

# **Environmental Health and Safety Plan**

**Kaiser Aluminum & Chemical Corporation  
Thorium Remediation Project  
Tulsa, Oklahoma**



**Kaiser Aluminum & Chemical Corporation  
Baton Rouge, Louisiana**

**REVISION 4  
May 2004**

**Environmental Health and Safety Plan**

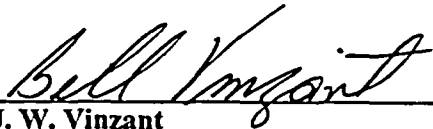
**Kaiser Aluminum & Chemical Corporation  
Thorium Remediation Project  
Tulsa, Oklahoma**

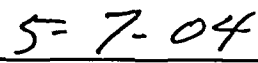
**Kaiser Aluminum & Chemical Corporation  
Baton Rouge, Louisiana**

**March 1999  
Revised June 2000  
Revised October 2003  
Revised May 2004**

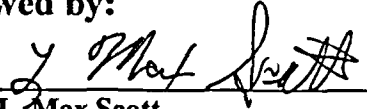
**Approval**

**The plan has been approved by:**

  
\_\_\_\_\_  
J. W. Vinzant  
Project Manager

  
\_\_\_\_\_  
Date

**Reviewed by:**

  
\_\_\_\_\_  
L. Max Scott  
Radiation Safety Officer

  
\_\_\_\_\_  
Date

## Table of Contents

	<u>Page</u>
1.0 Introduction	1
1.1 Purpose	1
1.2 Quality Assurance	1
1.2.1 Records and Documentation	1
1.2.2 Record Retention and Ownership	1
1.2.3 Variances	2
1.2.4 Safety Work Permit	2
2.0 Policy and Standards	3
2.1 Policy	3
2.2 Visitors	3
2.2.1 Visitor Activities	3
2.2.2 Visitor Responsibilities	3
2.2.3 Prohibited Activities	4
2.2.4 Personal Protective Equipment	4
3.0 General Site Information	5
4.0 Responsibilities	7
4.1 Key Personnel	7
4.2 Responsibilities	7
4.3 Contractor Site Personnel	8
5.0 Hazard Identification and Risk Assessment	10
5.1 Chemical Hazards	10
5.2 Indigenous Biological Hazards	10
5.3 Adverse Weather Procedures	10
6.0 Personal Protective Equipment	11
6.1 Designated Levels of Protection	11
6.2 Modification of Protection Program	12
7.0 Accident/Incident Reports	14
7.1 Employee Information	14
8.0 Chemical Monitoring	15
9.0 Standard Safety Procedures	16
9.1 Buddy System	16
9.2 Communications	16
9.3 Safe Work Practices	16
9.4 Site Map	17
10.0 Routine and Special Training	18
10.1 Site Orientation	18

**Table of Contents  
(Continued)**

	<u>Page</u>
10.2 Training	18
11.0 Emergency Response and Notification	20
11.1 Contingency Plans and Emergency Contacts	20
11.1.1 Fire/Explosion	20
11.1.2 Personnel Injuries	20
11.1.3 Severe Weather	20
11.2 Notification Requirements	20
11.3 Emergency Route to Hospital	21

**Figures**

- Figure 3-1 – Kaiser Aluminum Site
- Figure 11-1 – Emergency Contacts
- Figure 11-2 – Map to St. Francis Hospital
- Figure 11-3 – Map to Medical Center

**Attachments**

- Attachment 1 – Safety Work Permit
- Attachment 2 – HSP Permit Authorized Personnel List
- Attachment 3 – Health and Safety Plan Acceptance Form

**Environmental Health and Safety Plan  
Kaiser Aluminum & Chemical Corporation  
Thorium Remediation Project  
Tulsa, Oklahoma**

**1.0 Introduction**

This Environmental Health and Safety Plan (HSP) provides the basic policies, objectives, organizational structure, and guidelines of the Kaiser Aluminum & Chemical Corporation (Kaiser) and governs all nonradiological aspects of the Thorium Remediation Project at the Kaiser Tulsa, Oklahoma facility. This HSP was written in accordance with Occupational Safety and Health Administration (OSHA) standards codified in 29 Code of Federal Regulations (CFR) 1910.120.

**1.1 Purpose**

The Kaiser HSP identifies potential hazards and specifies an appropriate level of response to protect the health and safety of workers and the general public. Kaiser's HSP also has been developed to guide generation and implementation of contractor health and safety plans and procedures.

