General Engineering Contractor's License with Hazardous Remediation and Asbestos Certifications. Therefore, (as earlier outlined in our introductory statement), due to the vast amount of hazardous waste containers, (containing various amounts of waste), we feel it is to the advantage of all concerned to use a contractor who provides a total turnkey operation. This will eliminate considerable downtime during the sorting process.

There are many possible solutions to the clean-up and disposal project which exists at this site. We, at Crosby & Overton, feel that the most feasible, expedient and cost effective method would be to perform the work in the following manner:

A pre-construction meeting will be held prior to start of work to address such concerns as:

safety procedures and precautions, work procedures, site and security concerns, recommended staging area, communication between parties, etc. . .

PHASE 1

Crosby & Overton, Inc. will install temporary fencing surrounding the work area. A 20 foot swing gate will be installed at the front entrance of the property as well. In addition, C&O will attach to fence, barricade tape and warning signs at all approaches to work area. A clean zone will be established and an on-site office equipped with phone, electricity and water will staged in this area. A portable toilet will stage near the office and will be serviced on a bi-weekly basis. A five stage personnel decontamination station will also be set up between the work area, (hot zone) and clean zone. All personnel entering or exiting the work area will be required to use the decon station. (see Site Safety Plan)

PHASE 2:

Crosby & Overton personnel will don proper protective equipment, (reference Site Safety Plan for level of P.P.E) and introduce equipment into the work area. Various staging areas will be set up at this time. Drop boxes will be staged for metal, wood and non-hazardous debris. Warehouse S-2, (reference site map), and surrounding area will be cleared out first and used for storage of all hazardous material containers found on property. Vehicles will also be staged near Warehouse S-2. All tanks will also be staged in a cleared area to the rear of the warehouse.

* Refer to site map for all storage areas

* NOTE: Drop boxes for scrap metal, wood and non-haz debris will be moved to specific work areas to expedite loading time.

PHASE 3:

Once all staging areas are set up the sorting and staging process will begin. C&O will begin work in front of the property, working toward the back. All waste will be placed in their respective staging areas. Drop boxes for non-hazardous material will be replaced as they are filled. All hazardous materials will be segregated and stored in the proper staging area. C&O will continue this work until all waste on the property is sorted, staged and disposed of.

PHASE 4:

Disposal shall consist of:

inventory, proper packaging, labeling, manifesting, transportation and disposal of all hazardous waste in strict accordance with all local, state and federal regulations at approved disposal facilities.

DISPOSAL

Disposal: On the following pages you will find the outline for each waste stream.

Name of Waste Stream -

Inventory (projected) -

*NOTE: Inventories are based on visual inspection and could change once refuse piles are moved and additional waste containers are unearthed from these piles.

Packaging Method -

Treatment Method -

Approved & Licensed Disposal Facility -

Record Keeping -

*NOTE: All monies received from disposal of scrap metal, car & truck batteries and disposal of clean empty drums will be rebated to you at the conclusion of this project and at the following rates:

scrap metal & iron	(rebate \$20.00 per ton)
car & truck batteries	(rebate \$1.00 each)
empty clean drums	(rebate \$10.00 per ton)

DISPOSAL

WASTE STREAM: Scrap metal & iron

INVENTORY: Approximately 200 cubic yards
several 100 tons

PACKAGING: 20 - 30 cubic yard drop boxes

TREATMENT: metals recovery (recycle)

FACILITY: D.C. Metals
1401 - 3rd Street
Oakland, CA 94607

RECORD KEEPING: Bill of Lading and weight scale receipts
will be kept on file in triplicate

DISPOSAL

WASTE STREAM: Car and Truck Batteries

INVENTORY: 14 trucks - (approximately)
6 cars

PACKAGING: Palletize and Shrink Wrap

TREATMENT: Metals Recovery - (recycle)

FACILITY: Battery Specialists
2824 San Pablo Ave.
Oakland, CA 94608

RECORD KEEPING: Bill of Lading & weight scape receipts
will be kept on file in triplicate

DISPOSAL

WASTE STREAM: Clean Empty Containers

INVENTORY: Approximately 80 Drums - various sizes

PACKAGING: Crushed, palletized and transported on
stakedbed truck

TREATMENT: Metals Recovery (recycle)

FACILITY: Circosta Iron & Metal Co.
1801 Evans Ave.
San Francisco, CA 94124

RECORD KEEPING: Bill of Lading and scale receipts kept
on site in triplicate

DISPOSAL

WASTE STREAM: Wood and Lumber

INVENTORY: Approximately 130 cubic yards

PACKAGING: Loaded into 20 cubic yard drop boxes

TREATMENT: Fiber Recovery - (recycle)

FACILITY: HESCO
6877 Brentwood Blvd.
Brentwood, CA 94513

RECORD KEEPING: Bill of Ladings and weight receipts kept
on file, on site, in triplicate

DISPOSAL

WASTE STREAM: Approximately 60 pieces of rolling stock

INVENTORY: Trucks & Heavy Equipment - 22 (approx.)
Autos and pickups - 19 (approx.)
Trailers - 18 (approx.)

PACKAGING: Dismantled and loaded into bins

TREATMENT: Fluids drained, drummed and staged in Warehouse S-2

FACILITY: Ajax Auto Wreckers
3764 Depot Rd.
Hayward, CA 94545

RECORD KEEPING: City of Hayward to provide junk slips prior to start of work.

DISPOSAL

WASTE STREAM: Non Hazardous Debris

INVENTORY: Approximately 1350 cubic yards

PACKAGING: 30 cubic yard containers (tarped before transport)

TREATMENT: Landfill at an approved facility

FACILITY: Oakland Scavenger Co.
2601 Peralta St.
Oakland, CA 94603

RECORD KEEPING: Bill of Ladings and scale receipts kept on site on file in triplicate.

DISPOSAL

WASTE STREAM: Car & Truck - Tires & Rims

INVENTORY: Approximately 270 Truck (tires)
90 rims
330 Car (tires)
145 rims

PACKAGING: Loaded and transported on 27' trailers

TREATMENT: Tires will be dismounted, shredded and
incinerated (for fuels)
Rims will be recycled (Metals Recovery)

FACILITY: Oxford Tire Recycling
33950 - 7th St.
Union City, CA 94587

RECORD KEEPING: Bill of Lading will be kept on file on
site in triplicate

DISPOSAL

WASTE STREAM: Above & Underground Storage Tanks

INVENTORY: 1 - trailer mounted 500 gallon tank
1 - 500 gallon underground waste oil tank

PACKAGING: Load on 20' flatbed and transport to disposal facility

TREATMENT: Triple rinsed and dismantled for metals recovery

FACILITY: ERICKSON, INC.
255 Parr Blvd.
Richmond, CA 94801
E.P.A. ID# CAD 009 46 392

RECORD KEEPING: Hazardous waste manifest tracking form, profile and L.D.R. copies kept on file, on site, in triplicate

DISPOSAL

WASTE STREAM: Rinsate Liquids generated during the cleaning of the above & underground fuel tanks

INVENTORY: Approximately 1500 gallons of rinsate will be generated during this cleaning process

PACKAGING: Vacuum Truck (bulk liquid)

TREATMENT: Stabilization and/or incineration for fuels

FACILITY: GIBSON/PILOT
475 Seaport Blvd.
Redwood City, CA 94607
E.P.A. ID# CAD 043 260 702

RECORD KEEPING: Hazardous waste manifest tracking form, profile and L.D.R. copies kept on file, on site, in triplicate

DISPOSAL

WASTE STREAM: Auto & Truck Fuel Tanks

INVENTORY: Approximately 40 drums
Approximately 110 tanks
Various sizes ranging from 10 to
75 gallons

PACKAGING: Tanks - Pallatized, shrink wrapped and
transported on 20' stakebed trucks
Drums - Loaded and transported on 20'
flatbed truck

TREATMENT:

FACILITY: WESTERN DRUM
21301 Cloud Way
Hayward. CA 94545
E.P.A. ID# CAD 087 210 399

RECORD KEEPING: Hazardous waste manifest tracking
form kept on file, on site in
triplicate

DISPOSAL

WASTE STREAM: Waste Petroleum and Fuel Oils

INVENTORY: Approximately 1,085 gallons

PACKAGING: Vacuum Truck, (bulk liquid)

TREATMENT: Incinerated, recycled and/or used
for fuels blending

FACILITY: DE MENNO - KERDOON
2000 N. Alameda
Compton, CA 90222
E.P.A. ID# CAT 080 013 352

RECORD KEEPING: Hazardous waste manifest tracking
form kept on file, on site, in
triplicate

DISPOSAL

WASTE STREAM: P.C.B. Light Ballasts

INVENTORY: Approximately 68 kilograms

PACKAGING: Packed and properly labelled in
15 gallon 17H D.O.T. approved
drum and transported to disposal
facility

TREATMENT: Incineration

FACILITY: U.S. ECOLOGY
Off Hwy 95
10 mi. south of Beatty
Beatty, NV 89003
E.P.S. ID# NVT330010000

RECORD KEEPING: Hazardous waste manifest tracking form,
profile, L.D.R. and E.H. permit kept
on file, on site, in triplicate

DISPOSAL

WASTE STREAM: Asbestos

INVENTORY: 15' transite pipe - approximately
100' of insulated ducting components
5 cu. yds. of contaminated items

PACKAGING: Saturated and double wrapped
proper labelling

TREATMENT: Landfilled at Class II disposal facility

FACILITY: ANDERSON SOLID WASTE LANDFILL
18703 Cambridge Ave.
Anderson, CA 96007
E.P.S. ID# CAD 981 388 952

RECORD KEEPING: Hazardous waste manifest tracking form,
L.D.R. kept on file, on site in
triplicate

DISPOSAL

WASTE STREAM: and INVENTORY	Grease	(1)	30 gal drums
	Paint	(6)	55 gal drums
	Corrosives	(12)	55 gal drums
	Pesticide	(1)	10 gal drums
	Tar & Roofing Compounds	(15)	85 gal drums
	Unknowns	(6)	55 gal drums

PACKAGING: All waste will be properly packaged and labelled in approved D.O.T. shipping containers

TREATMENT:

Grease	-	Incinerated
Paint	-	Incinerated/or recycle
Corrosive	-	Deactivated
Pesticide	-	Incinerated
Tar & Roofing Compounds	-	Incinerated
Unknowns	-	to be determined after haz cats are performed

FACILITY: APPROPRIATE TECHNOLOGIES II
1700 Maxwell Rd.
Chula Vista, CA 92011
E.P.A. ID# CAT 080 010 101

RECORD KEEPING: Hazardous waste manifest tracking form, profile, L.D.R. for each waste stream will be kept on file, on site, in triplicate

QUOTATIONS: The cost breakdown for each service category is as follows:

LABOR	\$119,900.00
EQUIPMENT	17,500.00
MATERIAL	4,500.00
E.H. PERMIT (to transport E.H. wastes)	253.00
HAZ CAT SERVICES (to identify unknowns)	650.00
TEMPORARY FENCING	1,560.00
TRANSPORTATION & DISPOSAL - SCRAP METAL	REBATE
TRANSPORTATION & DISPOSAL - CLEAN EMPTY DRUMS	REBATE
TRANSPORTATION & DISPOSAL - WOOD & LUMBER	720.00
TRANSPORTATION & DISPOSAL - VEH.& ROLLING STOCK	4,350.00
TRANSPORTATION & DISPOSAL - CAR & TRK. TIRES.	1,200.00
TRANSPORTATION & DISPOSAL - NON HAZ DEBRIS.	14,266.00
TRANSPORTATION & DISPOSAL - TANKS > 75 GALLONS	3,220.00
TRANSPORTATION & DISPOSAL - RINSATE LIQUIDS.	1,000.00
TRANSPORTATION & DISPOSAL - CAR/TRK FUEL TANKS	2,000.00
TRANSPORTATION & DISPOSAL - WASTE PETROLEUM OIL	350.00
TRANSPORTATION & DISPOSAL - P.C.B. LIGHT BALLASTS	806.00
TRANSPORTATION & DISPOSAL - ASBESTOS WASTE.	660.00
TRANSPORTATION & DISPOSAL - GREASE WASTE	480.00
TRANSPORTATION & DISPOSAL - PAINT WASTE	3,600.00

HEALTH & SAFETY PLAN
(Site Specific)

SITE SAFETY PLAN FOR
138 RUUS LANE, HAYWARD, CA

A. SITE DESCRIPTION

DATE: June 7, 1991

LOCATION: 138 Ruus Lane, Hayward, CA

TYPE OF BUSINESS: Junkyard and Storage Warehouse

CHEMICAL HAZARDS: Flammable Liquids, Organic Solvents, Acids and Bases

AREAS AFFECTE: Warehouse floors and structure surrounding grounds

TOPOGRAPHY: Pasture land industrial area

SURROUNDING POPULATION: Light apx. 100 per sq. mile

WEATHER CONDITIONS: Warm mild climate-mild breeze

B. ENTRY OBJECTION

1. To classify and stage chemicals into compatable groups for stabililty and handling at a later date.
2. To mitigate any potential spillage of chemicals.
3. Decontaminate warehouse of any chemical spillage.
4. General clean up of property.

C. ON-SITE ORGANIZATION

PRIME CONTRACTOR: Crosby and Overton, Inc.

CONTRACTOR RESPRESENTATIVE - KELLY DRAKE

FIELD TEAM LEADERS - KELLY DRAKE

FIELD TEAM MEMBERS - eight (8) members

C. ON-SITE ORGANIZATION (cont'd)

FEDERAL AGENCIES & CONTACTS: None

STATE AGENCIES & CONTACT: None

LOCAL AGENCIES & CONTACTS: City of Hayward Attorney,
Debra Margolas, City of
Hayward, Cynthia Palacio,
City of Hayward Fire
Dept., Jay Swardendki

D. HAZARD EVALUATION

FLAMMABLE LIQUIDS:

Benzene - Paint related materials - Toluene - Laquer
Thinners - Methylene Ketone - Adhesives - Acetone
Phenols - Epoxy - Acrylic Monomers

CHLORINATED ORGANIC SOLVENTS:

Unknown

ACIDS:

Chrysilic Acid - Nitric

POISONS:

Pesticides

BASES:

Sodium Hydroxide - Ammonium Hydroxide - Cleaning
Detergents

OXIDIZERS:

Unknown

The following additional hazards can be expected on site:

Compressed gas cylinders - falling hazards from
stacked material - slip hazards from spilled and
leaking liquids - equipment operating in area -
insects and animals - ignition sources, including
vehicle traffic.