**1.2 Quality Assurance**

**1.2.1 Records and Documentation**

- Records required by regulations, permits, plans, and procedures implementing the health and safety program shall be maintained on site, and preserved.
- Records may be the original document, a reproduced copy or microform, if such reproduced copy or microform is duly authenticated by authorized personnel and capable of producing a clear and legible copy after storage

**1.2.2 Record Retention**

Records shall be maintained, as a minimum, for the period of time specified in the applicable regulations, unless disposition is otherwise directed by the Nuclear Regulatory Commission (NRC)/OSHA/U.S. Environmental Protection Agency (USEPA)/Department of Transportation, or other regulatory agency which maintains jurisdiction over those records.

### 1.2.3 Variances

If conditions develop requiring a deviation from the HSP, a written request for variance shall be made to one or more persons in a position authorized to approve the Plan.

### 1.2.4 Safety Work Permit

The purpose of the Safety Work Permit (SWP) is to identify special instructions or precautions pertinent to performing work in a safe manner not covered or detailed by the HSP or a standard operation procedure or instruction. SWPs are prepared at the discretion of the Kaiser Site Administrator (SA) or the Contractor Health and Safety Supervisor (H&S Supervisor).

## 2.0 Policy and Standards

### 2.1 Policy

It is the policy of Kaiser to conduct its operations in a manner that minimizes health and safety risks to its employees, contractors, and the general public. This HSP applies to Kaiser employees, contractors, subcontractors, and visitors to the site including local, state, and federal government employees. In preparing their HSP, and all other plans, the Contractor shall, at a minimum, address all the elements described in this EHASP, Kaiser's Radiological Health and Safety Plan, and Kaiser's Quality Assurance Plan.

### 2.2 Visitors

Persons visiting or conducting work at the Kaiser facility in Tulsa, Oklahoma are required to be familiar with Kaiser's health and safety requirements of the site. Visitors will be required to read and understand Kaiser's Visitor Health and Safety Plan Synopsis, sign in and out on the Visitor Log, and be accompanied by facility personnel while on the site.

Kaiser may delegate health and safety and site access authority to a qualified contractor.

#### 2.2.1 Visitor Activities

Visitor activities are limited to observation. Visitors are not to be present in restricted areas when remediation activities are being conducted. Under these conditions, visitors will have a limited potential for contact with contaminated materials. Persons accessing active remediation areas, exclusion zones, or contamination reduction zones; conducting activities other than observation; and unescorted visitors will be required to read and understand Kaiser's Health and Safety Plan and complete the facility orientation program.

#### 2.2.2 Visitor Responsibilities

Visitors to the Kaiser facility are admitted as a courtesy and must leave when requested to do so. Visitors are responsible for signing in and out. All visitors are responsible for behaving in a mature manner and following instructions, particularly in emergency situations.

### 2.2.3 Prohibited Activities

Visitors may not smoke, drink, eat, chew gum or tobacco, or apply cosmetics while in the restricted areas of the Kaiser facility. Visitors may not enter the restricted areas unescorted.

### 2.2.4 Personal Protective Equipment

Visitors accessing the restricted areas of the site must wear the required personal protective equipment (PPE) for the area. As a minimum, visitors will wear rubber overboots. Hard-toe boots, hard hats, cotton coveralls, safety glasses, and gloves, and/or rain gear may be required depending on site conditions and operations at the time of the visit. Visitors who enter areas where respiratory protection is necessary must provide evidence that they possess the training, medical surveillance, and fit testing required by OSHA regulations.



### 3.0 General Site Information

The former Kaiser Aluminum Specialty Products facility is located at 7311 East 41st Street in Tulsa, Oklahoma (Figure 3-1). It is situated in Tulsa County, Oklahoma, about 5 miles southeast of the downtown center of the City of Tulsa. The site initially occupied approximately 23 acres of land on both sides of 41st Street. Currently, a 3-acre parcel south of 41st Street contains an active aluminum extrusion and fabrication facility. North of East 41st Street are several parcels of land previously devoted to refining, processing, and waste disposal functions. This acreage is split by the Union Pacific Railroad right-of-way. An approximate 3.5-acre parcel south of the railroad (known as the former operational area) houses an active office building and several inactive industrial structures. An approximate 14.0-acre land area (known as the pond parcel) located north of the railroad contains a freshwater pond, a retention pond, a former reserve pond area, and the Flux Building area. The Thorium Remediation Project involves the former operational area and the pond parcel.

The Retention Pond currently occupies 8 acres of the 14-acre land parcel north of the railroad. The water level in the Retention Pond varies, based on seasonal precipitation. The Retention Pond is surrounded by a well-maintained berm and there are no surface water discharges from the pond. The Retention Pond is permitted by the Oklahoma Water Resources Board. Occupying approximately 4 acres on the western portion of this parcel is the area of the former Freshwater Pond. The Freshwater Pond was backfilled in October and November 2002. Northeast of the Retention Pond is the area of the former Reserve Pond (approximately 1.5 acres). The Reserve Pond was backfilled in the late 1960s and is currently covered with grass.

Extensive site characterization activities have been conducted since 1994 within the 14.0-acre land area of the facility known as the pond parcel. These characterization activities have indicated the presence of residual radioactive material within a 10-acre portion of the pond parcel. The radioactive material identified within this portion of land is a thorium-bearing dross containing the isotopes Th-232, thorium-230 (Th-230), and thorium-228 (Th-228). The affected portion of the parcel contains the Retention Pond and former Reserve Pond area. The unaffected portion of the pond parcel contains a former Freshwater Pond area.

The pond parcel area considered for remediation is bounded by the south fence line, the former Fresh Water Pond embankment on the west, Fulton Creek ditch on the north, the east fence line, and the northern and eastern edges of the Flux Building and paved area. A central feature of this area is the Retention Pond and associated embankments. Thorium-bearing dross was present on land adjacent to current Kaiser property along the east and south fence lines and represented the margins of the material. Kaiser has remediated this land by excavation and storing affected soil within the pond parcel. Affected soil generated during remediation of the adjacent land is considered as part of the on-site decommissioning.

## 4.0 Responsibilities

### 4.1 Key Personnel

The following personnel and organizations will be responsible for all health and safety aspects during site activities at the Kaiser remediation site.

#### NAME/TITLE/ORGANIZATION

Paul Handa	(918) 384-3169
Site Administrator	7311 41st Street
Kaiser	Tulsa, OK 74147

*(To be supplemented by contractors as applicable)*

### 4.2 Responsibilities

The Contractor Project Manager is responsible for the general management, oversight, and administration of the project. The Contractor Project Manager, working with the Contractor H&S Supervisor, is responsible for planning and controlling site activities in compliance with the project HSP, as well as notifying the Kaiser SA of deficiencies and/or deviations.

The Contractor H&S Supervisor has responsibility for developing, implementing, and maintaining the Contractor Health and Safety Program. The Contractor H&S Supervisor is functionally separate from project operations management, and has the authority to stop any activity which is not being conducted in a safe manner in accordance with the HSP. Specific responsibilities may be delegated in part to qualified health and safety personnel.

The Contractor H&S Supervisor is responsible for on-site direction and oversight of project activities in compliance with the project HSP.

The Contractor H&S Supervisor or his designee shall be present at all times during site activities. Respective functions will primarily include the following duties:

- advising on-site personnel, the Contractor Project Manager, and the Kaiser SA of potential health and safety hazards during field investigations
- ensuring potential hazards are monitored as stipulated in this plan
- evaluating potential changes of on-site activities and personnel protective equipment as needed to ensure employee safety
- terminating field work if unsafe conditions develop or an imminent hazard is perceived
- preparing procedure deviation, variances, and interim-change notices from this plan, if needed
- maintaining health and safety oversight of field activities with subcontractor personnel or visitors

#### 4.3 Contractor Site Personnel

Subcontractor personnel shall be classified as Contractor Site Personnel. Specific responsibilities include:

- performing tasks in compliance with the project HSP as well as posted, verbal, and other written safety instructions
- stopping work upon discovering, and reporting to the Contractor Project Manager and/or Contractor H&S Supervisor, any condition which jeopardizes industrial safety
- stopping work and reporting to the Contractor H&S Supervisor and/or Contractor Project Manager anytime he or she is unsure that their action or work environment is safe
- promptly obeying "Stop Work" orders
- reporting to the Contractor Project Manager and Contractor H&S Supervisor noncompliance with the project HSP
- assisting the Contractor H&S Supervisor with investigations as necessary
- not eating, drinking, smoking, chewing, or applying cosmetics in any controlled area
- wearing protective clothing properly and wherever required by the SWP, procedure, or the Contractor H&S Supervisor
- removing protective clothing properly

- reporting the presence of treated or open wounds to the Contractor Project Manager or the Contractor H&S Supervisor prior to working in a controlled area, and immediately exiting if a wound occurs while in such an area

## **5.0 Hazard Identification and Risk Assessment**

### **5.1 Chemical Hazards**

No potential chemical hazards have been identified at the site which have the potential to be present in the subsurface soils being remediated or sampled.