E. PERSONNEL PROTECTION LEVELS

EXCLUSION ZONE:

JOB FUNCTION	LEVEL
Removing material from warehouse	C-D
Sampling chemicals for compatibility	C
Staging chemicals in storage area	C
Consolidation of chemicals	B-C
Cleanup of spilled chemicals	B-C
General cleanup of nonhazardous debris	

CONTAMINATION REDUCTION ZONE:

JOB FUNCTION	LEVEL
Personnel Decon	C
Equipment Decon	C
Equipment Repair	D

OFF - SITE:

JOB FUNCTION	LEVEL
Delivery of equipment	D

PROTECTIVE EQUIPMENT

Level B: SCBA or Supplied Air Reprsirator

Outer - one piece PVC suit
Neoprene safety boots
PVC gloves

Inner - Tyvek suit
Surgical gloves
Hard hat

E. PERSONNEL PROTECTION LEVELS (cont'd)

Level C: Air purifying Respirator/Organic Vapor,
Acid gas and HEPA (when needed)

Outer - Polycoated Tyvek suit*
Neoprene Safety boots
PVC gloves

Inner - Tyvek suit
Surgical gloves
Hard hat & Safety glasses

*Optional - should be worn splash protection

Level D: Coveralls
Safety shoes
Hard hat & Safety glasses

F. DECONTAMINATION

Personnel and equipment leaving the exclusion zone shall be thoroughly decontaminated. The Standard Level for the decon line will be Level C and the decon stations will be:

- 1-Gross decon shower
- 2-Boot wash
- 3-Boot rinse
- 4-Outer glove wash
- 5-Outer glove rinse
- 6-Outer garment wash and removal
- 7-Respirator wash and removal
- 8-Inner garment removal
- 9-Personnel decon shower

Emergency decon will consist of gross decon shower and outer garment removal.

The following equipment is required:

Decon trauf and shower
Decon tubs and brushes
Water hose
Decon solutio (1% Trisdodium phosphate)
Palllets and visqueen

G. WORK SCHEDULE

Arrival time - 0700
Site set-up for days work - (vitals)*
Personnel suit out/safety meetings - 30 mins.
Enter hot zone for planned activities.
Working time in hot zone - 2.5 hours
Morning break for stress relief - 15 mins.
Enter hot zone to continue work
Working time in hot zone - 2.25 mins.
Personnel decon for lunch break - 15 mins. (vitals)*
Enter hot zone to continue work
Working time in hot zone - 3hrs.
Personnel decon - 15 min. (vitals)*
Secure site for night - 15 min.
Site departure time - 1730.

Schedule is designed for a cool mild day. Amendments should be made to reduce heat stress should the temperatures increase. Vital signs should be taken before entering hot zone and at the decon line while exiting. Vital signs should be monitored for the affects of this schedule on the personnel.

*Optional

encountered conditions, site control requirements should be modified for the specific situation.

B. Location of Field Command Post:

The location of the Field Command Post, and other support necessities in the support area (clean zone) are dependent on a number of factors including:

1. Wind direction - Preferable the Command Post should be located upwind of the site exclusion area. However, wind directions shift and other conditions may be such that the ideal location based on wind direction does not exist.
2. Accessibility - The terrain, woods, topography and space, may limit availability of Command Post sites.
3. Roads - Adequate roads or unavailability thereof.
4. Proximity to site - Relatively easy access to the site is needed.

IV. Zone Dimensions:

The radius of the zones or distances between hazardous waste site, hot line, contamination control line, and command post (Figure 1) are approximate distances only. Considerable judgment is needed to assure safe working distances for each zone balanced against practical work considerations. Physical and topographical barriers may constrain ideal locations. Field/laboratory measurements combined with weather conditions would assist in establishing the control zone distances. Long term operations would involve contamination tests for determining the transfer of material and dictate readjustment of zones.

DECONTAMINATION

I. Introduction

As part of the system to prevent or reduce the physical transfer of contaminants by people or equipment from on-site to off-site areas, procedures must be instituted for decontaminating anything leaving the exclusion area and contamination reduction area. These procedures include the decontamination of protective equipment and also the correct method of removing personnel protective equipment to avoid transfer of contaminants from the clothing to the body. Unless otherwise demonstrated, everything leaving the exclusion area should be considered contaminated and appropriate methods established for decontamination or disposal.

II. Decontamination

In general, decontamination at the site consists of:

1. Washing or a series of washing using a detergent/water or decontamination solution.
2. Rinsing or a series of rinses using copious amounts of water or
3. If the contaminating substance is known, rinsing with a solution which will react with the substance and alter its chemical composition, form or solubility. In Section IV is a sample procedure and physical layout for personnel decontamination. This example is a general procedure assuring the contaminating substance(s) is unknown and illustrates a possible "worst-case" situation. The procedure would be modified if the type of contaminating substance and its hazard potential was known or if the amount of contamination was minimal.

III. Contaminated Material

The decontamination process uses water and rinse solutions for washing down personnel and equipment. The spent solution, brushes, sponges, containers, stands, etc., used in the decontamination process must, until shown otherwise, be considered contaminated and, therefore, must be properly disposed of.

Personnel equipment that has been worn into the exclusion area and subsequently decontaminated upon leaving the area, may need to be used in subsequent operations; therefore, it should be stored for air drying in the support zone.

The decontamination of equipment, material and personnel used or working in the contamination reduction are may be somewhat less complex than "hot-line" procedures. Exact procedures would depend on the probability of these items being cross-contaminated.

In extreme situations, complete decontamination of personnel protective equipment, instruments, and small items may have to be done in a controlled laboratory situation.

Determining the presence or absence of unknown contaminating substance(s) and the identification and quantification of the substance(s) is a difficult task. To verify the initial decontamination procedures and/or the effectiveness of these procedures, contamination-decontamination testing is necessary.

IV. Sample Layout - Personnel Decontamination Procedures

A. Organization of the Personnel Decon Station (PDS)

Once the Hot Line section of the Exclusion Area Boundary has been established, the PDS is set up.

Layout of the PDS:

The layout of the PDS is shown in Figure 1 and is as follows:

Station A - A plastic ground sheet on which field equipment is dropped by returning members of the work party.

Station B - A wash tub filled with decon solution A
- A second wash tub filled with rinse solution
- A third wash tub filled with decon solution B
- A fourth wash tub filled with rinse solution
- Each wash tub should be equipped with a large sponge and brush

Station C - A bench or stool with disposable seat covers for personnel to sit on during removal of booties.
- A ten (10) gallon pail with plastic liner where disposable boot covers are discarded.

Station D - Two ten (10) gallon buckets filled with decon solution A and B respectively.

Station E - A ten (10) gallon bucket filled with rinse solution.

Station F - A thirty-two (32) gallon trash can with plastic liner (container for rubber items).

Station G - 30 meters upwind from Station F
- A plastic ground sheet for SCBA drop

Station H - A bench or stool for personnel
- A thirty-two (32) gallon trash can with plastic liner (container for cloth items)

Station I - A field shower set-up

Station J - A redressing and first aid station. This station defines the boundary between the Contamination Control Area and The Clean Area.

2. Decon and Rinse Solutions:

A. The Decon solutions should be solutions of water and chemical compounds designed to react with and neutralize the specific contaminants on the site. The temperature and contact time should also be considered to insure complete neutralization. However, the contaminants on a particular site will not be known in a majority of cases and it will be necessary to use a Decon solution that is effective for a variety of contaminants. Two of these general Decon solutions are listed below:

Decon Solution A - A solution containing 5% Sodium Carbonate (Na_2CO_3) and 5% Trisodium Phosphate (Na_3PO_4). Mix four (4) pounds of commercial grade Na_2CO_3 plus four (4) pounds commercial grade Na_3PO_4 with each ten (10) gallons of water. These chemicals are available at most hardware stores.

Decon Solution B - A solution containing 10% Calcium Hypochlorite $\text{Ca}(\text{ClO})_2$. Mix eight (8) pounds of $\text{Ca}(\text{ClO})_2$ with each ten (10) gallons of water. Calcium Hypochlorite (HTH) is available at most hardware or pool supply stores.

B. The rinse solutions used in Decon should have the ability to not only physically remove the Decon solution but to also neutralize excess Decon solution.

A general purpose rinse solution, used for both Decon solutions listed above consist of a five (5) percent solution of Trisodium Phosphate. Mix four (4) pounds of Na_3PO_4 with each ten (10) gallons of water.

IV. Other Considerations:

The decontamination procedure, as illustrated, is based upon wearing a self-contained breathing apparatus and fully encapsulating suit. A detailed decontamination process is required. Less extensive procedures for decontamination can be subsequently or initially established when the type and degree of contamination becomes known through analysis or the potential for transfer is judged to be minimal.

Less extensive procedures generally involve only one or two washdowns and fewer precautionary measures in doffing equipment. These procedures would not involve additional decontamination of removed protective clothing.

Additional problems are presented with SCBA worn over chemical-protective clothing and with monitoring instruments. This type of equipment is difficult to decontaminate. Therefore, whenever possible it should be packaged or wrapped in material that will protect it from contamination, but does not interfere with its operation.

In extreme situations when there may be a question of the efficacy of decontamination to known or strongly suspect substances of a highly toxic nature protective clothing may have to be discarded after use.

Since it is virtually impossible to prevent the transfer of contaminants, if present, on protective clothing to the wearer, the mainline of defense is the thorough decontamination of the clothing. When done effectively, the amount of substance remaining on the suit is greatly reduced and the possibility of suit-to-wearer transfer is proportionately reduced.

Consideration must also be given to the protective equipment worn by those personnel operating the decontamination line. In most cases, chemical-protective clothing, boots, and gloves should suffice. Unless it is suspected and/or confirmed that personnel needing decontamination are highly contaminated, air-purifying respirators with suitable cartridges should be worn.

CUSTOMER REFERENCE LIST

(EMERGENCY RESPONSE)

1. CITY & COUNTY OF SAN FRANCISCO
101 Grove Street, Room 207
San Francisco, CA 94105

Contact: Steve Low (415) 554-2788 - Chemical
David Rizzollo (415) 554-2787 - Asbestos

2. CALIFORNIA DEPARTMENT OF TRANSPORTATION
600 Lewelling Blvd.
San Lorenzo, CA 94580

Contact: Manuel Miranda
Arnold Joe (415) 352-0636

3. FREMONT FIRE DEPARTMENT
4200 Mowry Ave.
Fremont, CA 94538

Contact: Rich Neves (415) 791-4292

4. OAKLAND FIRE DEPARTMENT
1605 Martin Luther King Jr. Way
Oakland, CA 94612

Contact: Ronald K. Carter (415) 444-3322

5. LAKE COUNTY ENVIRONMENTAL HEALTH DEPARTMENT
922 Bevins Ct.
Lakeport, CA 94543

Contact: Raymond Ruminski (707) 263-2241

6. HAYWARD FIRE DEPARTMENT
25151 Clawiter Road
Hayward, CA 94545

Contact: Jay Swardenski (415) 293-8695

CROSBY & OVERTON, INC. - ENVIRONMENTAL MANAGEMENT

LICENSES AND CERTIFICATIONS

A.	Contractor License "A" General Engineering	450744
B.	Environmental Protection Agency	CAD 982 524 480
C.	CA DOHS Waste Haulers	0025
D.	CA Highway Patrol Hazardous Materials Transporter	55235
E.	Motor Carrier	157215
F.	CAL-OSHA Asbestos Registration	26
G.	CAL-OSHA Carcinogen Registration	
H.	Certificate of Insurance	
I.	Certificate of Workers' Compensation	

STATE AND CONSUMER SERVICES AGENCY
CONTRACTORS STATE LICENSE BOARD

No. 450744

Building Quality

ISSUED 12-30-83

This license is the property of the Registrar of Contractors. It is not transferable, and shall be returned to the Registrar upon demand when suspended, revoked, or invalidated for any reason. It becomes void if not renewed.


Contractor's License

Pursuant to the provisions of Chapter 9 of Division 3 of the Business and Professions Code and the Rules and Regulations of the Contractors State License Board, the Registrar of Contractors does hereby issue this license to:

CROSBY AND OVERTON INC

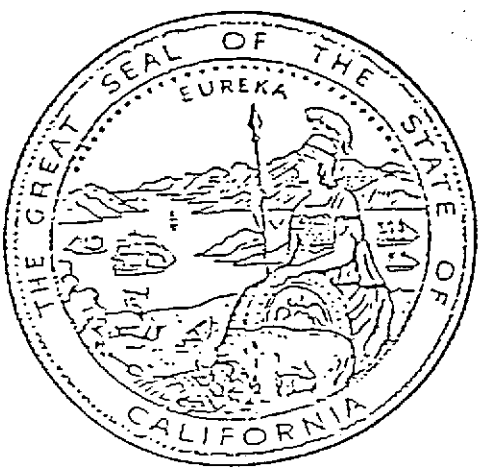
to engage in the business or act in the capacity of a contractor in the following classification(s):
A GENERAL ENGINEERING CONTRACTOR

Consumer Reports State of California
Department of Consumer Affairs
CONTRACTORS STATE LICENSE BOARD



License Number: 450744 Entity: CORP
Name: CROSBY AND OVERTON INC
Classification: A ASB HAZ
Expiration Date: 12/31/91

WITNESS my hand and sealed this
14TH day of JANUARY 1984.



J. K. Maloney
Registrar of Contractors

John R. Dent
Signature of Licensee

[Signature]
Signature of person who qualified on behalf of the licensee



ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER

+CA090252480

INSTALLATION ADDRESS

CROSBY & OVENTON, INC
1610 W. 17TH ST
LONG BEACH, CA 90813

8430 AMELIA ST
OAKLAND, CA 94621

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

GEORGE DEUKMEJIAN

DEPARTMENT OF HEALTH SERVICES

714/744 P STREET
P.O. BOX 942732
SACRAMENTO, CA 94234-7320

(916) 324-2430

*** HAZARDOUS WASTE HAULER REGISTRATION ***

NAME AND ADDRESS OF REGISTERED HAULER:

Crosby & Overton, Inc.
1610 W. 17th Street
Long Beach, CA 90813

HAULER REGISTRATION NO: 0025

EXPIRATION DATE: September 30, 1991

THIS IS TO CERTIFY THAT THE FIRM NAMED ABOVE IS DULY REGIS-
TERED TO HAUL HAZARDOUS WASTE IN THE STATE OF CALIFORNIA IN
ACCORDANCE WITH THE PROVISIONS OF CHAPTER 6.5, DIVISION 20
OF THE HEALTH AND SAFETY CODE AND CHAPTER 30, DIVISION 4,
TITLE 22 OF THE CALIFORNIA CODE OF REGULATIONS.

THIS REGISTRATION MUST BE CARRIED IN THE VEHICLE USED TO
TRANSPORT HAZARDOUS WASTE.



(AUTHORIZED SIGNATURE)

SEP 13 1990

(Date)



DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
NON-TRANSFERABLE LICENSE

LICENSE NUMBER	ISSUE DATE	EFFECTIVE DATE	EXPIRATION DATE
55235	8/13/90	-----	9/30/91
CHF CARRIER NUMBER	LOCATION		
CA- 302		<input type="checkbox"/> Initial <input checked="" type="checkbox"/> Renewal	

LICENSEE NAME AND ADDRESS (ONLY IF DIFFERENT FROM BELOW)

The person or firm named has been licensed pursuant to the California Vehicle Code for:

OPERATION OF:

- Emergency Ambulances Armored Cars (IMS) Inspection and Maintenance Station

HAZARDOUS MATERIALS TRANSPORTATION

- (HMX) Explosives subject to Division 14, Vehicle Code, Materials subject to Section 31302, Vehicle Code, and other hazardous materials.
- (HMO) Other Hazardous Materials.
- (HMW) Hazardous materials in certified waste hauler vehicles only (fee exempt); registration number:
-

CONTROL NUMBER
84081

LICENSEE NAME AND MAILING ADDRESS

Crosby & Overton, Inc.
1610 W. 17th Street
Long Beach, CA 90813

(RENEWAL #3)
State of California



Department of Industrial Relations
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH

Certificate of Registration
for
Asbestos-related Work
Certificate No. 26

CROSBY & OVERTON, INC. is duly registered by the
Division of Occupational Safety and Health in accordance with the California
Administrative Code, Title 8, Article 2.5, for asbestos-related work. This
registration expires on JANUARY 27, 1992.