### **5.2 Indigenous Biological Hazards**

Insects including ticks, mosquitoes, ants, and spiders at the Kaiser site are common to the general area as well as both poisonous and nonpoisonous snakes. However, these indigenous biological hazards are not considered likely.

In the unlikely event that an employee comes into contact with a poisonous plant or is bitten by a snake or rodent, the Contractor H&S Supervisor shall immediately be notified. The employee will be transported to a medical facility for medical attention, if warranted.

### **5.3 Adverse Weather Procedures**

Adverse weather conditions can severely affect field operations. The Contractor Project Manager and/or Contractor H&S Supervisor will make the determination to "stop work" if inclement weather jeopardizes employee safety or field operations.

## 6.0 Personal Protective Equipment

This section describes the general requirements of the USEPA designated Levels of Protection (A-D) and the specific levels of protection required for each task at the Kaiser site. The rationale for selected levels of protection and modification procedures are also discussed. The need for respiratory equipment is considered unlikely; however, identification and procedures are specified. Should respiratory equipment be required, this plan shall be modified as necessary to conform with applicable regulations.

Disposable PPE, such as gloves and coveralls, will be of a type suitable for disposal at a sanitary landfill. Specifically, PPE will not be of a color or bear markings identifying it as hazardous or radioactive waste.

### 6.1 Designated Levels of Protection

Personnel shall wear protective equipment when activities involve known or suspected atmospheric contamination; when vapors, gases, or particulates may be generated by site activities; or when direct contact with skin-affecting substances may occur. Full face-piece respirators protect lungs, gastrointestinal tract, and eyes against airborne toxicants. Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components have been established by the USEPA (USEPA, 1984) into four categories, according to the degrees of protection afforded.

- Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.
- Level B: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments.
- Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.
- Level D: Should be worn only as a work uniform and not on any site with respiratory or skin hazards. It provides minimal protection against chemical hazards.

The level of protection selected for this project is based upon the following criteria:

- type and measured concentration of hazardous chemical
- potential for exposure to hazardous chemicals in air, splashes of liquids, or other direct contact with material due to work being done

## 6.2 Modification of Protection Program

The prescribed level of protection shall be upgraded or diminished as warranted by a change in site conditions or findings of investigations. When a significant change occurs, the hazards shall be reassessed. Some examples of the need for reassessment include:

- contaminants other than those previously identified are encountered
- change in work scope which affects the degree of contact with contaminants
- temperature extremes or individual medical considerations limit the effectiveness of PPE
- change of season/weather
- change in job tasks during a work phase

A modified Level D is expected to be required. The following is a description of the modified Level D PPEs:

- polyvinylchloride steel toed boots
- safety glasses
- gloves
- leather gloves for heavy labor

Should a one-step upgrade in PPE prove necessary (i.e., Level D to Level C), site activities shall be temporarily halted until the appropriate PPE upgrade is accomplished. The Contractor H&S Supervisor shall provide documentation of such action, and shall notify both the Contractor Project Manager and Kaiser SA. Should a two-step upgrade be necessary (i.e., Level D to Level B), site activities shall be halted until such time that both the Contractor Project Manager and Kaiser SA have been advised of the situation and have provided written concurrence that work may proceed with the upgraded level of protection.



**NOTE**

Full-face respirator with particulate cartridges will be provided to personnel to be used only at the direction of the Contractor H&S Supervisor.

## 7.0 Accident/Incident Reports

Accidents or incidents that occur during activities at the Kaiser remediation site shall be reported in writing to the Kaiser SA and the Contractor Project Manager, and investigated where appropriate to prevent reoccurrence. Examples of incident reports include:

- a recordable occupational injury, i.e., a cut, fracture or sprain which results from a work accident or from an exposure involving a single incident
- animal bites and one-time exposure to chemicals
- a recordable occupational illness caused by exposure to environmental factors associated with employment including acute and chronic illnesses that may be caused by inhalation, absorption, ingestion, or direct contact
- in the event of an accident, a medical accident/incident form shall be completed and sent to the Contractor Medical Program Coordinator

### 7.1 Employee Information

The standards concerning employee's right-to-know OSHA requirements of 29 CFR 1910.120 will be available at the work site.

## 8.0 Chemical Monitoring

No chemical hazards have been identified to date by Kaiser. However, since the site has not been completely characterized for potential chemical hazard, limited organic monitoring with a photoionization detector will be performed if suspected organic contamination is discovered.

## 9.0 Standard Safety Procedures

### 9.1 Buddy System

The potential hazards associated with field activities at the Kaiser remediation site do not warrant utilizing the buddy system concept. However, as an additional safety precaution, and as a means of expediting field activities, a team of at least two people will be used when the supervisor or H&S Supervisor specifies so.