EFFECTIVE DATE: JANUARY 28, 1991

FEBRUARY 14, 1991

Date of Issuance

R. W. Stranberg, Chief
Division of Occupational Safety and Health

California Department of Industrial Relations

This registration is valid only when the following requirements and conditions are met:

1. The registered employer shall safely perform asbestos-related work in compliance with relevant occupational safety and health regulations.
2. The registered employer shall notify the Division of changes in work locations or conditions as specified by Section 341.9 of Title 8 of the California Administrative Code.
3. The registered employer shall post a sign readable at 20 feet at the location of any asbestos-related work stating
"Danger-Asbestos.
Cancer and Lung Hazard.
Keep Out."
4. The registered employer shall provide a copy of this registration certificate to the prime contractor and any other employers at the site before the commencement of any asbestos-related work.
5. The registered employer shall conduct a safety conference prior to the commencement of any asbestos-related work as specified by Section 341.11 of Title 8 of the California Administrative Code.
6. The registered employer acknowledges the Division's right to revoke or suspend this registration as provided by Section 341.14 of Title 8 of the California Administrative Code.



CROSBY & OVERTON INC.

1610 WEST 17TH STREET, LONG BEACH, CALIFORNIA 90813
(213) 432-5445

February 22, 1980

Chief, Division of Occupational Safety and Health
525 Golden Gate Avenue (Third Floor)
San Francisco, CA 94102

Gentlemen:

Crosby & Overton, Inc. is an environmental management company in the petroleum/chemical industry with carcinogen registration #2320. It is during clean-up/abatement operations that employees may be exposed to carcinogen(s). Crosby & Overton is involved in lab packing, neutralization, solidification, transportation, storage, handling and disposing of carcinogenic products.

Because of the nature of our business, we do not produce or process carcinogen products, rather, we are subject to the needs and concerns of our customers. For this reason we are unable to be specific concerning the type, location or amount of carcinogen(s) our employees may be exposed to.

Should you require further information, please feel free to contact me at (213) 432-5445.

Sincerely,

CROSBY & OVERTON, INC.

Harman Pinto
Director Environmental Health, Safety & Training

HP:lah

Enclosures

DEPARTMENT OF INDUSTRIAL RELATIONS
 DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
 1 GOLDEN GATE AVENUE
 SAN FRANCISCO



ADDRESS REPLY TO:
 P.O. BOX 602
 SAN FRANCISCO, CA 94101

CARCINOGEN 'REPORT OF USE' FORM

Dear Sir:

This letter may serve as a notice of carcinogen use in accordance with Title 8, California Code of Regulations, Sections (as listed below), indicating use of the following carcinogen(s). Check the substances that are used or handled in your workplace and complete the 10 questions on the reverse side. Use an additional sheet if necessary.

<u>5208</u>	<u>5210</u>
<input checked="" type="checkbox"/> Asbestos	<input checked="" type="checkbox"/> Vinyl chloride
<u>5209</u>	<u>5211</u>
<input checked="" type="checkbox"/> 2-acetylaminofluorene	<input checked="" type="checkbox"/> Coke oven emissions
<input checked="" type="checkbox"/> 4-aminodiphenyl	<u>5212</u>
<input checked="" type="checkbox"/> Benzidine and its salts	<input checked="" type="checkbox"/> 1,2-dibromo-3-chloropropane DBCP
<input checked="" type="checkbox"/> Bis (chloromethyl) ether	<u>5213</u>
<input checked="" type="checkbox"/> 3,3'-dichlorobenzidine and its salts	<input checked="" type="checkbox"/> Acrylonitrile
<input checked="" type="checkbox"/> 4-dimethylaminoazobenzene	<u>5214</u>
<input checked="" type="checkbox"/> Beta-naphthylamine	<input checked="" type="checkbox"/> Inorganic arsenic
<input checked="" type="checkbox"/> N-nitrosodimethylamine	<u>5215</u>
<input checked="" type="checkbox"/> Beta-propiolactone	<input checked="" type="checkbox"/> 4,4'-Methylene bis (2 Chloroaniline) MBOCA
<input checked="" type="checkbox"/> Methyl chloromethyl ether	<u>5219</u>
<input checked="" type="checkbox"/> Alpha-naphthylamine	<input checked="" type="checkbox"/> Ethylene dibromide (EDB)
<input checked="" type="checkbox"/> Ethyleneimine	<u>5220</u>
<input checked="" type="checkbox"/> 4-Nitrobiphenyl	<input checked="" type="checkbox"/> Ethylene Oxide (EtO)
	Other: <u>Hazardous Waste</u>

Continued on reverse side.

CAL/OSHA 183
 February 1989

Give a brief description of the way(s) in which the carcinogen or carcinogen containing product(s) are processed, handled, used, or transported.

- 2. Give the in-plant location(s) where carcinogen(s) are used or handled.
- 3. Give the address of each area where carcinogen(s) are used/handled if different from the address given below.
- 4. Other identifying information of each carcinogen in use or present, such as trade names or synonyms, if known.
- 5. The number of employees authorized in areas where carcinogens are used or present during any operation, including maintenance.
- 6. The total number of employees (even if not exposed), including office personnel at this establishment. (For statistical purposes)
- 7. The manner in which a carcinogen is present in a place of employment; e.g., whether it is manufactured, processed, used, repackaged, released, stored or otherwise handled.
- 8. The name and address of the union bargaining representative(s), if any, of the employees who may be exposed to the carcinogen(s).
- 9. Nature of Business. Indicate the industry and the principal product(s), line of service or other activity. (Examples: General Contractors, Single Family Homes or Commercial, Chemical Manufacturing, Paints and Varnishes; etc.) (For assigning Standard Industrial Codes)
- 10. For any of the carcinogens listed under Sections 5209, 5210, 5212, 5213, 5214, 5215, 5219, and 5220 (see front page) include the quantity of the carcinogen used (or the quantity of the product for which the content of the carcinogen is unknown) and the frequency of employee exposure.

PLEASE TYPE OR PRINT

Herman Pinto, Director Env. Health and Safety 2/2/90
 Name and Title of Registrant (please print) Date

Crosby & Ovarton, Inc. X Check if operations
 Company involve temporary job sites

1610 W. 17th St., Long Beach, CA 90813
 Address: Street & Number City County Zip

Herman Pinto (213) 432-5445
 Signature Telephone Number

This report or any change in the report information shall be sent in writing to: Chief, Division of Occupational Safety and Health, 525 Golden Gate Avenue, Third Floor, San Francisco, CA 94102, within 15 (10 for EDB) calendar days as referenced in Title 8, California Code of Regulations Sections cited here. If you have questions regarding this form or Sections cited please call the Occupational Carcinogen Control Unit (415) 657-2037.

(POST A COPY OF THIS REPORT IN A CONSPICUOUS PLACE WHERE CARCINOGEN IS USED. SEE SECTION 24231 OF THE HEALTH AND SAFETY CODE).

CERTIFICATE OF INSURANCE

SET TAB STOPS AT ARROWS
ISSUE DATE (MM/DD/YY)

12-10-90

WICK JAMES OF CA, INC.
WILSHIRE BLVD., #2700
ANGELES, CA 90010

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

Coco Sullivan

COMPANY LETTER	A	London/British Companies
COMPANY LETTER	B	Planet Insurance Company
COMPANY LETTER	C	London/British Companies
COMPANY LETTER	D	
COMPANY LETTER	E	

by & Overton, Inc., E. M. I.
S. Services, Inc.
West 17th Street
Beach CA 90813

TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. STANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY APPLY OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH POLICIES.

TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIABILITY LIMITS IN THOUSANDS	
				PER PERSON	PER OCCURRENCE
GENERAL LIABILITY COMPREHENSIVE FORM PREMISES/OPERATIONS BACKGROUND COLLISION & COLLAPSE HAZARD PRODUCTS/COMPLETED OPERATIONS CONTRACTUAL INDEPENDENT CONTRACTORS BOND FORM PROPERTY DAMAGE PERSONAL INJURY	PWT/D/2569	11/20/90	11/20/91	BODILY INJURY \$ PROPERTY DAMAGE \$ BI & PG COMBINED \$ 5000 PERSONAL INJURY \$	\$ 5000
MOBILE LIABILITY AUTO ALL OWNED AUTOS (PRIV. PASS.) ALL OWNED AUTOS (OTHER THAN PRIV. PASS.) ALL OWNED AUTOS UNOWNED AUTOS TRUCK LIABILITY Scheduled Autos	NKA2015425	10/21/90	11/20/91	BODILY INJURY \$ PROPERTY DAMAGE \$ BI & PG COMBINED \$ 1000	\$
UMBRELLA LIABILITY UMBRELLA FORM OTHER THAN UMBRELLA FORM Excess Auto Liability	PWT/D/2569	10/21/90	11/20/91	BI & PG COMBINED \$ PERSONAL INJURY \$	\$ 4 MIL XS 1 MIL
WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				WORKERS' COMPENSATION \$ EMPLOYERS' LIABILITY \$	\$

DESCRIPTION OF OPERATIONS/LOCATION(S)/VEHICLES/SPECIAL ITEMS

CERTIFICATE HOLDER

WICK JAMES OF CA, INC.
WILSHIRE STREET
ANGELES, CA 94621

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Bruce Daga

STATE
COMPENSATION
INSURANCE
FUND
MAY 1, 1991

P.O. BOX 807, SAN FRANCISCO, CA 94101-0807

RECEIVED

APR 03 1991

Ans'd.....

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

POLICY NUMBER: 0802177-91
CERTIFICATE EXPIRES: 04-01-92

is to certify that we have issued a valid Workers' Compensation insurance policy in a form approved by the California
Insurance Commissioner to the employer named below for the policy period indicated.

policy is not subject to cancellation by the Fund except upon ³⁰~~TEN~~ days' advance written notice to the employer.

It also give you ³⁰~~TEN~~ days' advance notice should this policy be cancelled prior to its normal expiration.

This certificate of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the
policies listed herein. Notwithstanding any requirement, term, or condition of any contract or other document with
which this certificate of insurance may be issued or may pertain, the insurance afforded by the policies
described herein is subject to all the terms, exclusions and conditions of such policies.


PRESIDENT

ENDORSEMENT #2065 ENTITLED CERTIFICATE HOLDER'S NOTICE EFFECTIVE 04-01-91
ATTACHED TO AND FORMS A PART OF THIS POLICY.

EMPLOYER

CROSBY AND OVERTON, INC.
8430 AMELIA STREET
OAKLAND, CA. 94621

CROSBY AND OVERTON INC.

1990 RATE SHEET



CROSBY & OVERTON INC.

1610 WEST 17TH STREET, LONG BEACH, CALIFORNIA 90813
(213) 432-5445

CROSBY & OVERTON, INC.

INDUSTRIAL/HAZARDOUS RATES

LABOR, EQUIPMENT AND MATERIAL RATE SCHEDULE

CALIFORNIA

EFFECTIVE OCTOBER 1, 1990

CROSBY & OVERTON, INC.
INDUSTRIAL/HAZARDOUS RATES

EFFECTIVE OCTOBER 1, 1990

LABOR:

STRAIGHT TIME

-BETWEEN 8:00 AM AND 4:30 PM
MONDAY THRU FRIDAY

OVERTIME

-BETWEEN 4:30 PM AND 8:00 AM
MONDAY THRU FRIDAY

ALL DAY SATURDAY AND THE
FOLLOWING HOLIDAYS:

NEW YEAR'S DAY
WASHINGTON'S BIRTHDAY
GOOD FRIDAY
MEMORIAL DAY
INDEPENDENCE DAY
LABOR DAY
VETERAN'S DAY
THANKSGIVING DAY
DAY AFTER THANKSGIVING DAY
DAY BEFORE CHRISTMAS
CHRISTMAS DAY

DOUBLE TIME

-ALL DAY SUNDAY

CALL-OUT MINIMUM:

-FOUR (4) HOURS

JOBSITE MINIMUM:

-SIX (6) HOURS

YARD MINIMUM:

-FOUR (4) HOURS

CROSBY & OVERTON INC.
INDUSTRIAL/HAZARDOUS RATES
LABOR RATES AS OF OCTOBER 1, 1990

<u>CLASSIFICATIONS</u>	STRAIGHT TIME	OVER TIME	DOUBLE TIME
<u>ASBESTOS REMOVAL</u>			
ASBESTOS LABORERS	32.49	40.92	49.33
ASBESTOS EQUIPMENT OPERATOR	34.47	43.50	52.52
ASBESTOS LEADMAN	36.12	45.68	55.22
ASBESTOS SUPERVISOR	41.98	53.51	65.06
<u>INDUSTRIAL RATES</u>			
LABORER GENERAL	22.86	28.56	37.26
HAZMAT TECHNICIAN	26.08	32.82	39.54
EQUIPMENT OPERATOR	26.68	33.58	40.50
LEADMAN	27.74	35.00	42.26
FOREMAN/SUPERVISOR	36.48	46.54	56.60
<u>TECHNICAL STAFF</u>			
RESPONSE MANAGER	42.27	54.10	65.90
SAFETY SUPERVISOR	38.30	48.87	59.43
SENIOR HEALTH & SAFETY SPECIALIST	65.80	85.10	104.38
CHEMIST	48.76	62.70	76.66
SENIOR CHEMIST	65.80	85.10	104.38
PROJECT MANAGER	48.80	61.53	76.86
STAFF GEOLOGIST	35.64	45.36	55.06
SENIOR STAFF GEOLOGIST	51.72	66.54	81.38
REGISTERED GEOLOGIST	77.38	101.24	124.90
INDUSTRIAL HYGIENIST	52.54	67.36	82.18
CERTIFIED INDUSTRIAL HYGIENIST	75.16	97.42	119.66
STAFF ENGINEER	41.77	53.45	65.10
SENIOR STAFF/PROJECT ENGINEER	70.48	91.24	112.04
PROCESS ENGINEER	59.75	78.16	94.46
SENIOR PROCESS ENGINEER	75.16	97.42	119.66
DRAFTING TECHNICIAN	25.98	33.12	40.24
SENIOR DRAFTING ENGINEER	65.80	85.10	104.38
WORD PROCESSOR/CLERICAL	35.55	45.93	56.30

THE FOLLOWING CHARGES ARE MADE ONLY WHEN APPLICABLE PER OUR UNION CONTRAC:

<u>MEALS</u>	\$ 3.00 PER MEAL PER MAN
<u>SUBSISTANCE</u>	\$ 50.00 PER DAY PER MAN
<u>TRAVEL ALLOWANCE</u>	\$ 18.00 PER DAY PER MAN