### 9.2 Communications

Due to the nature of planned field activities, the use of communication devices such as radios, megaphones, and air horns will not be necessary. However, all personnel shall be familiar with the following hand signals.

SIGNAL	DEFINITION
Hands clutching throat	Out of air/cannot breath
Hands on top of head	Need assistance
Thumbs up	OK/I am alright/I understand
Thumbs down	No/negative
Arms waving upright	Send back support
Grip partner's wrist	Exit area immediately

### 9.3 Safe Work Practices

The following safe work practices shall be followed:

- Designated personal protective and safety equipment shall be worn while working within control zone and decontamination areas.
- Eating, drinking, chewing gum or tobacco, smoking, or applying cosmetics is prohibited in the contaminated or potentially contaminated areas.
- Contact with potentially contaminated substances shall be avoided to the extent practicable; placing monitoring equipment on potentially contaminated surfaces should be avoided.
- Field staff will be alert for potentially dangerous situations (e.g., presence of strong, irritating or nauseating odors), and immediately take appropriate measures.

- Good housekeeping shall be practiced; equipment and materials shall be kept orderly and out of potentially harmful situations.
- Field staff shall be familiar with the physical characteristics of the site including the following:
  - the nearest emergency assistance
  - prevailing wind direction
  - access to associates, equipment, and vehicles
  - communication facilities at and near the site
  - areas of known or suspected contamination
  - site access and egress
- The number of personnel and amount of equipment in the contaminated area shall be minimized to the extent consistent with safety requirements.
- Waste generated during activities at the site shall be contained appropriately.
- Injuries shall be reported, regardless of how minor.
- Periodic health and safety meetings shall be conducted by the Contractor H&S Supervisor or his designee for personnel involved in field activities; and prior to commencing a new task, these meetings shall address health and safety concerns related to the planned activities and shall review emergency response plans.

#### 9.4 Site Map

Kaiser shall provide a site map to contractors to familiarize them with the work area. The map shall be detailed with important features, such as the location of medical facilities and evacuation routes.

## **10.0 Routine and Special Training**

### **10.1 Site Orientation**

Site orientation concerning site-specific health and safety shall be administered to all personnel. Health and Safety Plan acceptance forms shall be completed by site personnel to document their understanding of the health and safety requirements.

### **10.2 Training**

If on-site personnel engage in hazardous waste activities, they shall receive classroom training and supervised field experience as required by 29 CFR 1910.120. The training they will receive will cover hazard awareness, personnel protection, toxic properties of hazardous materials, site control, and sampling hazardous materials as per 29 CFR 1910.120. A training outline for site activities is provided below:

#### **Training Outline – Site Activities**

- I. Purpose and objectives of training.
  
- II. Recognizing and identifying health and safety hazards at the Kaiser Tulsa, Oklahoma site.
  - A. Physical hazards
    - structures
    - equipment
    - terrain
    - weather
  
  - B. Biological hazards
    - indigenous site hazards (insect, snake, plant)
  
  - C. Potential health effects

### III. Safety and monitoring requirements

#### A. Controlled area restrictions

- eating/drinking/smoking
- access control points

#### B. Protective equipment requirements

- clothing, boots, gloves, coveralls, goggles

#### C. Procedures for using protective equipment

- clothing
- respirator

#### D. Personal contamination monitoring and decontamination

### IV. Emergency response requirements

#### A. Getting emergency assistance

#### B. Emergency notification procedures

#### C. Names of personnel and alternates responsible for site safety and health

## **11.0 Emergency Response and Notification**

The purpose of this section is to provide guidance for responses to emergency situations.

### **11.1 Contingency Plans and Emergency Contacts**

Emergency response contingency plans in this section shall be followed during field investigations. A copy of this plan will be available at the work site, and personnel working on the site shall be familiar with the plan. Evacuation plans and routes shall be discussed with field personnel before field activities begin.

Persons and services to contact in case of emergencies are identified in Figure 11-1. This emergency contact form will be posted at the work site.

#### **11.1.1 Fire/Explosion**

A fire emergency will be handled by evacuating the work area and immediately notifying the Tulsa Fire Department (911). Field personnel should attempt to put out the fire only if it appears to be small and easily extinguishable. The Fire Department shall be notified of such an occurrence. In the event of an explosion, personnel will be evacuated and no one shall enter the work area until clearance is given by the appropriate Tulsa authorities.

#### **11.1.2 Personnel Injuries**

In case of minor injuries to personnel, first aid treatment shall be initiated in the field. In case of serious injuries, the victim shall be transported to a hospital as soon as possible.