CROSBY & OVERTON
EQUIPMENT FEE SCHEDULE
OCTOBER 1, 1990

EQUIPMENT DESCRIPTION

ACID BARREL		
55 Gallon, Stainless Steel		26.75 Day
AIR FILTER		
Activated Charcoal Filter		200.00 Day
Trailer Mounted, 5' x 10' Long (Recharge Billed Separately)		
55 Gallon Drum Charcoal Unit		320.00 Day
80 Gallon Drum Charcoal Unit		640.00 Day
Charcoal		2.00/lb
Disposal of Charcoal - extra		
ANALYTICAL EQUIPMENT		
Air Sampling Pump		53.50 Day
Auger (Manual) w/Core Sampler		35.00 Day
Bacarach Mercury Meter		80.00 Day
Chlor-N-Oil Test Kit		10.00/Kit
Dragger Test Kit		21.50 Day
Individual Dragger Tubes (Cost + 15% - 4.00 to 8.00 Depending on Compound)		
Gastech GX-3A		21.50 Day
HNU Photoionization Meter		160.00 Day
OVA Meter (108)		160.00 Day
OVA Meter (GC128)		250.00 Day
Hazardous Characterization Screening		53.50 Each Sample
Sampling Equipment		107.00 Day
TLV Sniffer		35.00 Day
BANDING MACHINE		27.00 Day
BAIL SAMPLER		27.00 Day
BLACK HAWK PORTA POWER		21.50 Day
BLOWERS - ELECTRIC		
Super-vacuum Blower with Ducting	- 110V AC/DC	22.50 Day
Super-vacuum Blower Exhauster with Ducting	- 110V AC/DC	30.00 Day
BLOWERS - PNEUMATIC		
18" x 25' ducting		25.00 Day
Crosby & Overton Aluminum Tank Ventilator		23.50 Day
Coppus (Air or Steam) CP-20 Turbine Exhauster		43.00 Day
Coppus (Air or Steam) CP-20 Blower		43.00 Day
Coppus (Steam Only) CP-20 Blower-Heater		51.50 Day
Lamb 3" (Air or Steam) Ventilator		5.50 Day
Lamb 4" (Air or Steam) Ventilator		7.00 Day
Lamb 6" (Air or Steam) Ventilator		9.00 Day
Lamb 10" (Air or Steam) Ventilator		13.00 Day
Lamb 12" (Air or Steam) Ventilator		14.00 Day
Air Ducting		5.00 Day

CROSBY & OVERTON
EQUIPMENT FEE SCHEDULE
OCTOBER 1, 1990

EQUIPMENT DESCRIPTION

BREATHING AIR AND OTHER RESPIRATORY APPARATUS

3-M Full Face Respirator W/Hepa Filter	53.50 Day
Breathe Easy 7 - Full Face Respirator W/Hepa Filter	32.10 Day
Thirty (30) Minute Pressure Demand, Self-Contained Breathing Air Pack	64.50 Day
Recharge Bottle of Air	26.75 Bottle
Sixty Minute, Pressure Demand, 4.5 Self-Contained Breathing Apparatus	32.00 Hour
Pressure Demand Mask W/Egress System, Safety Line and Harness, Continuous Flow Air Line Masks With Hose, Safety Line and Harness (1 to 4 Masks)	132.00 Day
Resuscitator/Inhalator	19.00 Day
Full Face Respirator Mask with Chemical Cartridge for Medium Toxic Atmosphere (Scott O Vista)	23.50 Day
Additional Cartridge for Above	10.50 Set
Half-face Respirator with Cartridges (Non-disposable) for Light Toxic Atmosphere	17.00 Day
Additional Cartridges for Above	10.00 Set
Pressure Demand Mask W/Egress System, Safety Line and Harness	52.00 Day
Ray Cal Power Respirator	53.50 Day
Replacement Cartridges for Above	36.00 Set
Robert Shaw Five (5) Minute Escape Capsule	53.50 Day
Cool Vest	16.00 Day
<u>CHIPPING GUNS - PNEUMATIC</u>	26.75 Day
Chipping Chisels	5.00 Day
Chipping Points	4.00 Day
<u>COME A-LONG</u>	
1 Ton	10.00 Day
3 Ton	19.50 Day
<u>COMMUNICATION EQUIPMENT</u>	
High Frequency - 2-Way Radio/Intrinsically Safe	43.00 Day
Sound Powered Phones	50.00 Day
<u>COMPRESSORS</u>	
185 Cu Ft Minimum, Diesel, Roto Gear	19.50 Hour
325 Cu Ft Minimum, Diesel, Roto Gear	25.00 Hour

CROSBY & OVERTON
EQUIPMENT FEE SCHEDULE
OCTOBER 1, 1990

EQUIPMENT DESCRIPTION

DECONTAMINATION EQUIPMENT

Decontamination Trailer - Contains Two Showers, Lockers for 12, Negative Pressure, and Filtering System for Particulates	150.00 Day
Portable Asbestos Decontamination Unit (Individual) W/Asbestos Water Filter for Particulates	160.00 Day
Portable Eye Bath	22.50 Day

DRUM CRUSHER

13.00 Hour
1.00/Drum

ENVIRONMENTAL SUITS

Environmental Suit (Graylite)	172.00 Day
Environmental Suit (Acid King)	268.00 Day
Environmental Suit (Fyprell)	170.00 Day

EMERGENCY RESPONSE VEHICLE

107.00 Hour

EMERGENCY RESPONSE TRAILER

107.00 Hour

FENCING

Portable Fencing	3.25 Ft/Day
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GRINDERS

Electric	21.50 Day
Pneumatic	26.75 Day

HEAT EXCHANGER

10" Diameter x 5' Long	43.00 Day
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HEATING COILS

12" Diameter x 1 1/2" Long	7.50 Day
24" Diameter x 2 1/2" Long	19.50 Day
14" Diameter x 6' Long	26.75 Day
36" Diameter x 10' Long (Stainless Steel)	53.50 Day

HOSE - ACID - HIGH PRESSURE

1 1/2" x 25'	5.00 Day
1 1/2" x 50'	6.00 Day
2" x 25'	6.50 Day
2" x 50'	8.00 Day

HOSE - AIR

3/8 x 50'	1.60 Day
3/4" x 50'	4.50 Day
1 x 50'	5.50 Day
1 1/2" x 25'	6.00 Day
1 1/2" x 50'	6.50 Day
2" x 25'	7.00 Day

CROSBY & OVERTON
EQUIPMENT FEE SCHEDULE
OCTOBER 1, 1990

EQUIPMENT DESCRIPTION

HOSE - FIRE		
2 1/2" x 50'		0.35 Ft/Day
3 1/2" x 50'		0.70 Ft/Day
4" x 50'		0.75 Ft/Day
HOSE - HYDROBLAST - HIGH PRESSURE		
3/8" x 50'		10.75 Day
3/4" x 50'		13.00 Day
1" x 50'		15.00 Day
HOSE - SOLVENT		
1" x 25'		16.00 Day
HOSE - STEAM		
1/2" x 50'		5.50 Day
3/4" x 50'		6.50 Day
1" x 25'		7.50 Day
1 1/2" x 25"		8.50 Day
1 1/2" x 50"		17.00 Day
HOSE - SUCTION DISCHARGE		
1/2" x 50'		9.50 Day
2" x 50'		10.75 Day
2 1/2" x 25'		15.00 Day
2 1/2" x 50'		21.00 Day
3" x 25'		17.00 Day
4" x 10'		13.00 Day
4" x 25'		23.50 Day
6" x 4'		10.75 Day
6" x 20'		40.00 Day
6" x 25'		45.00 Day
8" x 4'		13.00 Day
8" x 25'		77.00 Day
6" x 10' Stainless Steel Flanged		37.50 Day
8" x 10' Stainless Steel Flanged		43.00 Day
HOSE - WASH		
3/4" x 50'		3.25 Day
1" x 50'		7.50 Day
1 1/2" x 50'		8.50 Day
HYDROBLAST MACHINE		
10,000 PSI At 50 GPM (hammelmann) (Quiet - Van Enclosed)		107.00 Hour
All hydroblasters listed below are diesel powered and trailer mounted.		
6,000 PSI at 15 GPM		26.50 Hour
6,000 PSI at 42 GPM		46.00 Hour

CROSBY & OVERTON
EQUIPMENT FEE SCHEDULE
OCTOBER 1, 1990

EQUIPMENT DESCRIPTION

HYDROBLAST MACHINE

10,000 PSI at 22 GPM	47.00 Hour
10,000 PSI at 42 GPM	68.00 Hour
10,000 PSI at 15 GPM (Hammelmann 380)	105.00 Hour
10,000 PSI at 50 GPM (Hammelmann)	85.00 Hour
20,000 PSI at 15 GPM (Quiet)	115.00 Hour

Special interior cleaning equipment
(For heat exchanger, pipelines, etc.)

6,000 PSI	14.00 Hour
10,000 PSI	18.00 Hour
20,000 PSI	23.00 Hour

O.D. Heat Exchanger Cleaner (Semi-Automatic)	28.00 Hour
Multiple Lancer I.D. Machine (Semi-Automatic)	22.00 Hour
Rotary Hydro-Jet	21.50 Hour

Special Equipment for 20,000 PSI Hydroblaster

Abrasive Nozzel	41.00 Hour
Rotary Drill Unit	37.00 Hour
Aqua Blast Unit	20.00 Hour
MJV Valve	10.00 Hour

IMPACT WRENCH - PNEUMATIC (W/HOSE)

23.50 Day

INVASION PIPE

4" x 100' W/Victraulic Couplers	2.70 Ft/Mont.
6" x 100' W/Victraulic Couplers	2.90 Ft/Mont.
8" x 100' W/Victraulic Couplers	3.00 Ft/Mont.
10" x 100' W/Victraulic Couplers	5.00 Ft/Mont.
Additional Miscellaneous Fittings	21.50 Ea/Job

JACK HAMMERS - PNEUMATIC

30 Pound W/Chisel	34.00 Day
60 Pound W/Chisel	37.00 Day
90 Pound W/Chisel	40.00 Day

Jackhammer 90# W/2 Points and Con Wedge	45.00 Day
Jackhammer 90# W/Points and Asphalt Cutter	50.00 Day

LADDERS

Genie Descent Devices	32.00 Day
12' Tripod	17.00 Day
16' Extension	25.00 Day
24' Extension	30.00 Day
36' Extension	32.00 Day
Jacobs Ladder	38.00 Day

LIGHTS

Explosion Proof (Large)	10.00 Day
Explosion Proof (Small)	8.00 Day

CROSBY & OVERTON
EQUIPMENT FEE SCHEDULE
OCTOBER 1, 1990

EQUIPMENT DESCRIPTION

LIGHTS

Explosion Proof Light Extension Box	10.00 Day
Light Box	2.25 Day
Light Stand	8.50 Day
Portable Lighting System	10.75 Day
Electrical Generator	53.60 Day
Safety Lantern	2.75 Day
Vapor Proof Lights	7.50 Day
12V Transformers	26.75 Day
500 Watt Light Stand	53.50 Day
Ingersoll-Rand Light Tower and Generator	13.50 Hour

METERS

Fuel	32.00 Day
Water	32.00 Day

MUCKING WINCHES

38.50 Day

NEEDLE GUN - PNEUMATIC

43.00 Day

OIL SPILL EQUIPMENT

Work Boat - Inboard Diesel, 360 Degree Drive	57.00 Hour
Work Boat - Inboard Diesel, 34'	67.00 Hour
Skiff/Punt	7.00 Hour
Skiff/Punt - W/Motor	20.00 Hour
Floating Skimmer	43.00 Day
Oil Spill Boom - 4" Diameter	1.00 Ft/Day
Oil Spill Boom - 6" Diameter	1.25 Ft/Day
Oil spill Boom - 8" Diameter	1.50 Ft/Day
Pontoon W/Flashing Lights	6.50 Day
Barricade W/Flashing Lights	6.50 Day
Cone	2.75 Day

PLATE AND FRAME PRESS

125.00 Hour

PRESSURE SPRAY POT

Acid - 15 Gallons	17.00 Day
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PRESSURE SPRAY POT

Airless Sprayer	26.75 Day
Degreaser - 15 Gallons	15.00 Day
Hudson Sprayer	11.00 Day
Asbestos Airless Sprayer	43.00 Day

PUMPS - MANUAL

1" Barrel	7.50 Day
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PUMPS - DIESEL

2 1/2" x 2" - Dorr Oliver, Butyl Rubber Lined	19.80 Hour
3" x 2 1/2" - Turbine Pump	19.80 Hour
3" x 3" - Fairbanks & Morris	19.80 Hour
3" x 3" - Viking, Rotary Gear	16.00 Hour

CROSBY & OVERTON
EQUIPMENT FEE SCHEDULE
OCTOBER 1, 1990

EQUIPMENT DESCRIPTION

PUMPS - DIESEL

4" x 3"	- Barnes, Centrifugal	16.00 Hour
5" x 4"	- Suction Discharge Gear Pump	19.80 Hour
5" x 4"	- Viking, Rotary Gear	19.80 Hour
6" x 5"	- Suction Discharge Pump	19.80 Hour
6" x 6"	- Barnes, Centrifugal, Self Priming	21.50 Hour
10" x 10"	- Barnes, Centrifugal, Self Priming	24.50 Hour
Landau Booster Pump		107.00 Day
4" x 4"	- Barnes Turbine	18.50

PUMPS - ELECTRIC

3/4"	- Jabsco, Rotary Flex Impeller	14.00 Day
1 1/2"	- Submersible	27.00 Day
6"	- Flyght - Submersible	268.00 Day
8"	- Flyght - Submersible	300.00 Day

PUMPS - HYDRAULIC

Electronic Hydropower Pack		30.00 Hour
Hydraulic Submersible		75.00 Day

PUMPS - PNEUMATIC

2 to 1	- Graco, Barrel	15.75 Day
5 to 1	- Graco, Barrel	29.25 Day
10 to 1	- Graco, Barrel	38.25 Day
1"	- Jabsco, Rotary Flex Impeller	20.50 Day
1"	- Lutz Pump W/Polypropylene Stinger	27.25 Day
1"	- Oberdorfer, Rotary Gear	27.25 Day
1"	- PCB Pump	107.00 Day
1"	- Wortington, Turbine	27.25 Day
1 1/2"	- Oberdorfer, Centrifugal	27.25 Day
2"	- Roper, Rotary Gear	27.25 Day
2"	- Wilden, Double diaphragm (M-8)	45.00 Day
2"	- Wilden, Double diaphragm (M-8) Stainless	58.00 Day
2 1/2"	- Ingersoll-Rand, Submersible, Brass	43.00 Day
3"	- Wilden, Double Diaphragm (M-15)	61.00 Day
3"	- Thor, Sludge, Brass/Aluminum, Venturi	41.00 Day
4"	- Coppus	26.75 Day

PUMPS - PNEUMATIC

3/8"	- Sprague Hydrostatic Test, 8800 PSI	37.50 Day
1 1/2"	- Oberdorfer, Rotary Gear	27.25 Day
Auger & Pump		19.25 Day
Air Sampling Pump		53.50 Day
Hydrostatic Test Pump		37.50 Day
Kynar Pump		64.00 Day
M - 2 Acid Pump		53.50 Day
PCB Transfer Pump		107.00 Day