#### **11.1.3 Severe Weather**

In the event that severe weather threatens the safety of employees, contractors, and visitors, it is important that each person minimize the chance for injury and proceed to the nearest shelter.

### **11.2 Notification Requirements**

Should any doubt be encountered as to who or what authority should be contacted, a conservative approach shall be used so as to contact all appropriate authorities. The SA shall also be informed of any emergency situation.



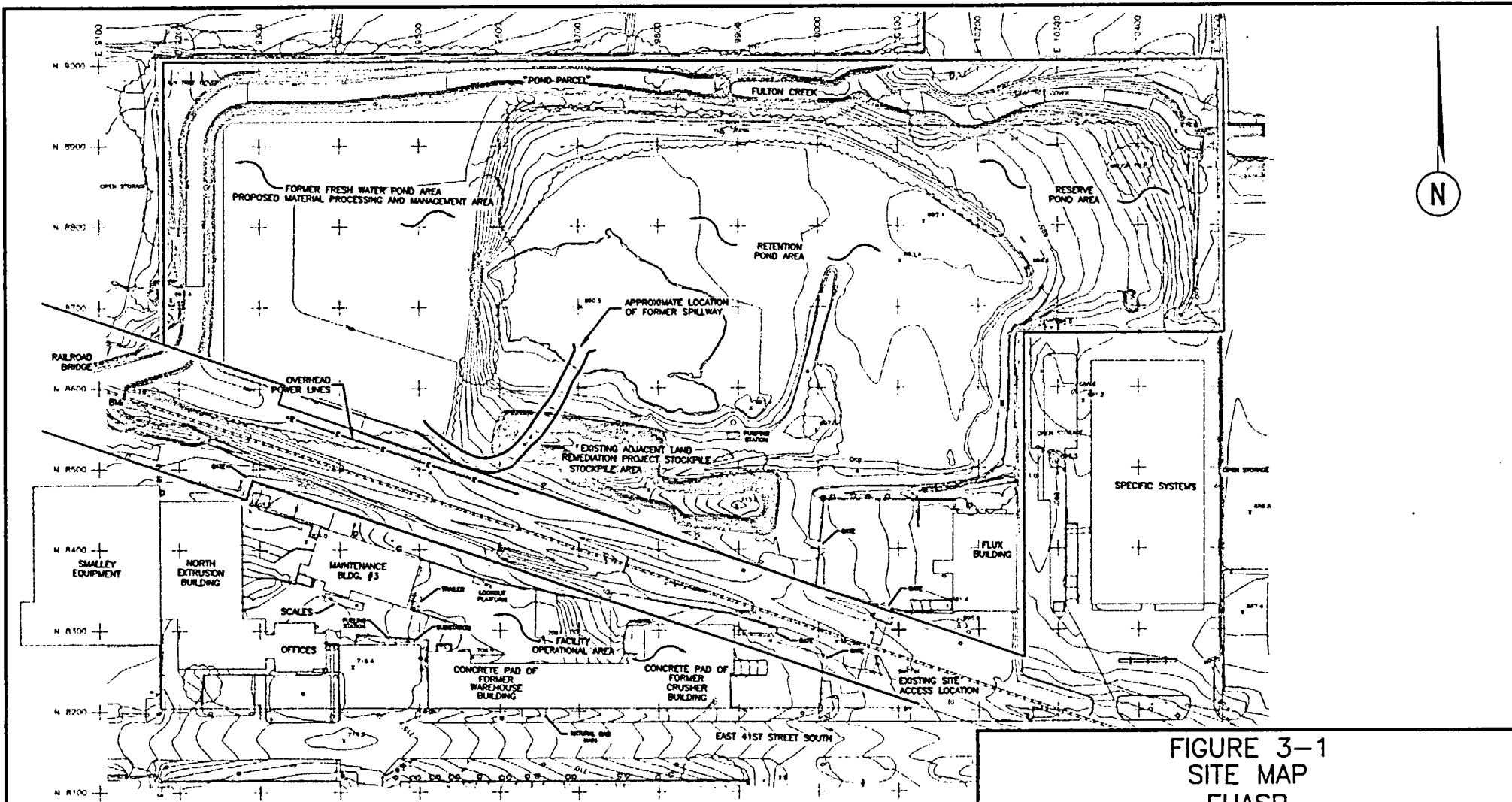
Any reporting and notification of emergency situations shall be documented. The Contractor H&S Supervisor has the major responsibility for overseeing the response to emergency situations and shall ensure that the appropriate actions are taken.

### 11.3 Emergency Route to Hospital

A map of the emergency route will be provided to each field staff member (see Figures 11-2 and 11-3).

Q: 4000:PA4072: Kaiser Plans: Kaiser Ehasp

**FIGURES**



**FIGURE 3-1**  
**SITE MAP**  
**EHASP**  
**THORIUM REMEDIATION PROJECT**  
**TULSA, OKLAHOMA**

PREPARED FOR  
**KAISER ALUMINUM & CHEMICAL CORPORATION**  
**BATON ROUGE, LOUISIANA**

APPROVED	<i>CRB 5/7/04</i>
CHECKED	<i>CRB 5/14/04</i>
DRAWN	DEB 3/31/04
DRAWING NUMBER	
PA4072001	

**Penn E&R**

Environmental & Remediation, Inc.

**FIGURE 11-1**  
**EMERGENCY CONTACTS**

**CONTRACTOR HEALTH AND SAFETY OFFICER**

*TO BE COMPLETED BY CONTRACTOR*

**KAISER ALUMINUM (Paul Handa)**

Call: (918) 384-3169

**FIRE ! Call: 911**

**AMBULANCE ! Call: 911**

**POISON CENTERS**

National Poison Control Center, 404-588-4400

Regional Poison Control Center, 1-800-672-1697

Medical Center Poison Control Center, 716-5900

**POLICE ! Call: 911**

**YOU ARE LOCATED AT:**

7311 East 41st Street, Tulsa, Oklahoma

**THE NEAREST EMERGENCY MEDICAL SERVICES ARE LOCATED AT:**

St. Francis Hospital

6161 South Yale Avenue

Phone Number: 918-494-1225

**THE NEAREST NONEMERGENCY MEDICAL SERVICES ARE LOCATED AT:**

Med Center

2929 South Garnett Street

Phone Number: 918-665-1520

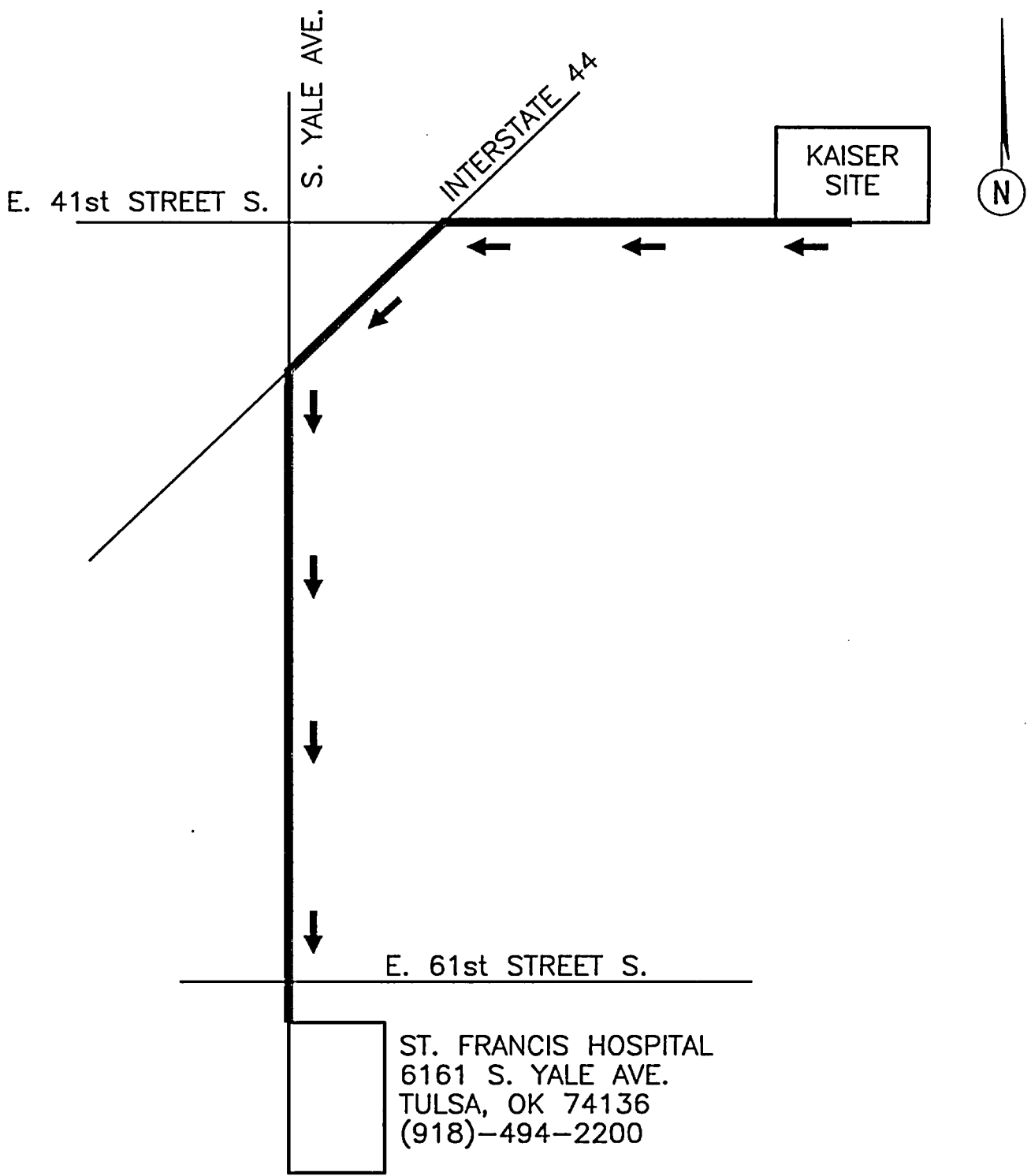
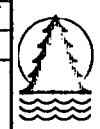