RIVET BUSTER

Ripper Chisel		35.00 Day
		25.00/Each

CROSBY & OVERTON
EQUIPMENT FEE SCHEDULE
OCTOBER 1, 1990

EQUIPMENT DESCRIPTION

SAWS		
Circular Saw - Electric		13.00 Day
Chain Saw - Electric		37.50 Day
SAWS		
Chain Saw - Gasoline		45.00 Day
Cut Off Saw - Gasoline		64.00 Day
Power Hack Saw		37.50 Day
Replacement Hack Saw Blades		10.00 Each
SCAFFOLDING		
Aluminum Pop-up, 10' x 10' Square, 10' x 20' High		107.00 Day
SCALES - PORTABLE		133.00 Day
SIGNS - PORTABLE, ROAD		2.70 Ea/Day
SPACE HEATER		
110V A.C., Indirect Kerosene		100.00 Day
STEAM MACHINE		
320 Machine, 1 Gun, Rated at 1,000,000 B.T.U.		23.50 Hour
535 Machine, 2 Gun, Rated at 1,500,000 B.T.U.		32.00 Hour
Hotsy		29.50 Hour
Pressure Washer		13.00 Hour
STORES EQUIPMENT		
Banding Machine		27.00 Ea/Day
Cargo Nets		10.70 Ea/Day
Drum Deheader		26.75 Ea/Day
Hand Trucks		12.50 Ea/Day
Four Wheel Trucks		14.00 Ea/Day
Barrel King		14.00 Ea/Day
Roller conveyors - 18" x 10"		14.00 Ea/Day
Pallet Jacks		32.00 Ea/Day
Pallet Slings		16.00 Ea/Day
STRAINERS		
2" Duplex		16.00 Day
6" Duplex		28.00 Day
TANK - PORTABLE		
Clarifier, 5' Diameter		19.50 Day
Dip Tank, 4' x 4' x 25', Butyl Rubber Lined		64.00 Day
600 Gallon, Butyl Rubber Lined		48.00 Day
260 Barrel, Butyl Rubber Lined		86.00 Day
500 BBL Tank		20.00 Day
TRAILER		
Low Boy		16.00 Hour
Portable Equipment Trailer		8.50 Day
Portable Office Trailer		80.00 Day

CROSBY & OVERTON
EQUIPMENT FEE SCHEDULE
OCTOBER 1, 1990

EQUIPMENT DESCRIPTION

THREADING MACHINE

Manual	4.25 Day
Electric	26.75 Day

TRUCKS

3 Ton forklift or Crane Truck, 2 1/2 Ton Flatbed Pickup with 4-wheel drive	21.00 Hour
Backhoe	65.00 Hour

TRUCKS

Stake W/Lift Gate, Gear, Personnel Van, Crew Cab Pickup and Automobile	12.50 Hour
Chemical Tank Truck (1500 Gallon)	16.50 Hour
Chemical Tank Truck (2000 Gallon)	20.00 Hour
Chemical Tank Truck (2200 Gallon)	12.50 Hour
Dump (5 Cubic Yard)	17.75 Hour
Dump (13 Cubic Yard)	26.75 Hour
End Dump - Tractor & 20 Yd. Trailer (Oakland only)	43.00 Hour
End Dump - 20 Yd. Trailer (Oakland only)	31.00 Hour
Flatbed Crew Cab	23.00 Hour
40' Flatbed Trailer (Oakland only)	29.00 Hour
Tractor, Diesel, Three Axle (250-300 HP)	22.50 Hour
Tractor - 40' Flatbed	43.00 Hour
Tripod Manlift	80.00 Day
Vacuum Truck (35 Barrel)	22.50 Hour
Vacuum Truck, Butyl Rubber Lined (35 Barrel)	32.00 Hour
Vacuum Truck - 60 Barrel (Oakland only)	43.00 Hour
Vacuum Truck - 100 Barrel (Oakland only)	53.50 Hour
Water Tank Truck (1500 Gallon)	16.50 Hour
Water Tank Truck (2000 Gallon)	20.00 Hour
 Turbine Equipment - Pneumatic	 85.00 Ea/Set/ Day

VACUUM CLEANERS

Asbestos Vacuum Cleaner	75.00 Day
Hako Hepa - 30 Gal Wet/Dry	75.00 Day
Hako Minute Man - Wet/Dry 30 Gal W/Hepa Filter	80.00 Day
Hako Minute Man - Backpack 1 Gal W/Hepa Filter	32.00 Day
Nilfisk Asbestos Vacuum W/Hepa Filter	80.00 Day
Nilfisk Mercury Vacuum	80.00 Day
Microtrap (For Asbestos Decontamination)	107.00 Day
Pneumatic, 55 Gallon, W/Hose	17.00 Day
Pneumatic, Hand Vacuum, W/Hose	15.00 Day
Electric, 15 Gallon, W/Hose	12.00 Day
Wet/Dry Vacuum	61.00 Day

WELDING UNIT

Oxygen/Acetylene - Cutting Torch	59.00 Day
Electric	67.00 Day

WHEEL BARROW

15.00 Day

CROSBY & OVERTON
 MATERIAL PRICE LIST
 OCTOBER 1, 1990

DESCRIPTION

PRICE

CHEMICALS - GENERAL

3-M Spray Adhesive	8.40 Can
Adhesive	28.00 Gal
Ammonium Bifluoride	1.40 lb
Calcium Hypochlorite Granular	2.00 Gal
Caustic Flakes	0.45 lb
Caustic Soda (liquid)	2.10 Gal
Citric Acid	1.30 lb
Chlorine Bleach	2.05 Gal
Diatomaceous Earth	23.00 Bag
Diethyethiourea	3.60 lb
Disodium Phosphate	0.90 lb
Encapsulant	29.50 Gal
Hydrochloric Acid 31.4%	0.95 Gal
Lime	21.00 Bag
Liquillen CC	5.60 Gal
Listex	9.00 Gal
Monosodium	0.90 lb
Nalchelate 762	4.50 lb
Nalco	2.00 lb
Nitrogen	7.00 Cyl
O.B. Inhibitor	1.10 Gal
Oakite 33	13.60 Gal
Oakite 77 (375 lbs/drum)	1.50 lb
Phosphoric Acid 75%	7.15 Gal
Phosphoric Acid 85%	8.15 Gal
Renex 30	17.00 Gal
Rodine 50, 92A, 213	18.50 Gal
Sealer - Asbestos	10.00 Gal
Shell Oil Dialex	2.55 Gal
Soda Ash	0.45 lb
Sodium Hydroxide	0.55 lb
Sodium Nitrite	0.80 lb
Spray Adhesive (Glue)	10.00 Can
Spray Paint	5.00 Can
Steam Con	0.80 lb
Steam Con (Liquid)	6.70 Gal
Sulfuric Acid	1.20 lb
Trichlorotrifluoroethene (freon)	20.00 Gal
Triton x-100	12.10 Gal
Trisodium Phosphate	0.90 lb
155 Power Cleaner	10.35 Gal
Nalco 8960 Solvent Cleaner	10.50 Gal

CROSBY & OVERTON
 MATERIAL PRICE LIST
 OCTOBER 1, 1990

DESCRIPTION PRICE

CHEMICALS - TANK CLEANING

Alcohol	3.20 Gal
Acetone	3.25 Gal
Bola HD Degreaser	6.75 Gal
Citrus Fresh Degreaser	11.00 Gal
Cejer G8-40	11.50 Gal
Cejer APC	7.75 Gal
Cejer 127	0.80 lb
Chemco Alumbrite	6.50 Gal
Chemco Steam Con	0.80 lb
Chemco Taraway	6.75 Gal
Diala AX	3.50 Gal
Diesel Oil	1.40 Gal
Fuel Oil 220	5.80 Gal
HGX - Mercury Decon-Powder	6.85 lb
Kerosene	2.10 Gal
Methylene Chloride	7.00 Gal
Mineral Oil	3.15 Gal
PCB Decontamination Solution	31.50 Gal
Surfacant - Asbestos	42.00 Gal
Turco Tar Remover	4.75 Gal
Turco Rust Remover	2.75 Gal
Turco Transmulsion	6.00 Gal
Vasco - Alum Cleaner #1	9.00 Gal
Uranine Dye	15.00 lb
Salt (80 lb bag)	8.50 Bag

DRUMS

DOT Overpack/Recovery Drum (Plastic)	190.00 Each
DOT Overpack/Recovery Drum (Metal)	135.00 Each
DOT 17E Close Top - New	45.00 Each
DOT 17H Open Top - New	42.00 Each
Drum Hoops and Tops	17.85 Each
DOT 55 Gal Plastic Drum, 17H	52.50 Each
Acid Carboy	21.00 Day
10 Gal Overpack	23.00 Each
DOT 17H Reconditioned (unlined)	26.00 Each
DOT 17H Reconditioned (lined)	27.00 Each
5 Gal Poly	15.00 Each
5 Gal Steel	13.00 Each
14 Gal Drum	25.00 Each
30 Gal Drum	40.00 Each
5 Gal Pail	15.00 Each
pH Paper	55.90/Case

CROSBY & OVERTON
MATERIAL PRICE LIST
OCTOBER 1, 1990

DESCRIPTION	PRICE
<u>MATERIAL</u>	
Absorball	7.50 Bag
Absorbent Pads 18x18x1/4 100/box	70.00 Box
Absorbent Boom 8" Dis 8' long	4.75 Ft
Absorbent Anti-Step	14.00 Bag
Bags:	
Glove Bags - Asbestos - Vertical	16.00 Each
Glove Bags - Asbestos - Horizontal	19.00 Each
Gunny Sack	0.85 Sack
Gunny Sack - 300 bundle	252.00 Bundle
Plastic Asbestos Bag - Small, 6 Mil	104.00 Box
	1.25 Each
Plastic Bag (small), 4 Mil	80.00 Box
	1.00 Each
Plastic Bag (large) drum liner, 4 Mil	104.00 Box
	2.25 Each
Banding Material	10.50 Roll
Barricade Tape:	
Asbestos	30.00 Each
Yellow/Black Stripe	15.00 Each
Boots:	
Acid - Neoprene	57.75 Pair
Rubber	5.75 Pair
PVC Boots	25.00 Pair
Tyvek Booties	3.15 Pair
Pesticide Booties	7.75 Pair
Cement 90 lb Bag	7.75 Bag
Cloth Tape	6.50 Roll
Coveralls:	
Disposable	10.00 Each
White Tyvek	10.00 Each
1 Case (25 Suits)	250.00 Case
Self Contained Airline Suit - Level A	AOR *
Self Contained Airline Suit - Level B	100.00 Each
Disposal of Coveralls	10.00 Each
Diatomaceous Earth	23.00 Bag
Drinking Water	1.50 Gal
Drum Opener	25.00 Day
Ear Plugs	0.25 Each
Ear Plugs	85.00 Box
Enviro Guard	6.75 Bag
Excelsior	25.00 Bale

* AOR = Available On Request

CROSBY & OVERTON
MATERIAL PRICE LIST
OCTOBER 1, 1990

DESCRIPTION	PRICE
MATERIAL	
Filters:	
3 Micron	10.00 Each
20 Micron	13.75 Each
Gloves:	
Acid - Neoprene	16.80 Pair
PVC	6.65 Pair
Surgical	3.15 Pair
Viton - Chemical	42.00 Pair
Asbestos	0.75 Pair
Goggles	4.20 Each
Hydroxide	1.60 Gal
Kiln Dust (2,000 lbs per bag)	0.07 lb
Kiln Dust Blend (2,000 lbs per bag)	0.19 lb
Muslin Filter Bags	13.75 Each
Labels:	
Asbestos Labels	31.50 Roll
Hazardous Waste Labels	105.00 Roll
Nylon Rope	0.75 Ft
Oil Spill Drum	21.00 Each
Oil Spill Rake	8.00 Each
Pallets	13.15 Each
Paper Sacks (large)	0.40 Bag
Plastic Sheet (polypropylene) 4 mil	42.00 Roll
Plastic Sheet (polypropylene) 6 mil	52.50 Roll
Polymer	7.50 Gal
Pumice	15.75 Bag
Quick-Sorbe (50 lb bag)	5.25 lb
Rags	0.55 lb
Rags - Lint Free	2.90 lb
Rain Gear	10.00 Each
Sampling Jars:	
4 oz.	2.00 Each
32 oz.	4.00 Each
42 oz.	7.25 Each
Sample Tube Brass:	5.00 Each
Sampler - Bail, disposable	8.00 Each
Sample Rods	3.00 Each
Sand Bags Full	2.10 Each
Sand	19.00 yd
Saw Dust	3.20 Bag
Solid-A-Sorb	7.50 Bag
Tri-wall Box W/Liner	80.00 Each

CROSBY & OVERTON
 MATERIAL PRICE LIST
 OCTOBER 1, 1990

<u>DESCRIPTION</u>	<u>PRICE</u>
 <u>MATERIAL</u>	
Suits - Protective:	
Acid Suit - Class 1	42.00 Each
Acid Suit - Class 2 - Sigel	72.00 Each
Tyvek - Laminated	33.00 Each
Tyvek - Saranex	47.00 Each
Superwater	40.00 Gal
Tubing, Pyrex	1.00 Each
Vermiculite	15.00 Bag
#36 Abrasive Garnet	AOR *
 <u>RESPIRATORS - DISPOSABLE</u>	
Ammonia Methylamine - Respirator	11.00 Each
Mercury Dust Vapor Masks	3.00 Each
Organic Vapor/Acid Gas #8725	10.00 Each
Organic Vapor - Respirator	10.00 Each
Paper Dust/Mist #8710	2.00 Each
Paper Dust/Mist #9910	3.00 Each
Pesticides - Respirator	11.00 Each
Ray Cartridges & Filters	36.00 Set
 <u>LEAD FREE TESTS</u>	
Out of Town	375.00
Local	275.00
 FAX Fees:	
Local or Out of State	5.00/Page

* AOR = Available On Request

TERMS AND CONDITIONS

1. ALL INVOICES ARE DUE AND PAYABLE UPON RECEIPT AND ARE CONSIDERED TO BE DELINQUENT AFTER 30 DAYS. ALL PAST DUE AMOUNTS WILL BEAR INTEREST AT A RATE OF 5% PER ANNUM PLUS THE RATE PREVAILING ON THE 25TH OF THE MONTH PRECEDING THE MONTH THE ACCOUNT IS PAST DUE, ESTABLISHED BY THE FEDERAL RESERVE BANK OF SAN FRANCISCO ON ADVANCES TO MEMBER BANKS UNDER SECTIONS 13 AND 13A OF THE FEDERAL RESERVE ACT AS NOW IN EFFECT OR FROM TIME TO TIME HEREAFTER AMENDED.
2. SUBCONTRACTOR CHARGES AND RENTAL CHARGES WILL BE BILLED AT COST PLUS 15% HANDLING CHARGE.
3. MATERIALS REQUIRED FOR THE PERFORMANCE OF SERVICES ARE STOCKED BY C&O, INC. AND THEIR COSTS ARE INCLUDED IN THE RATE SCHEDULE. A 15% HANDLING CHARGE WILL BE BILLED FOR SPECIAL MATERIALS NEEDED FOR TREATMENT OR HANDLING UNUSUAL HAZARDOUS MATERIALS.
4. DISPOSAL CHARGES WILL BE BILLED AT COST PLUS 20%. ALTERNATIVELY, CUSTOMERS WHO PAY THE DISPOSAL COST DIRECTLY WILL BE BILLED ONLY 5% OF THE COSTS TO COVER OUR PROCESSING.
5. RATES NOT LISTED ON THIS SCHEDULE WILL BE FURNISHED ON REQUEST.
6. CERTIFICATES OF INSURANCE WILL BE FURNISHED ON REQUEST.
7. SUBSISTENCE WILL BE CHARGED ONLY IF MEN ARE REQUIRED TO STAY OVERNIGHT.
8. LABOR RATES ARE FOR WORK NOT GOVERNED BY THE DAVIS-BACON ACT OR A STATE PREVAILING WAGE STATUTE OR REGULATION. AN APPROPRIATE SURCHARGE WILL BE APPLIED TO THE RATE SCHEDULE FOR ANY WORK PERFORMED UNDER THE DAVIS-BACON ACT OR A STATE PREVAILING WAGE STATUTE OR REGULATION. THE CUSTOMER SHALL NOTIFY CROSBY & OVERTON, INC. OF ANY PROJECT GOVERNED BY THE DAVIS-BACON ACT OR STATE PREVAILING WAGE STATUTE OR REGULATION.
9. MOBILIZATION AND DEMOBILIZATION - LABOR CHARGES WILL BE AT STANDARD RATE ON A PORTAL TO PORTAL BASIS.
 - OPERATED AND TOWED EQUIPMENT CHARGES WILL BE ON A PORTAL TO PORTAL BASIS.
 - OTHER EQUIPMENT WILL BE AT NO CHARGE WHILE BEING MOBILIZED/DEMOBILIZED.
10. OUR EQUIPMENT BILLED ON A DAILY RATE IS BASED ON AN 8 HOUR DAY AND WILL BE BILLED PER SHIFT.

Crosby & Overton, Inc. Health and Safety

EMERGENCY TELEPHONE NUMBERS

Ambulance 911
Police 911
Fire Department 911

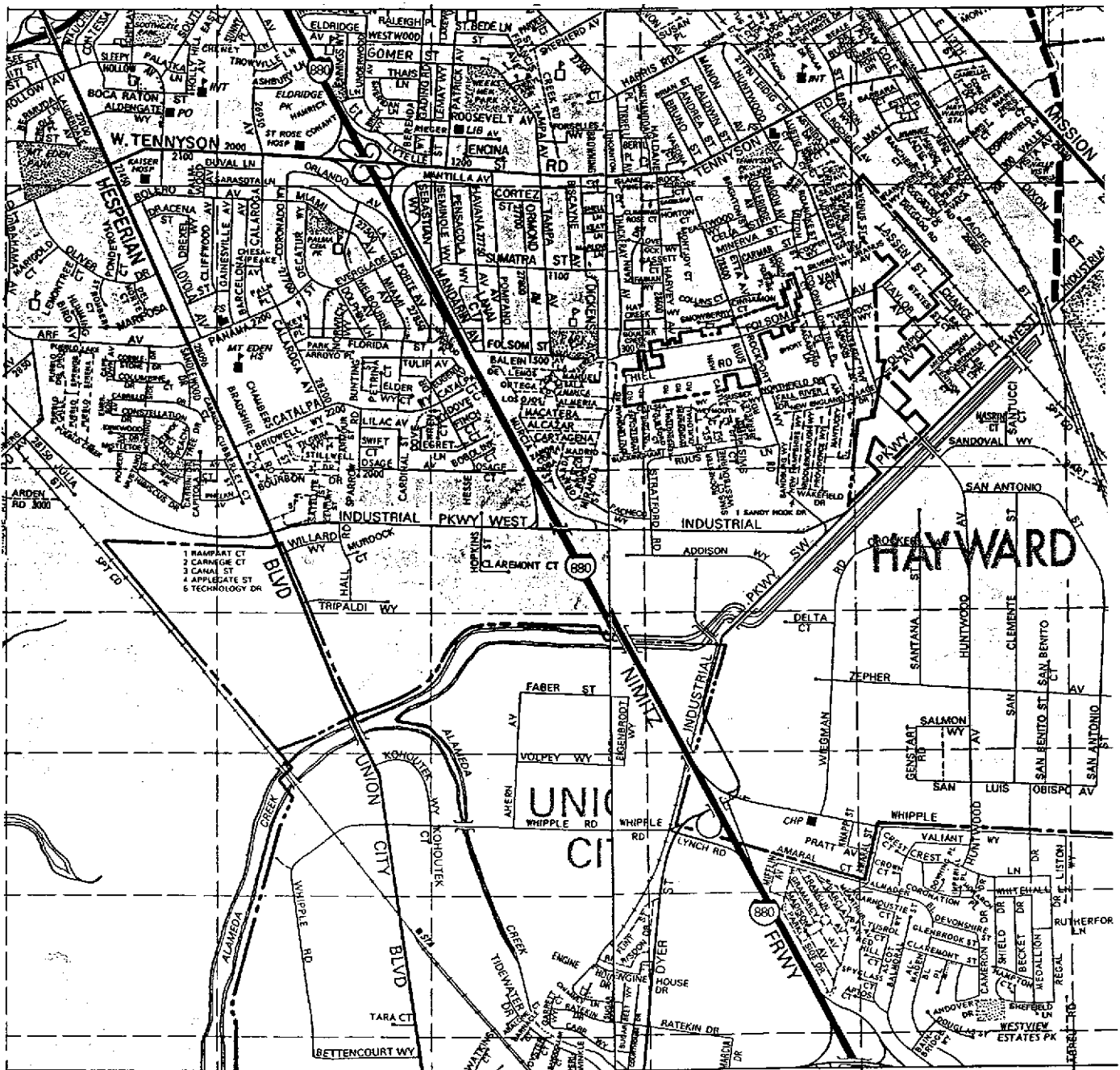
Hospital: Kaiser Hospital, 27400 Hesperian Blvd., Hayward, California.

(415) 784-4251

Poison Control Center 800-233-3360

Project Manager: Office 633-0336 Home 834-2691

Ted Haavisto, HSO: Office 1-800 821-0424 Home 537-7318



STATEMENT OF QUALIFICATIONS

OAKLAND FACILITIES OULINES
MANAGEMENT APPROACH
GENERIC HEALTH & SAFETY
LICENSES AND CERTIFICATES

CROSBY & OVERTON, INC.

8430 AMELIA STREET • OAKLAND, CA 94621

(800) 821-0424 • (415) 633-0336
FAX (415) 633-0759

OAKLAND FACILITIES

Crosby & Overton has been in Environmental Management, Transportation and Remedial Services for over 40 years. Our qualified and experience personnel are on 24 hour call. Crosby & Overton, Inc. has offices in Oakland, California, Boron, California, and our Corporate Headquarters In Long Beach California. In addition, our U.S. Services Transportation Division has offices in Oakland California, Corona, California, Nampa, Idaho.

Our facility in Oakland is located at 8430 Amelia Street, which is near the Oakland Coliseum. Our location is very centralized for emergency responses.

Our warehouse is approximately 30,000 sq. feet, with additional 4,000 sq. feet of offices. We employ over 40 personnel in our Oakland office. The warehouse contains materials for spills; such as vermiculite, visqueen, super fine, soda ash, absorbent pads and large inventory of various size drums. Our equipment on hand is: 1 emergency response vehicle, 2 compressors, 7 light pickups and trucks, 3-35 barrel, 1-60 barrel, 1-120 barrel stainless and 40-120 barrels, all are vacuum type trucks.

We also have 4-1 ton stake beds, 3-flatbed trailers, 2-5 ton, 1-3 ton stake bed truck, all stake bed trucks are equipped with liftgates.

MANAGEMENT APPROACH

Crosby & Overton Environmental Management, Inc. (C&O EMI) possesses a professional management approach to emergency response that is based on many years of experience. C&O EMI believes that it offers the most comprehensive in-house response capability available. This highly organized integrated capability operates efficiently and does not depend on higher levels of subcontracting.

The C&O EMI organizational system for emergency spill response already exists and has been working smoothly and efficiently for well over thirty-five years. This service is now based within C&O EMI. A C&O EMI dispatcher is on duty 24 hours per day, seven days a week, and 365 days per year. Spill response foremen, chemists, industrial hygienists, and clean-up technicians are always on duty. On-call response personnel have personal pagers for easy access and also have two-way radio's in their vehicles for rapid communication.

This organizational procedure has operated very well. When a response request is received, a dispatcher accepts the call and patches it through to the Program Manager or Response Manager. This Program Manager will assimilate the information and assign a response foreman. The response foreman will then respond to the scene. If an immediate response is desired, a response foreman can respond directly to the scene as another foreman goes to the C&O EMI facility to prepare other response personnel, equipment, and materials. This greatly increases the responsiveness of getting personnel and equipment to the scene. Also, if subcontractors or outside support is needed, the dispatch foreman can mobilize these additional resources as needed. All subcontractors used by C&O EMI have agreed to provide emergency response capability 24 hours per day.

C&O EMI has an extensive inventory of emergency response equipment and materials on hand at our facilities. We also have subcontractor arrangements to supply equipment and materials on a 24 hour basis as well. These are generally long established vendors and subcontractors that have worked with C&O EMI in emergency response work.

PERSONNEL

C&O EMI has designated a experienced Program Manager and will provide staff, equipment, and administrative capabilities as needed to ensure the successful and efficient execution of the Statement of Work. The Program Manager (or designee) shall be the single point of contact for coordination with the Duty Officer and shall be responsible for receiving and managing the implementation of all incident orders under this contract.

Management responsibilities of the Program Manager shall include the following:

- A. Dispatch and manage the distribution of response personnel, equipment, materials and subcontractors.
- B. Receive and implement incident orders within the time period specified by the customer.
- C. Select a Response Foreman for each incident who will report directly to the customers representative in site.
- D. Provide overall supervision and administration of all resources under the control of C&O EMI.
- E. Maintain a response-by-response accounting of all costs incurred in accordance with contractual requirements, and controlling costs at all levels of work.
- F. Submit to customers Contract Manager a report of incidents, personnel and equipment utilized in response thereto during any specified period.
- G. Implement and verify compliance to a Health and Safety plan to protect all response personnel.
- H. Maintain a twenty-four hour per day, seven days per week contact to provide customers with immediate access to response services.

Immediately under the Program Manager in the organization is a Response Manager. This position is a Deputy Program Manager who will act as a back-up Program Manager in the event the Program Manager is unavailable. This arrangement is especially advantageous in the event of multiple response requests. The Response Manager will generally assist the Program Manager in all facets of this contract.

The Response Foreman, as designated by the Program Manager, shall be fully dedicated to the specific response action for the duration of the response, unless substitutions are approved by customer or designated City official. The response foreman shall be the single point of contact for on-scene coordination, and shall be responsible for the management and execution of all response activities under the control of C&O EMI in exact accordance with the specifications of the Duty Officer or his/her designee. The response Foreman will be at the scene of a response within the response time specified in the incident order. Specific on-scene management responsibilities of the response foreman shall include but may not be limited to the following:

- A. Maintain close communication and coordination with the customers representative or his/her designee for the duration of a specific response, including reporting any and all encumbrances encountered during response activities.
- B. Conduct an on-scene survey as a basis for a work plan and cost estimate.
- C. Provide administrative support, supervision, and management of response personnel, equipment, and materials on-scene to ensure that all directives issued by the customers representative or his/her designee are immediately executed in an acceptable manner. At the option of the customers representative (or designee) once response personnel are assigned to an incident by the response foreman, they shall become fully dedicated for the duration of the incident.

- D. Take immediate corrective action when performance is not acceptable to the customers representative or his/her disignee.
- E. Ensure that assigned tasks are performed in accordance with the incident safety plan and follow standard quality assurance and quality control procedures as required.
- F. Provide the customers representative or other designated official with an estimated accounting of all cost incurred at each site.
- G. Implement an incident safety plan to protect all response personnel. A work plan will then be devised in conjunction with the customers representative based on the incident survey.

C&O EMI shall provide response services through the Program Manager or Response Manager for spills and removal of hazardous materials as specified in incident orders issued by the customers representative or designee. C&O EMI understands that it may be requested to conduct an initial on-scene survey to gain sufficient familiarity with the incident to proceed with response work in the most effective, efficient, and safe manner. This work plan shall describe the utilization of response personnel, equipment and materials and the estimated cost.

PROCEDURES

C&O EMI will provide all personnel, materials, and equipment specified in the approved work plan within the time limits specified in the incident order. We shall take any actions, under the direction of the customers representative or designee, as may be required to protect health and welfare of the public and the environment resulting from a release or threat of release of hazardous materials. These actions may include but shall not be limited to those conducted under the following response work phases:

1. Containment and Countermeasures

Action shall be taken to protect the public health and welfare and the environment. This action may include, but shall not be limited to: sampling and analysis to determine the identity, source, extent, and disposal options of the hazardous material(s); containing the material at its source and preventing further acute flow; using chemicals or other materials to restrain the spread of the material; placing physical barriers to deter the spread of the material; constructing slurry trenches; earth moving; drum handling, containerizing; diverting surface water; precluding wildlife from the affected areas; controlling water discharge from upstream impoundments; providing alternative drinking water supplies on a temporary basis; and providing security to prevent unauthorized entry.

2. Cleanup and Mitigation

Cleanup and mitigation actions shall be taken to recover the material from the affected media. These actions shall include necessary procedures which have been approved by the customers representative and are in accordance with all applicable Federal, State and Local laws and regulations.

3. Disposal

Any contaminated material shall be disposed on consistent with all applicable Federal, State and Local laws and regulations. C&O EMI and/or its subcontractors shall be responsible for compliance with all applicable State and Local licenses, registrations, permits and certifications for transporting hazardous wastes.

4. Restoration

Actions shall be taken to repair or replace items altered by the response operations and to restore the affected environment to as near pre-incident conditions as possible. Such actions may include, but shall not be limited to, regrading, reseeding, replanting and soil replacement.

5. Analytical

On-site and off-site analytical activities shall be accomplished on a rapid turnaround basis (24 hours or less) to provide appropriate chemical and physical analysis. This rapid turnaround activity has been prearranged with certified laboratories. Sample collection, storage, transportation, analysis and disposal shall be in accordance with standard QA/QC protocols as set forth in EPA guidelines, including, but not limited to, chain-of-custody requirements therein.

Subcontracting

C&O EMI has elected to subcontract analytical work to laboratories. These laboratories are state certified and EPA approved and are located in close proximity to potential sample sources. This affords flexibility and expedience in obtaining analytical results from incident contaminants.

C&O EMI employees Chemists that are capable of performing on-site identification of hazardous materials utilizing a field haz-mat kit and portable instruments.

Equipment List

C&O EMI has at its immediate disposal all of the company owned vehicles which includes a fleet of vacuum trucks, stainless steel, steel and rubber lined; ranging in sizes of 120, 100, 60, 50 and 35 barrel sizes. A fleet of twenty-five ton net weight end dump-trucks, 40' flat beds, five ton stake trucks, three ton stake trucks, backhoes, back hoe transport vehicles, two ton stake beds, one ton stake beds, pick-up trucks, steam machines, air compressors, *hydroblasters, mobile charcoal filters and Emergency Response Vehicles. Corporate wide we have vehicles licensed to transport hazardous waste. Attached for your information in the Appendix Section is an IBM readout of our company owned equipment.

Subcontractors

At various times throughout the life of this contract, it may become necessary to utilize special or additional services from subcontractors. Listed below are the firms which we propose to use for heavy equipment use and specialized services. Please see in Appendix, letters from selected subcontractors confirming our agreement.