FIGURE 11-2  
ROUTE TO ST. FRANCIS HOSPITAL  
EHASP  
THORIUM REMEDIATION PROJECT  
TULSA, OKLAHOMA

PREPARED FOR  
KAISER ALUMINUM & CHEMICAL CORPORATION  
BATON ROUGE, LOUISIANA

APPROVED *CNO 5/2/04*  
CHECKED *CNO 5/19/04*  
DRAWN *DEB 3/31/04*

DRAWING NUMBER  
PA4072002



**Penn E&R**  
Environmental & Remediation, Inc.



HIGHWAY 161

E. 31st STREET S.

MEDICAL CENTER  
2929 S. GARNETT ROAD  
TULSA, OK 74129  
(918)-665-1520

S. GARNETT RD.

E. 41st STREET S.

KAISER  
SITE

FIGURE 11-3  
ROUTE TO MEDICAL CENTER  
EHASP  
THORIUM REMEDIATION PROJECT  
TULSA, OKLAHOMA

PREPARED FOR  
KAISER ALUMINUM & CHEMICAL CORPORATION  
BATON ROUGE, LOUISIANA

APPROVED *CRA 5/7/04*  
CHECKED *CRA 5/7/04*  
DRAWN *DEB 3/31/04*

DRAWING NUMBER  
PA4072003



**Penn E&R**  
Environmental & Remediation, Inc.

**ATTACHMENTS**

**ATTACHMENT 1**

<b>Safety Work Permit</b> <b>**Copy To Be Posted In The Work Area**</b>		
Project Name:	Issue Date:	Expiration Date:
Emergency Contact(s):	Phone No.:	
Specific Job Location and Task to be Performed:		
<b>Personnel Monitoring</b>	<b>Protective Equipment and Clothing</b>	
Bioassay:	Respiratory Protection:	
Radiation Dosimeter		
Area Airborne Monitoring	Protection Clothing:	
Near Representative Workers		
	Other:	
Other		
<b>Non-Radiological Hazards</b>	<b>Radiological Conditions and Hazards</b>	
	Exposure Rate:	
	Contamination:	
	Air Sample Results:	
<b>Access Control Instructions</b>	<b>Survey Requirements</b>	
Special Use or Restraints:		
<b>Review and Approvals</b>		
Review:	Date:	
Approval:	Date:	



**ATTACHMENT 2**

**SWP Authorized Personnel List**

**\*\*To Be Signed By All Personnel Performing Work On-Site\*\***

By signing the form below, the Radiation Worker agrees to comply with all of the requirements listed in the Safety Work Permit and the instructions given by the RSO, SA or designee.

Name (Print):	Signature:	ID Number	Date

**Attach to SWP**

**ATTACHMENT 3**  
**KAISER ALUMINUM & CHEMICAL CORPORATION**  
**THORIUM REMEDIATION PROJECT**

**HEALTH AND SAFETY PLAN**  
**ACCEPTANCE FORM**

**Instructions:** This form is to be completed by each person prior to working on the subject project work site and returned to the Radiation Safety Officer or Health and Safety Supervisor.

Project: \_\_\_\_\_  
Date of \_\_\_\_\_  
Project: \_\_\_\_\_

I understand my health and safety responsibilities and agree to perform my work in accordance with those responsibilities.

Signed \_\_\_\_\_

Print Name \_\_\_\_\_

Company Name \_\_\_\_\_

Date \_\_\_\_\_