<u>Subcontractor</u>	<u>Services & Equipment Provided</u>
U.S. Services, Inc. 526 Railroad Street Corona, CA 91720 714-371-1461	Dump trucks Backhoes, flatbeds End dumps Front-end loaders, Bull dozers
Crosby & Overton Transportation Co. 1620 West 16th Street Long Beach, CA 90813 213/436/9723	Vacuum trucks Flatbeds
Crosby & Overton Inc. 1610 West 17th Street Long Beach, CA 90813 213/432-5445	cleaning equipment (hydroblaster, steam cleaners) Personnel (all levels)

Response Vehicles

C&O EMI is proud of its fleet of Emergency Response Equipment. C&O EMI has designed and built four uniquely dedicated Emergency Response Vehicles. Each is capable of supporting a crew of four people in full level A for an eight hour period, with all associated safety equipment. Each Emergency Response Vehicle is fully equipped and can be used independently of one another or together as a team. C&O EMI can supply fully trained, and fresh air qualified personnel in any 24 hour period. Each Emergency Response Vehicle exceeds the minimum requirements.

CROSBY & OVERTON ENVIRONMENTAL MANAGEMENT, INC.

EMERGENCY RESPONSE

SITE MITIGATION

HEALTH AND SAFETY PLAN

STANDARD OPERATING HEALTH AND SAFETY PROCEDURES

I. Introduction

This standard provides procedural guidelines to mitigate health and safety hazards at emergency response incidents. Although every endeavor on or off-site involves some consideration for worker protection and safety, the purpose of this document is to provide criteria for standard operating procedures primarily related to site control and entry. Other safety procedures are contained in the overall Crosby & Overton, Inc. health, safety, and training programs.

The following guidelines and procedures are addressed in this standard:

1. General Measures
2. Initial Survey and Reconnaissance
3. Personnel Protection
4. Site Work Areas
5. Decontamination

II. Standardized Operating Procedures

A major consideration in all emergency response activities is the health and safety of all personnel at the site. Not only must a variety of technical tasks be conducted in a timely fashion, but they must be accomplished in a manner to protect the worker. In addition to having appropriate procedures, certain prerequisites must be in place to reduce the possibility of injury.

For procedures to be effective:

1. Written instructions should whenever possible be prepared in advance of their anticipated use. The careful deliberation and thought needed to develop safe, practical procedures is difficult enough without the added pressure and stress created by the urgency of an emergency.
2. Procedures must be based on the best available knowledge, operational principles, and technical guidance.
3. Initial procedures should be field tested, reviewed, and revised, when necessary, by health and safety professionals.

4. Procedures should be understandable, practically feasible and applicable, without sacrificing an acceptable level of safety.
5. All personnel involved in site activities should be provided with and briefed on operating procedures.
6. Response personnel should receive thorough and periodic training in operating procedures.

III. Rationale for Conducting Response Activities

Response activities associated with each specific incident are unique; however, there are criteria, principles, and operations common to all incidents. An incident must be evaluated to determine its hazard or potential hazard. Since a variety of environmental samples and measurements are needed to determine the extent of contamination, personnel may need to go on-site to collect information. Workers involved need to be protected against the potential hazards. Efforts such as containment, cleanup, and disposal activities to prevent or reduce potentially harmful substances from migrating from the site, require response personnel to be appropriately protected and decontaminating equipment.

Standard operating procedures are needed for all phases of the operations and each phase should include health and safety options as the situation requires. These safety procedures are independent of the type of incident, but are adapted or modified to meet the incident-specific requirements.

1. GENERAL MEASURES

I. Introduction

To prevent injuries and acute and chronic health effects, the following safe work practices are to be followed when dealing with situations of known or unknown toxic hazards and when relying on portable field monitoring equipment. These practices establish a pattern of general precautionary measures for reducing the risks associated with response operations.

II. Safety Practices

A. Personal Hygiene:

1. Eating, drinking, chewing gum or tobacco, taking medication, and smoking is prohibited in the contaminated or potentially contaminated area or where the possibility for the transfer of contamination exists.
2. Upon leaving contaminated or suspected contaminated areas, the hands and face must be thoroughly washed. After decontamination procedures, a thorough shower and washing of the body must occur.
3. Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling on the ground, leaning or sitting on drums, equipment, or the ground. Do not place monitoring equipment on potentially contaminated surfaces (i.e., drum ground, etc.).
4. No beard or facial hair, which could interfere with a satisfactory qualitative respirator fit test, may be worn.

B. Personal Protection

1. Be familiar with and knowledgeable about standard operating safety procedures.
2. Be familiar, knowledgeable, and adhere to all instructions in the site safety plan.
3. Identify and arrange for emergency medical assistance. The location, telephone number, and transportation capabilities of the nearest emergency medical facilities should be available and/or the nearest medical facility alerted.

4. Consider fatigue, heat stress, and other environmental factors influencing efficiency of personnel.

5. Wear appropriate or designated, approved respiratory protective devices and protective clothing.

C. Operations:

1. In emergencies, verbal, hand signals, or other safety protocols must be established by the team, followed as soon as practical by written site safety plans. These should be developed, reviewed, and made available to personnel for all phases of operation.

2. All personnel going on-site should be thoroughly briefed on the anticipated hazards, equipment requirements, safety practices, emergency procedures, and communication methods.

3. Initial entry team entrance and exit routes should be planned, and emergency escape routes delineated.

4. Unfamiliar operations should be rehearsed prior to implementation.

5. Personnel on-site must use the "buddy" system (pairs). Buddies should pre-arrange hand signals or other means of emergency signals for communication in case of lack of radios or radio breakdown. At a minimum, use of self-contained breathing apparatus and fully-encapsulating suits require a third person, suitably equipped, as a safety man backup. Communications between these three members must be maintained at all times.

6. Visual contact must be maintained between "pairs" on-site with the team members remaining in close proximity in order to assist each other in case of emergencies.

7. Wind indicators visible to all on-site personnel should be provided when practicable to indicate possible routes for upwind escape.

8. The number of personnel and equipment in the contaminated area should be minimized consistent with site operations as directed by the On-Scene Coordinator (OSC).

9. Establish appropriate work areas for support, contamination, reduction, and exclusion.

10. Establish appropriate decontamination procedures for leaving the site.

III. Education & Training

All personnel involved in incident response operations must receive training in general safety practices and procedures and equipment use.

Safety education will be continually incorporated into all site activities so that safety awareness becomes a part of the thought process of all personnel. To accomplish this, safety training will be provided to all incident response personnel commensurate with the activities they will perform as a responder. Not only must they be provided with initial safety training, but periodic, repetitive re-training will be implemented.

IV. Stress

A. Both physiological and psychological stress can affect the functioning of response personnel, and under certain conditions, be a significant contributing factor to accidents and harm to workers. To reduce the potential for these stresses or anxieties:

1. Workers must be periodically authorized by medical personnel to be physically, and if possible, psychologically fit to perform the functions of their job (also see medical surveillance program).
2. Continual practice and training must be provided in using personal protection equipment, especially respiratory protection equipment.
3. Thorough and complete safety program compliance is necessary to protect the worker and assure their confidence in the program.

B. Adverse climate conditions - heat and cold - are important considerations in planning and conducting site operations. The effects of ambient temperature can cause physical discomfort, loss of efficiency, personal injury, and increased accident probability. In particular, heat stress, due to protective clothing decreasing body ventilation, is an important factor. One or more of the following recommendations will help reduce heat stress. Their applicability is dependent on evaluating the conditions particular to a specific incident:

1. Provide sufficient amount of liquids to replace loss of body fluids. Employees should replace

water and salts lost from sweating. Use either more heavily salted foods, or commercial mixes such as Gatorade. The commercial mixes may be preferable for employees on low sodium diets.

2. Establish a work schedule that will provide sufficient rest periods for cooling down. This may require shifts for workers when wearing encapsulating suits and SCBA.
3. Cooling devices may be worn under suits. These increase, however, the amount of weight that must be carried.
4. Portable showers and hosing down of suits may be utilized.

C. Heat Stress:

Heat stress symptoms should be observed for all levels of protection, but especially in Levels A and B.

Ambient Temperature Maximum Wearing Time (Hours)

Above 90 degrees F	1/4 hour
85-90 degrees F	1/2 hour
80-85 degrees F	1 hour
70-80 degrees F	1 1/2 hours
60-70 degrees F	2 hours
50-60 degrees F	3 hours
30-50 degrees F	5 hours
Below 30 degrees F	8 hours

A method for measuring the effectiveness of employees rest-recovery regime is by monitoring the heart rate. Use the Brouha guideline: The pulse rate is counted for the last 30 seconds of the second minute; and the last 30 seconds of the third minute. The count obtained should then be doubled. If the recovery pulse rate during the last 30 seconds of the first minute is maintained at 110 beats per minute, no increasing strain occurs as the work day progresses.

D. Response personnel should be trained to recognize the symptoms of and provide first aid for heat exhaustion, heat prostration, and heat stroke.

E. Field personnel must observe each other for any toxic exposure effects. Indications of adverse effects include:

1. Changes in complexion, skin discoloration.
2. Changes in coordination.
3. Changes in demeanor.
4. Excessive salivation, pupillary response.
5. Changes in speech pattern.

F. Field personnel will be aware of and inform each other concerning potential non-visual effects of toxic exposure such as:

1. Headaches
2. Dizziness
3. Blurred vision
4. Cramps
5. Irritation of eyes, skin, or respiratory tract.

2. INITIAL SURVEY & RECONNAISSANCE

I. Introduction

Initial site entry should be proceeded by the collection of as much information as possible concerning the type(s) and degree of hazard which may exist.

Based upon a preliminary evaluation of available information, an assessment of the hazards to be expected is made to determine the protection needed by personnel initially going on-site.

II. Objective of Initial Site Entry Team

The initial site entry team's primary objective is to collect information about the site in order to assess the toxic environment and other immediate health hazards which may affect personnel subsequently entering the site, and concomitantly to provide additional information for determining required corrective actions to mitigate the incident.

III. Initial Information Collection

A. Organic Vapors

With the use of general survey instruments such as a photoionizer (hnu Systems, etc.) an organic vapor analyzer (Century OVA System, etc.) operating in the total readout mode, sufficient data should be collected to delineate or screen the site for concentrations of organic vapor material. Gross measurements can then be related to both levels of protection and exclusion area zones.

If the type(s) of substances involved in the incident are known, specific measurements with appropriate survey instruments should be made. Higher than background readings on the survey instruments, photoionizer or organic vapor analyzer may also indicate the presence of combustible gases and be prime areas for explosivity measurements.

B. Inorganic Vapors

The entry team's collection of total inorganic vapor concentration is extremely limited by available field monitoring equipment. Presently, the photoionizer has limited detection capability and the organic vapor analyzer does not detect inorganic vapors. A Draeger kit with detector tubes may be of help to a chemist or industrial hygienist. See Appendix III for photoionizer/organic vapor analyzer characteristics.

Colorimetric tubes and handpumps would be useful, as would be other instruments for specific substance measurements.

C. Radiation

Although radiation monitoring is not necessary for all response activities, it should be incorporated in the initial survey where applicable (i.e., break or leaking of unknown wastes from an impoundment, transportation incident involving unknown materials/wastes, etc.).

Normal gamma radiation background is approximately 0.01 to 0.02 milliroentgen per hour (mR/hr) on a gamma survey instrument. Radiation exposure levels should not be more than 2-3 times background levels and at no time should exposure be 10 mR/hr or above without the advice of a health physicist. EPA's Office of Air, Noise, and Radiation has radiation specialists in each Region as well as a staff at Headquarters, Montgomery, Alabama and Las Vegas, Nevada.

Absence of instrument readings above background may be misinterpreted as the complete absence of radioactivity. Radioactive materials emitting low energy gamma radiation, alpha or beta radiation may be present, but for number of reasons will not cause a response on the instrument. Unless airborne, these radioactive materials should present minimal hazard to initial on-site personnel, but more thorough surveys should be conducted as site operations continue in order to completely determine the presence or absence of radioactive material.

D. Visual Observations

While on-site, the initial entry team(s) should make visual observation which may be useful in an evaluation of the site hazards, i.e., fish kill, land features, dead insects, damaged vegetation, wind direction, labeling on packages or drums, general conditions, etc.

17. Additional Information Collection

For subsequent entry wearing appropriate personal protective equipment, the following surveys should be made to further assist in selecting personal protection equipment and determining any additional hazardous conditions which may exist.

A. Oxygen Deficiency

At least 19.5% oxygen at sea level must be present in the ambient air without using air-supplied equipment. Oxygen deficiency measurements are of particular importance for work in enclosed spaces, low-lying areas or in the vicinity of accidents that have produced heavier-than-air vapors which could displace the ambient atmospheres. Oxygen deficient areas are also prime locations for taking further organic vapor measurements, since air has been displaced by other substances.

B. Airborne Toxic Materials

A more thorough survey is needed on-site to qualitate and quantify airborne toxic vapors. This information determines the subsequent level of protection needed by all workers on-site.

If specific known or suspected harmful materials (hydrogen sulfide, hydrogen cyanide, etc.) are present, the entry teams should monitor with appropriate instruments for these specific agents, in addition to an overall air monitoring program.

C. Combustible Gases

The presence or absence of combustible vapors or gases should be determined. If explosivity readings greater than 10% of the lower explosive limit (LEL) are detected, a very careful investigation and mapping of the area must be made. Readings approaching or greater than 50% LEL are cause for immediate withdrawal of personnel from on-site. Before the resumption of any on-site activities, project personnel in consultation with personnel skilled in fire or explosion hazards, must develop refined plans for additional operations. The presence of combustible gases also indicates that vapors are present. These vapors may present toxicity hazards.

3. PERSONNEL PROTECTION

I. Introduction

It is important that personnel protective equipment and safety requirements be appropriate to protect against the potential or known hazards at an incident. Protective equipment should be selected based on the type(s), concentration(s), possibilities, and routes of personnel exposure from substances at a site. In situations where the type of materials and possibilities of contact are unknown or the hazards are not clearly identifiable, a more subjective determination must be made of the personnel protective equipment required for initial safety.

The appropriate level of protection shall be determined prior to the initial entry on-site based on best available information. Subsequent information may suggest changes in the original level selected.

A. Levels of Protection:

Level A

Level A protection should be worn when the highest available level of respiratory, skin, and eye contact protection is needed. While Level A provides the maximum--available protection, it does not protect against all possible airborne or splash hazards. For example, suit material may rapidly permeable to certain chemicals in high air concentrations or heavy splashes.

Level B

Level B protection should be selected when the highest level of respiratory protection is needed, but exposure to the small unprotected areas of the body (i.e., neck and back of head) is unlikely, or where concentrations are known to be within acceptable exposure standards.

Level B protection is the minimum level recommended on initial entries until the hazards have been further identified and defined by monitoring, sampling, and other reliable methods of analysis, and personnel protection equipment corresponding with those finding is utilized.

Level C

Level protection should be selected when the type(s) and concentration(s) of respirable material is known, has adequate warning properties, or is reasonable assumed to be not greater than the protection factors associated with air-purifying respirators; and exposure to the few

unprotected areas of the body (i.e., neck and back of head) is unlikely to cause harm. Continuous or routine periodic monitoring of the site and/or individuals should be established.

Level D.

Level D is the basic work uniform and should be worn for all site operations. Level D protection should only be selected when sites are positively identified as having no toxic hazards.

B. Equipment and Selection Criteria:

Level A

1. Personal Protection Equipment

- Positive Pressure SCBA (MSHA/NIOSH approved) operated in the positive pressure mode (supplied air respirator with egress unit is optional)
- Totally encapsulating suit (boots & gloves attached)
- Boots - chemical-protective, steel toe and shank. Depending on suit boot construction; worn over suit boot.
- Gloves-Outer, chemical-resistant. Depending on suit construction worn over suit gloves. May be replaced with tight-fitting, chemical resistant gloves worn inside suit gloves
- Underwear-Cotton, long-john type *
- Hard Hat - * (under suit)
- Disposable protective suit, gloves, and boots. (Worn under or over encapsulating suit)*
- Coveralls * (under suit)
- 2-way radio communications or other communication system

* Optional

2. Criteria For Use:

A. When the type(s) and concentration(s) of toxic substances are known and require the highest level of combined protection to the respiratory tract, skin, and eyes. These conditions would be:

Atmospheres which are "immediately dangerous to life and health" (IDLH). IDHL's can be found in the

NIOSH/OSHA's "Pocket Guide to Chemical Hazards" and /or other references.

Known atmospheres or potential situations that would effect the skin or eyes, or could be absorbed into the body through these surfaces in toxic quantities.

Potential situations are those where vapors may be generated or splashing occur through site activities.

Standard reference books should be consulted to obtain concentrations hazardous to skin, eyes, or mucous membranes.

3. Oxygen deficient atmospheres with above conditions.

At sites where the type(s) and/or potential concentration(s) of toxic substances are unknown.

Unless circumstances strongly indicate otherwise, the site should be presumed to present hazards to the respiratory system, skin, and eyes. Level A protection would provide the highest level of protection for the initial entry team.

a. Such circumstances might be:

1. Environmental measurements adjoining to teh site
2. Reliable accurate historical data
3. Open, unconfined areas
4. Minimal probability of vapor's presence or splashing with cutaneous effecting substances

2. Enclosed areas such as building, railroad, cars, ships holds, etc.

C. Total vapor reading indicate 500 ppm to 1,000 ppm on instruments such as the photoionizer, organic vapor analyser, or other survey instruments:

Level B

1. Personal Protective Equipment:

-Positive Pressure SCBA

(MSHA/NIOSH approved), operated in the positive pressure mode (supplied air respirator with egress unit is optional)

- Hooded, two-piece chemical-resistant suit
- Gloves - Inner, tight-fitting, chemical-resistant
- Boots - Outer (chemical-protective, heavy rubber disposables)
- Boots - Inner (chemical-protective, steel toe and shank)
- 2-way radio communications or other communication system
- Hard Hat *
- Face Shield * * optional

2. Criteria for Use:

- A. When the type(s) and concentration(s) of hazardous substances are known and require the highest degree of respiratory protection; but a lower level of skin protection.

Atmospheres which are "immediately dangerous to life and health (IDLH). Type(s) and concentration(s) of vapors in air do not present a hazard to the small, unprotected areas of the body.

Atmospheres with concentrations of known substances greater than protection factors associated with full-face, air-purifying respirators with appropriate cartridges.

Atmospheres with less than 19.5% oxygen.

- B. A determination is made that potential exposure to the body parts not protected by a fully encapsulating suit (primarily neck, ears, etc.) is highly unlikely.

Known absence of cutaneous or percutaneous hazards.

Activities performed preclude splashing of individuals.

- C. Total vapor levels range from 5 ppm - 500 ppm on instruments such as the photoionizer, organic vapor analyzer, or other survey instruments and does not contain suspect high levels of toxic substances affecting skin or eyes.

D. Level B protection is recommended as the lowest level of protection for initial entries until the hazards have been further identified and defined by monitoring, sampling, and other reliable methods of analysis, and personnel protection equipment commensurate with these findings utilized.

Level C

1. Personal Protective Equipment:

- Full-face, air purifying respirator (MSHA/NIOSH approved)
- Chemical-resistant clothing
- Overalls & long-sleeved jacket or coveralls; hooded 2-piece chemical splash suit (when applicable-hooded disposable coveralls) *
- Gloves - Inner (tight-fitting, chemical-resistant type)
- Cloth Coveralls - Fire resistant (inside chemical-protective clothing) *
- Escape mask * optional
- Hard Hat * (face shield, optional)
- Boots - Outer (chemical-protective heavy rubber throw-aways)
- 2-way radio communications or other communication system

2. Criteria for Use:

A. Site known to contain potential hazards not to exceed:

Air concentrations of material not requiring a protection factor greater than that afforded by a full-face mask (normally considered to be 100). Material must have warning properties.

Body exposure to unprotected areas (face, neck, etc.) non-existent or less than any amount that will cause harm.

Well documented, reliable history of site and patterns of prior entry.

No evidence of acute or chronic effects to exposed personnel.

Well-documented, reliable history of site and patterns of prior entry.

No evidence of acute or chronic effects to exposed personnel.

B. Total vapor reading between 0 ppm and 5 ppm above background on instruments such as the photoionizer and portable GC.

C. Continuous or frequent periodic air or personnel monitoring should occur while wearing Level C protection.

Level D.

1. Personal Protective Equipment:

- Half mask, air purifying respirator (MCHA/NIOSH approved) (PF 10)
- Coveralls-Fire resistant
- Boots/Shoes - Safety or chemical-resistant steel-toed boots
- Boots - Outer (chemical-protective heavy rubber throw-away)
- Escape masks
- Safety glasses or safety goggles
- Hard hat * (face shield optional)
- Gloves *

2. Criteria for Use

- A. No indication of airborne health hazards present.
- B. No gross indications above background on the photoionizer organic vapor analyzer, or other analytical instrument.
- C. Continuous or frequent periodic air or personnel monitoring should occur while wearing Level D protection.

II. Criteria for Establishing levels of Protection in Unknown Environments

In responding to an incident where the type(s) and concentration(s) in the ambient atmosphere of substances

injurious to human health are unknown, a determination must first be made if it is necessary to have personnel enter the site (close proximity to the potential source of exposure). A requirement for on-site operations, necessitates personnel to initially enter the site to characterize and define the hazardous environment that potentially exists.

The lack of knowledge concerning the toxic atmosphere that could be encountered precludes the use of a decision logic for selecting respiratory protection equipment based on evaluating concentrations of known toxicants against safety factors associated with various types of personal protective equipment. Until qualitative and quantitative information is available for assessing the ambient atmosphere at a site, levels of protection based on gross measurements from portable instruments for organic vapor analysis (photoionizer, organic vapor analyzer, general survey instruments, etc.) may have to be used.

If carcinogens or other highly toxic materials are suspected to be present, levels of protection should be determined on a case-by-case basis and not solely dependent on the following criteria.

ZONE A - TOTAL VAPOR READINGS: 500 PPM TO 1000 PPM

Definition

That section of the site which has the highest inhalation exposure potential and/or contains suspected high probability of skin contact with cutaneous or percutaneous effecting chemicals.

Protection Level:

Since the area requires maximum respiratory, skin, and eye protection, this area requires Level A personal protection equipment.

Monitoring Criteria:

Note wind direction and atmospheric conditions before taking environmental background readings. The zone's total vapor concentrations at breathing levels vary above background from 500 ppm to 1000 ppm.

The entry team should not routinely enter an area containing total vapor concentrations over 1000 ppm. Although the protective equipment required for this area is sufficient to go into environments with total vapor concentrations greater than 1000 ppm, the entry team

should evaluate the need for further entry on a case-by-case basis.

ZONE B TOTAL VAPOR READING : 5 PPM TO 500 PPM

Definition

That section of the site which has the next highest respiratory hazard and does not have a high probability of skin contact with cutaneous or percutaneous chemicals.

Protection Level:

Since the area requires maximum respiratory protection and the next lower level of skin and eye protection, this area requires Level B personal protection.

Monitoring Criteria:

Note wind direction and atmospheric condition before taking environmental background readings. The zone's total vapor concentrations at breathing levels vary above background from 5 ppm.

Level B is for those areas where the potential exposure to the small unprotected areas of the body is not likely to be harmful upon skin contact.

ZONE C - TOTAL VAPOR READINGS: BACKGROUND TO 5 PPM

Definition:

That section of the site where exposure potential is assumed relatively unlikely, however, low levels of respiratory exposure are possible.

Protection Level:

Since the exposure potential, concentration, and/or route(s) of contamination are assumed not to be greater than the protection factor associated with a full-face air-purifying respirator, this area requires Level C personal protection.

Monitoring Criteria:

Note wind direction and atmospheric condition before taking environmental background readings. The zone's total vapor concentrations at breathing levels vary above background to 5 ppm.

III. Additional Criteria For Establishing Protective Equipment

In addition to the criteria previously discussed for selecting the levels of protection (A-D), the following criteria are also helpful in determining appropriate levels of protection:

- A. The chemicals listed in Appendix I are known to have adverse effects on the skin ranging from irritation to absorption, and require Level 1 or Level 2 protection depending on the specific chemical and exposure concentration potential. Additional information is available from OEHM-TADS on the chemicals listed in Appendix I.
- B. Chemicals listed in Appendix II are known to have percutaneous properties and Level 1 protection should be worn in areas with relatively high potential for direct skin contact with these materials. Level 2 protection may be worn, but it is dependent upon exposure concentration potential, wind direction and speed, temperature, duration of exposure, and specific chemical properties, etc.
- C. Level C protection calls for the use of an air-purifying respirator, as well as skin protection. The following criteria should be considered in making the decision to use air-purifying respirators:
 1. Atmospheric conditions - temperatures, stability, etc.
 2. Wind direction and velocity.
 3. Whether conditions have been identified sufficiently to permit airpurifying respirators (MSHA/NIOSH approved).
 - A. Oxygen levels are sufficient to support air-purifying respirators.
 - B. Canisters or cartridges used are MSHA/NIOSH approved for all identified and/or suspected chemicals present.
 - C. Total release exposure potential is known.
 - D. Airborne materials have adequate warning properties.
 - E. Individual has been fit-tested for the air-purifying respirator used.
 - F. The respirator used is a full-face mask.

4. Entry tasks of individuals have been identified to assure direct exposure does not occur (eg. drum sampling).
5. Individual is knowledgeable of the site entry/safety plan and carries an emergency escape pack.
6. Continuous or frequent monitoring program should be established to maintain knowledge about the type and concentration of substances in the ambient air.

IV. Important Considerations

A. General

The protection of health and safety of personnel is an important consideration in all site operations. Selecting the appropriate personnel protection equipment to be worn is one of the first requirements in reducing the potential for adverse health effects.

When the material(s) airborne concentration(s), inhalation characteristic(s), cutaneous characteristic(s), toxicity, and health effects are known, determining the appropriate personnel protection equipment is less difficult. In general, after determining whether the substances concentration in the ambient air is a respiratory and/or a cutaneous hazard, it is compared with the protection factor associated with respiratory protection equipment and protective clothing. Appropriate equipment is selected to reduce the concentrations to acceptable levels.

Determining adequate protection when type and concentration of vapors are unknown, if present at all, is more difficult. In Sections I, II, & IV guidance is given for selecting levels of protection based on gross survey readings. However, the applicability of the best level of protection must be determined on a case-by-case basis utilizing the guidance contained within and the professional judgment of those in charge.

It should also be recognized that physical stress incurred by wearing personal protective equipment decreases the efficiency and effectiveness of the user. Although the stress to the wearer must be considered in planning work routines, the selection of the level of protection must be based only on the protection of the wearer from hostile environment.

I. Introduction

An incident generally involves the escape of normally controlled substances into the environment via air, water, or land surfaces and response activities involve control actions to prevent, minimize, and remove these discharges. As used here, however, site control is preventing or reducing the transport of hazardous substances (contaminants) from the site by workers and equipment involved in site operations.

Site control involves two major activities:

1. Physical arrangements and control of the site work areas.
2. Methods for the removal of contaminants from people and equipment - decontamination procedures - which are discussed in the DECONTAMINATION SECTION.

II. Control at the site

Control of contaminants is needed to reduce the possibility of transfer from the site of contaminants, which may be present on personnel and equipment needed for various on-site operations. This can be accomplished in a number of ways including:

1. Physical barriers to exclude unnecessary personnel.
2. Checkpoints with limited access to the site, or areas within the site.
3. Minimizing personnel and equipment on-site consistent with effective operations.
4. Establishment of containment zones.
5. Decontamination procedures.
6. Conducting operations in a manner to reduce possibility of contamination:
 - A. Field Operations Work Areas:

One method of reducing the potential for transfer of contamination off-site is to delineate zones or work areas based upon expected contamination. Within these zones prescribed operations would occur utilizing appropriate personnel protective equipment. Movement between areas would be controlled checkpoints. Three adjacent zones are recommended:

1. Exclusion area (contaminated)
2. Contamination reduction area
3. Support area (non-contaminated)

B. Exclusion Area:

The exclusion zone is the inner most of three concentric rings and is considered contaminated, dirty or "hot"

Within this area, prescribed levels of protection must be worn by any entering personnel. An entry checkpoint must be established at the periphery of the exclusion area to control the flow of personnel and equipment between contiguous zones and to ascertain that the procedures established to enter and exit the zones are followed. The exclusion area boundary would be established initially based on the presence of the actual wastes or spilled materials and placed as close as possible to drums, tanks, ponds, liquid run-off, or other physical indicators of hazardous substances. Subsequent to operations the boundary may be readjusted based on observation and/or measurements. The boundary should be physically secure and posted, or well-defined by geographical boundaries.

The exclusion area could be further divided into zones with different levels of protection for each zone. Based upon environmental measurements or expected on-site work practices, locations within the exclusion area would be defined concomitantly with the level of protection required for that area. This procedure would allow for more flexibility in operation, decontamination procedures, resources needed and other advantages. Guidelines for designating levels of protection are found in the section entitled SITE ENTRY - PERSONNEL PROTECTION.

C. Support Area:

The support area is the outermost of three rings and is considered a non-contaminated or clean area. It contains the command post for field operations and other elements necessary to support site activities. Normal work clothes are the appropriate apparel within this zone.

D. Contamination Reduction Area:

Between the exclusion area and the support area is the contamination reduction area. The purpose of this zone is to provide an area to prevent or reduce the

transfer of contaminants which may have been picked up by personnel or equipment returning from the exclusion area. All decontamination activities occur in this area.

The boundary between the support area and the contamination reduction area is the contamination control line. This boundary separates the possibly contaminated area from the clean zone. Entry into the contamination reduction zone from the clean area should be through an access control point. Personnel entering at this station would be wearing the prescribed personal protective equipment for working in the contamination reduction area. Exiting the contamination reduction area to the clean area requires the removal of any suspected or known contaminated personnel protection equipment and compliance with decontamination procedures.

At the boundary between the contamination reduction area and the exclusion area is the hot line and access control station. Entrance into the exclusion area requires the wearing of the prescribed personal protection equipment (which may be different than the equipment requirements for working in the reduction area). At a point close to the hot line, a personnel and/or equipment decontamination station is established for those exiting the exclusion area. Another decontamination station is needed closer to the contamination control line for those working only in the contamination reduction area.

III. Other Consideration:

A. Modifications:

The use of a three-zone system of area designation, access control points, the exacting decontamination procedures provides reasonable assurance against the translocation of a contaminating substance. This control system is based on a "worst case" situation and requires a large number of personnel and an abundance of equipment and material to operate. Less stringent site control and decontamination procedures or adaptations of the procedures described may be utilized based upon more accurate information on the types of contaminants involved and the contaminating hazards they present. This information can be obtained through air monitoring, instrument survey, wipe tests for possible personnel or equipment contamination, and technical data concerning the characteristics and behavior of the material present. Predicted upon having more reliable data about